ORAL CAVITY, TONGUE, SALIVARY GLANDS, TEETH

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DEPARTMENT OF ANATOMY AND HISTOLOGY

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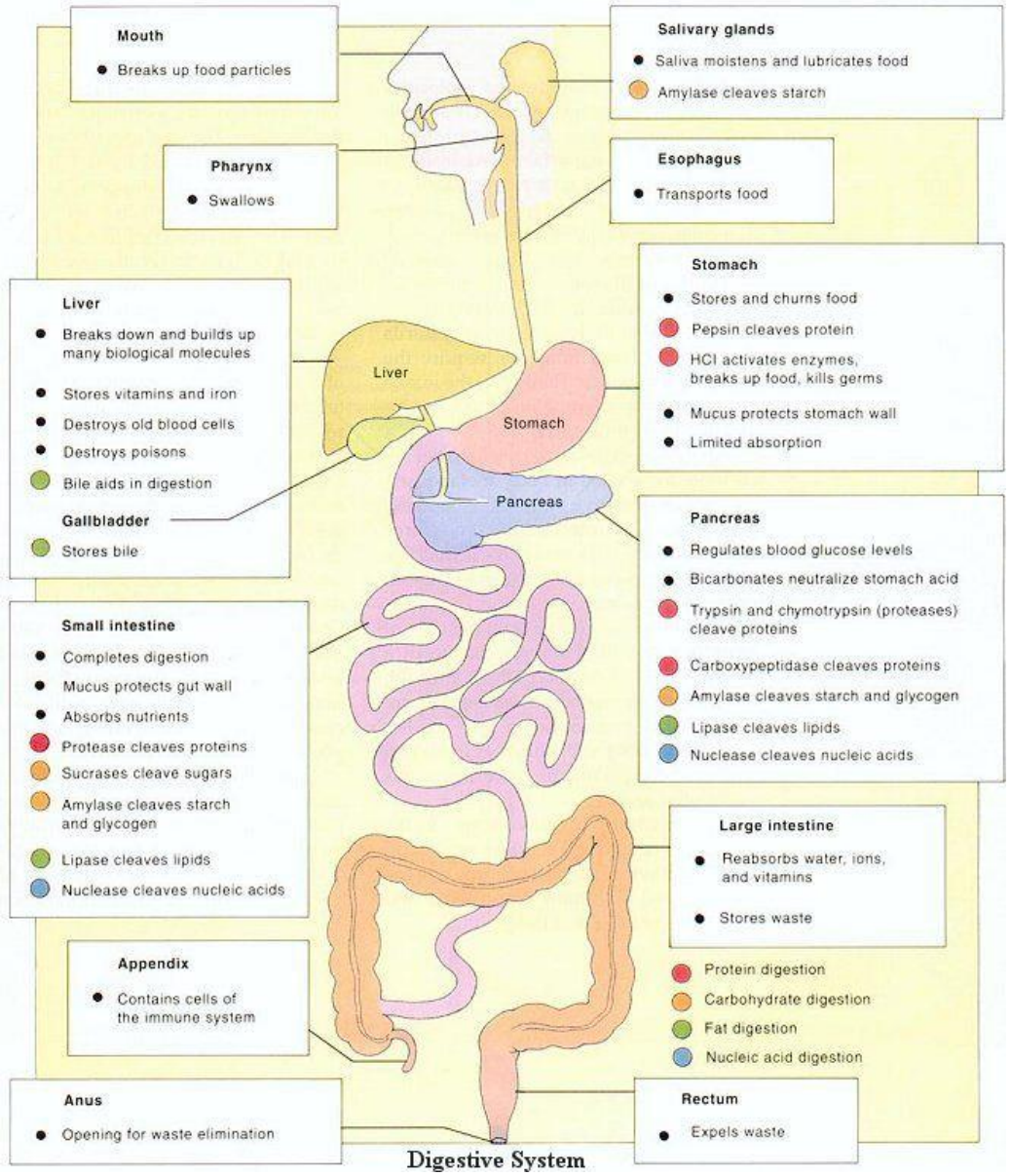
FUNCTION OF THE DIGESTIVE SYSTEM

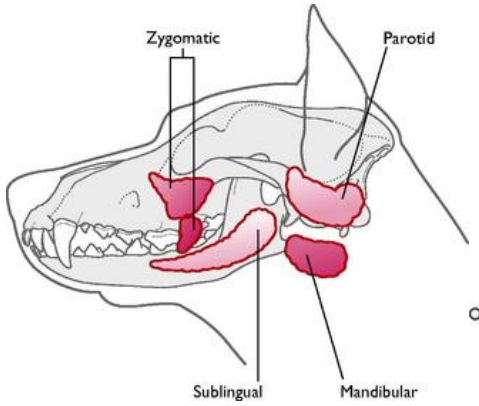
1. **prehension of food**
2. **mastication**
3. **digestion**
4. **absorption**
5. **initial storage of the nutreints**
6. **expulsion of the unabsorbed portion of the food**

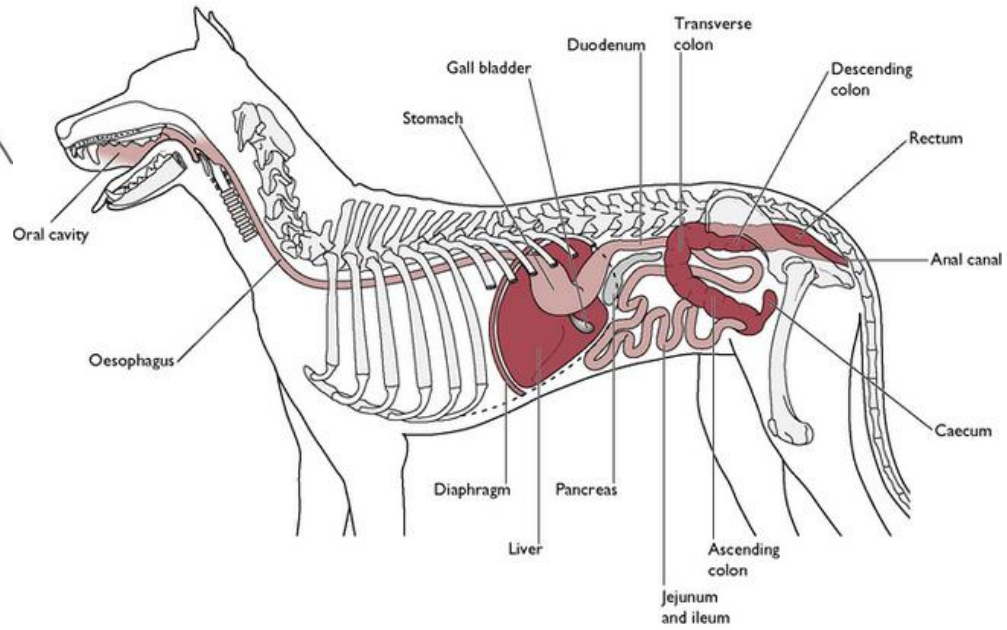


https://hu.pinterest.com/pin/253609022739030729/

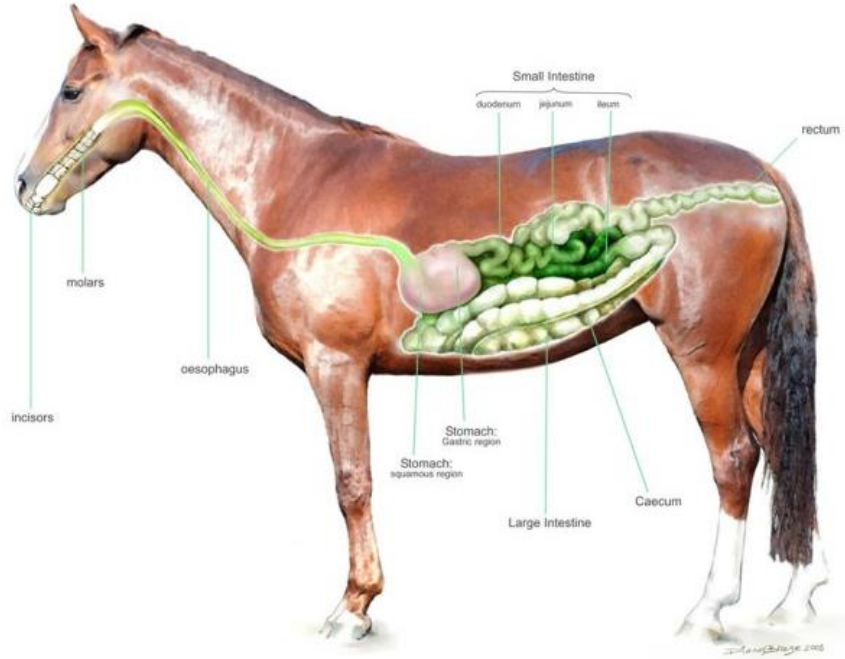
STRUCTURES OF THE DIGESTIVE SYSTEM

1. MOUTH
2. PHARYNX
3. ALIMENTARY CANAL
4. ACCESSORY GLANDS

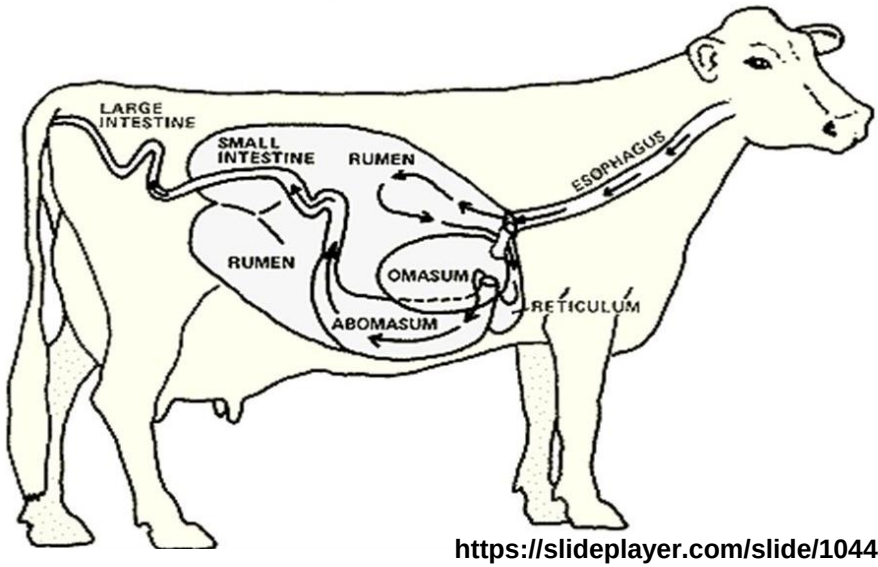




https://veteriankey.com/digestive-system/



https://equinenutritionnerd.com/2014/06/29/the-equine-digestive-system/



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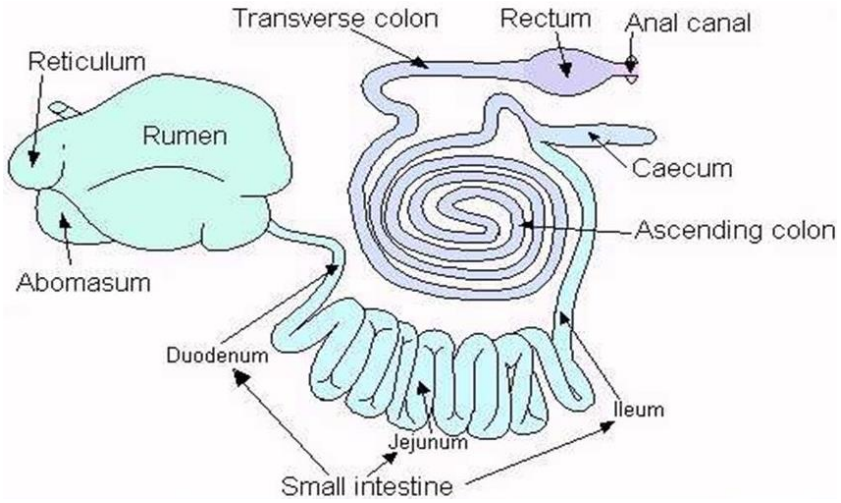
STRUCTURES OF THE DIGESTIVE SYSTEM

ALIMENTARY CANAL:

- **muscular tube**
- **begins with the esophagus**
- **ends at the anus**



RUMINANT

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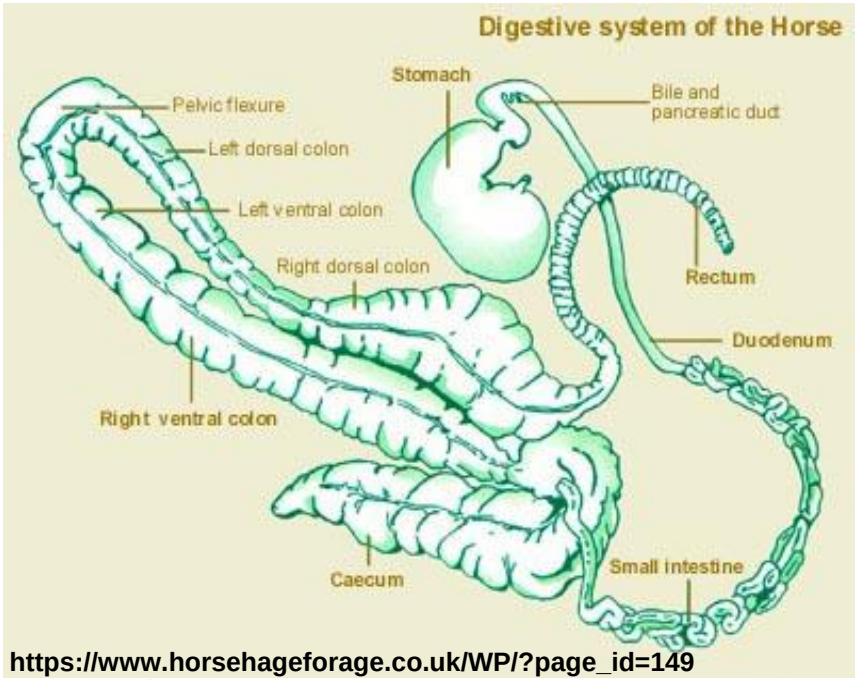
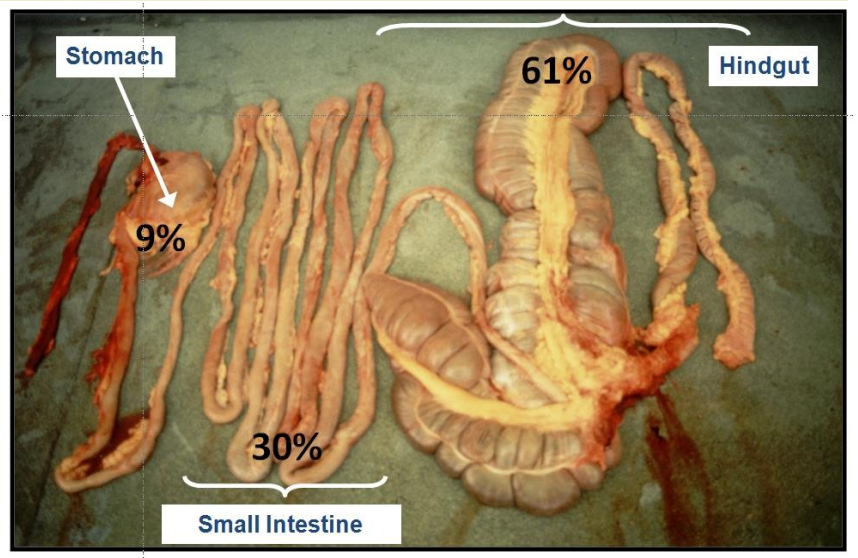
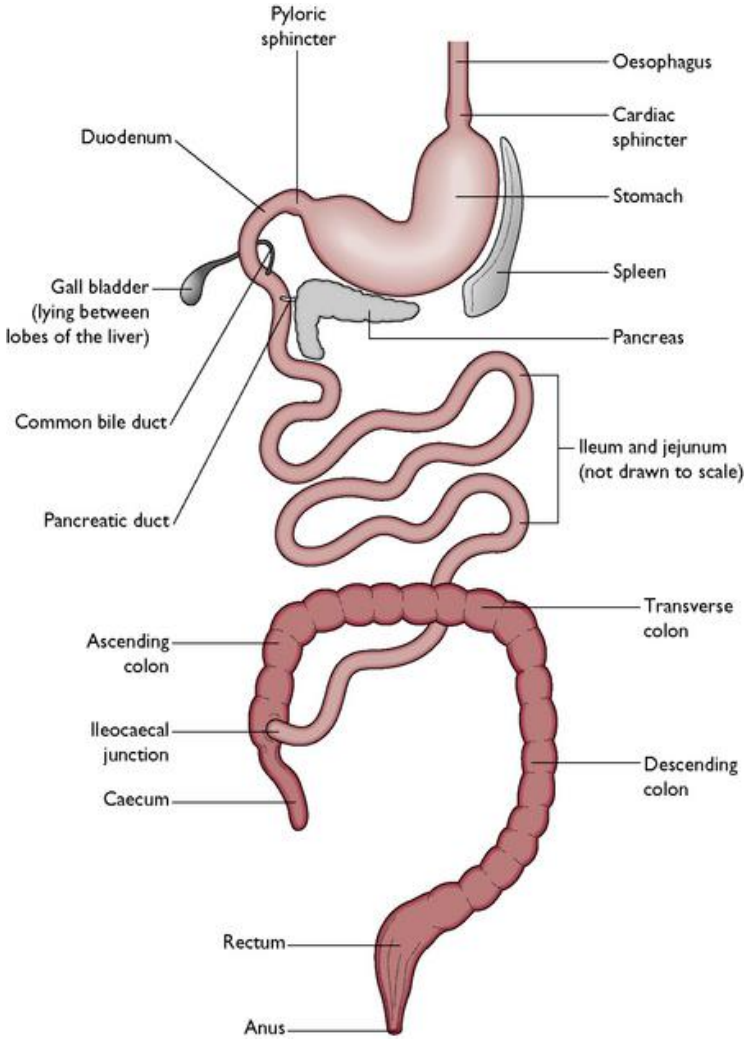


https://www.horsehageforage.co.uk/WP/?page_id=149



http://davidmarlin.co.uk/portfolio/2313/



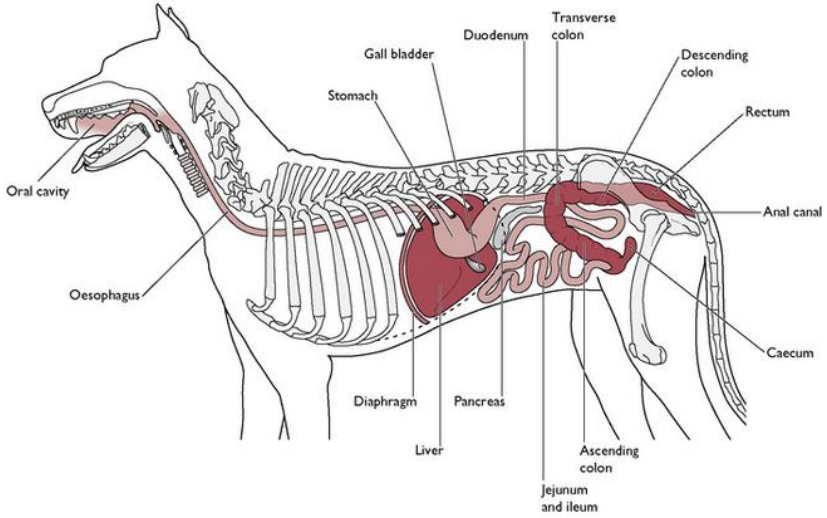
DOG

https://veteriankey.com/digestive-system/

STRUCTURES OF THE DIGESTIVE SYSTEM

ACCESSORY GLANDS:

- **salivary glands located on the head**
- **liver**
- **pancreas**



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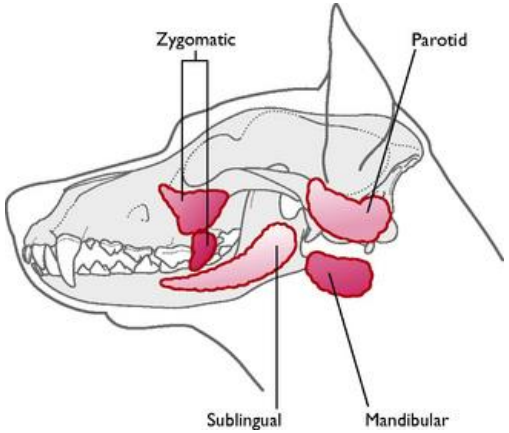

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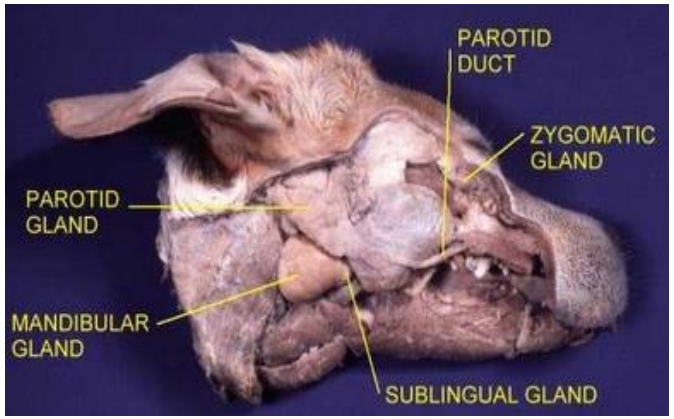
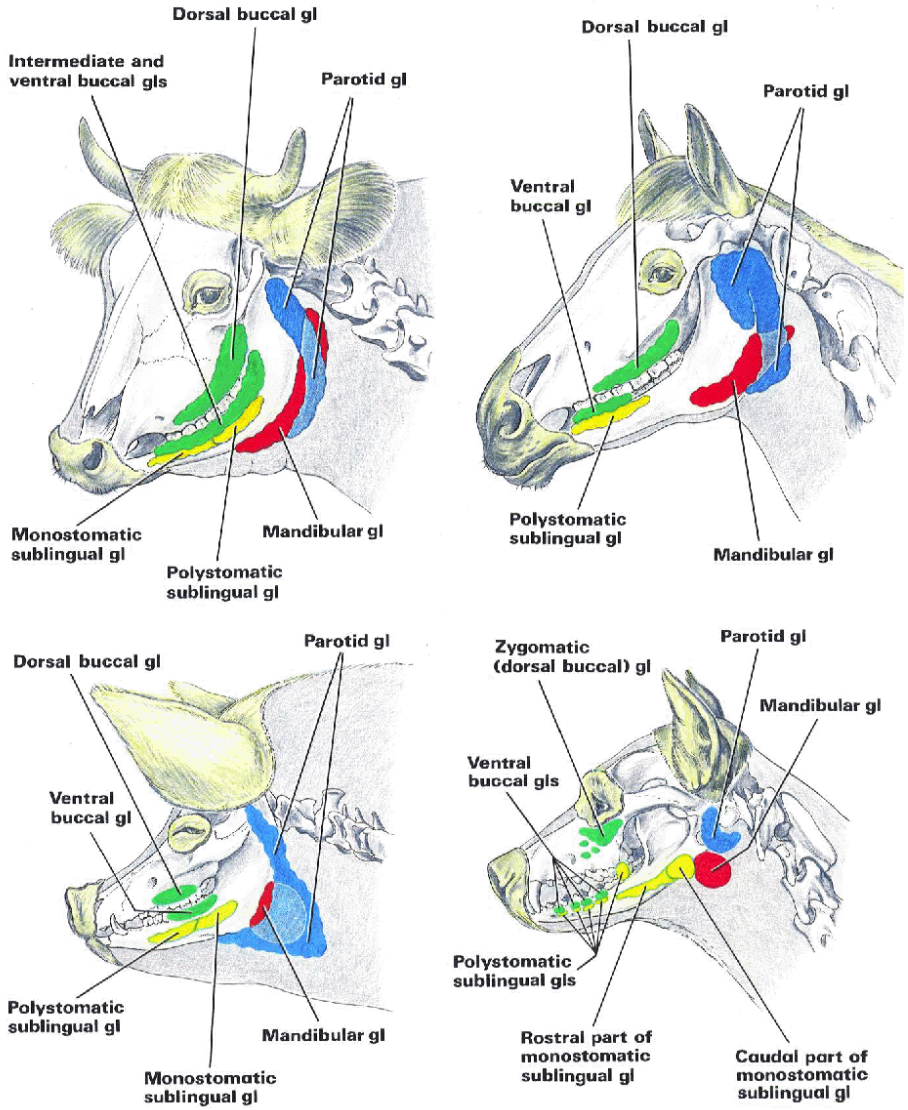


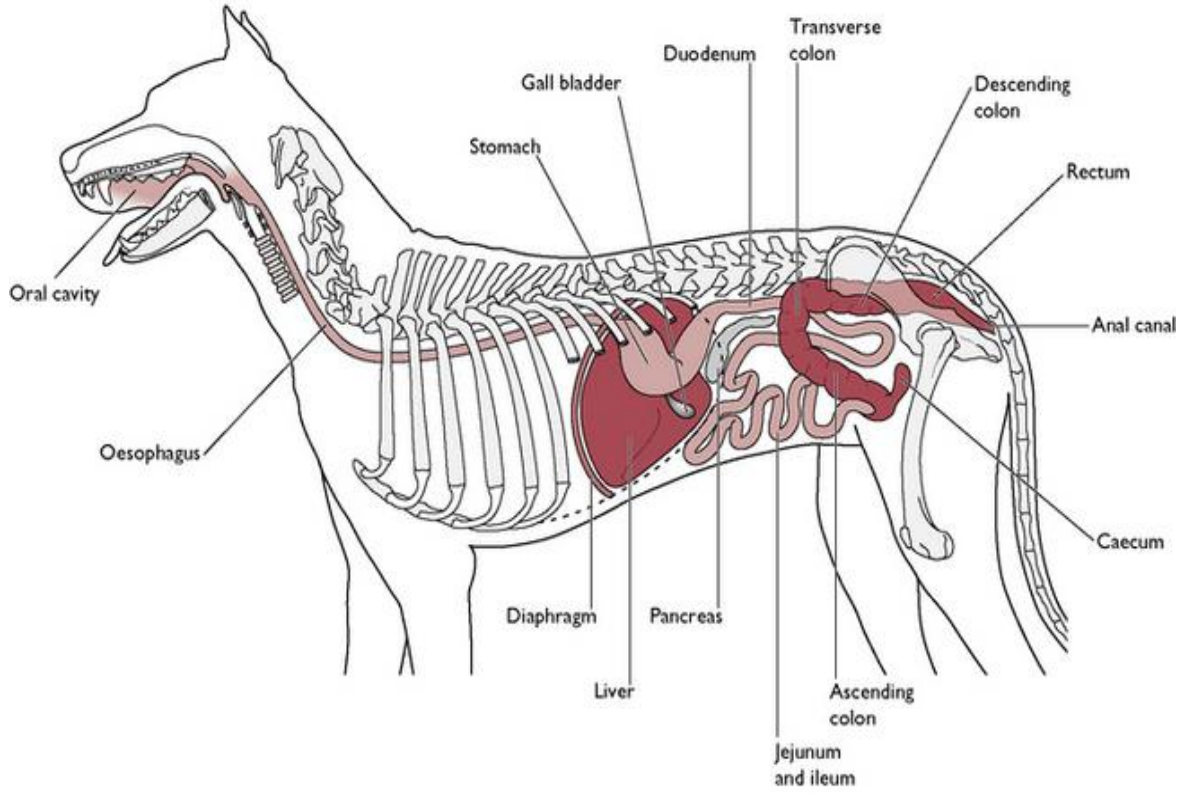
http://bvetmed1.blogspot.com/2013/02/oral-cavity-lecture-131.html



https://hu.pinterest.com/pin/294704369347319951/

CONSECUTIVE SEGMENTS OF THE DIGESTIVE SYSTEM

1. **MOUTH**
2. **PHARYNX**
3. **ESOPHAGUS**
4. **STOMACH**
5. **SMALL INTESTINE**
6. **LARGE INTESTINE**
7. **ANAL CANAL**



https://veteriankey.com/digestive-system/

ORAL CAVITY

- **extends from the lips to the entrance into the pharynx**

STRUCTURES OF THE ORAL CAVITY:

1. **tongue**
2. **teeth**
3. **salivary glands**

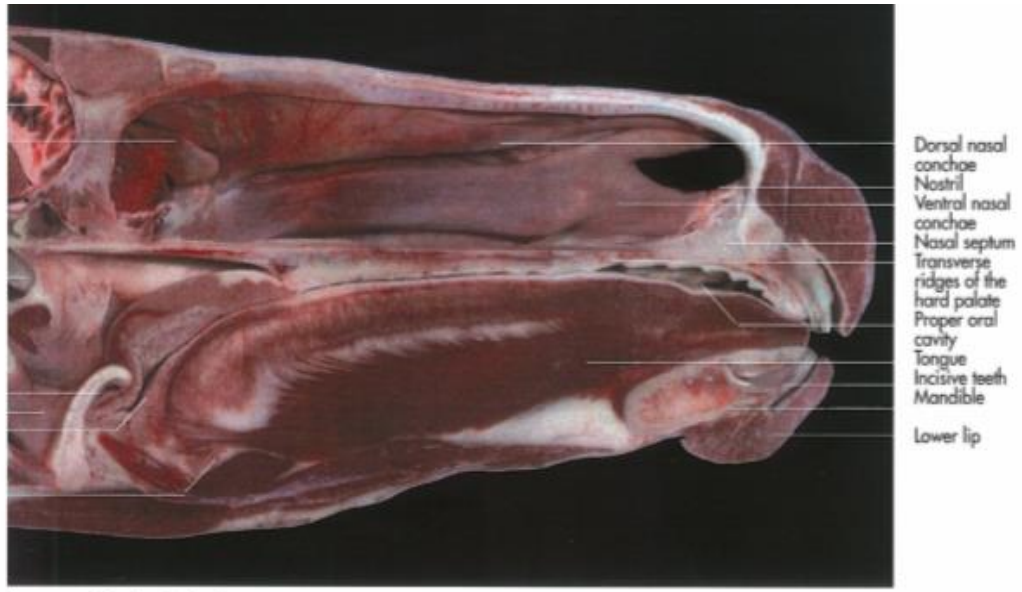
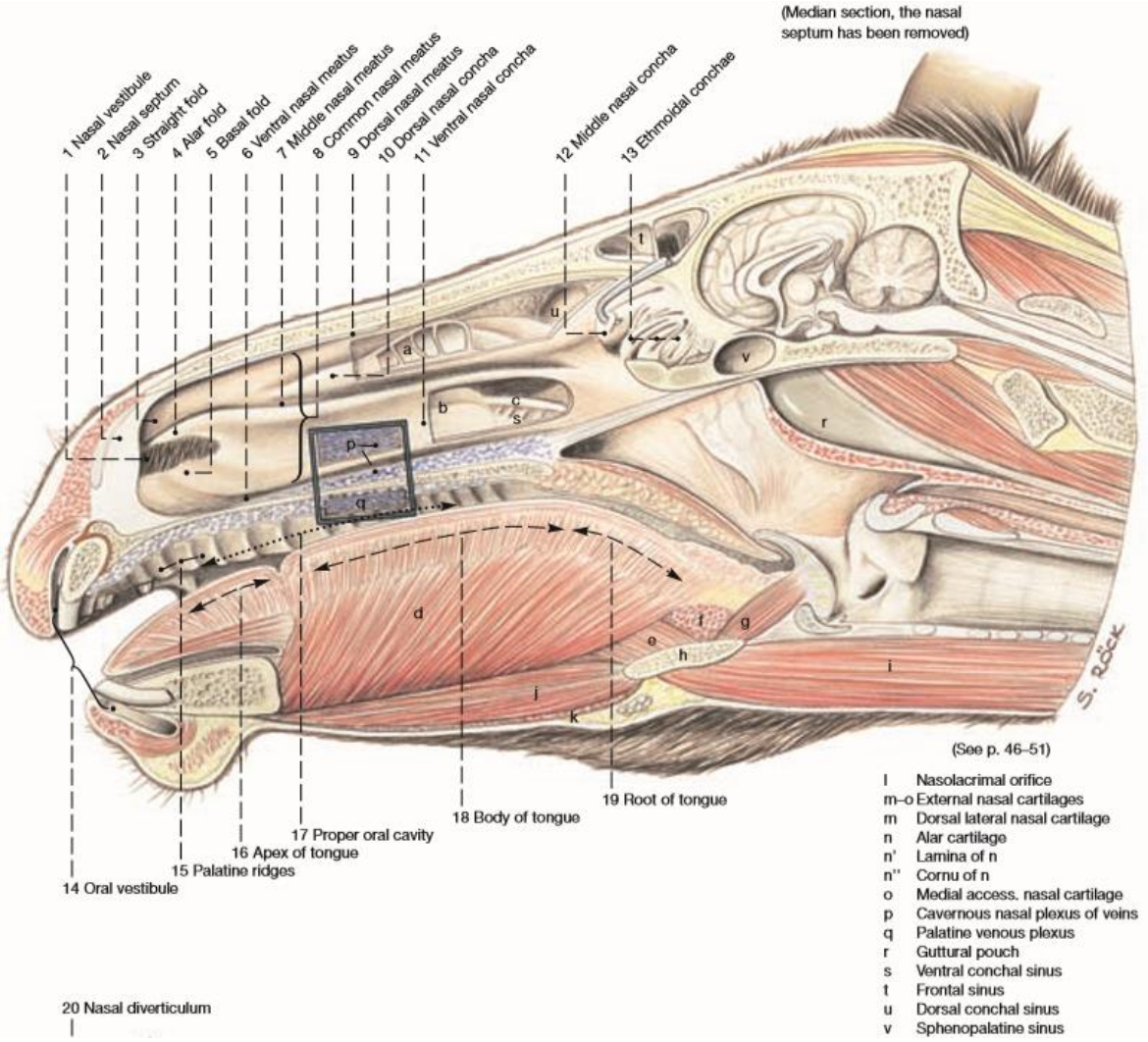


Fig 7-2. Sagittal section of the head of a horse.



ORAL CAVITY

a) rostrally bounded by the lips

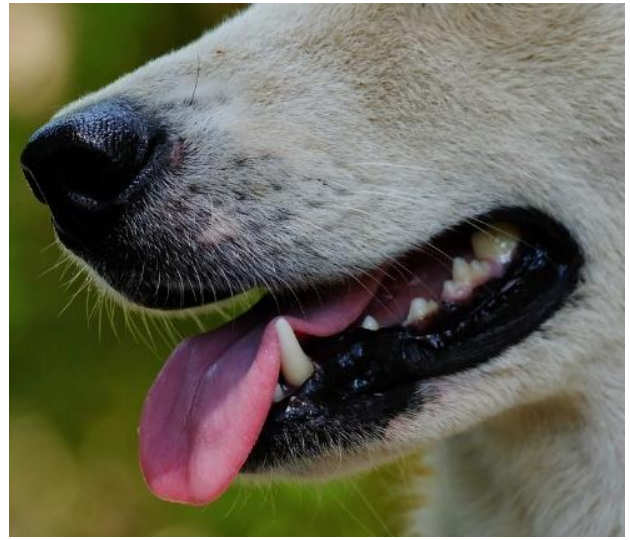
b) laterally bounded by the cheeks

c) its roof – hard palate (palatum durum)

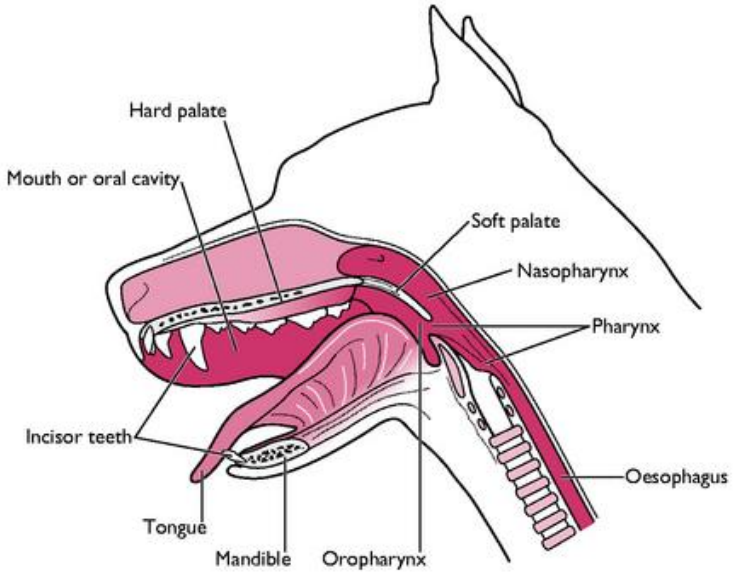
d) ventrally bounded by the the tongue

e) its floor – suprahyal muscles

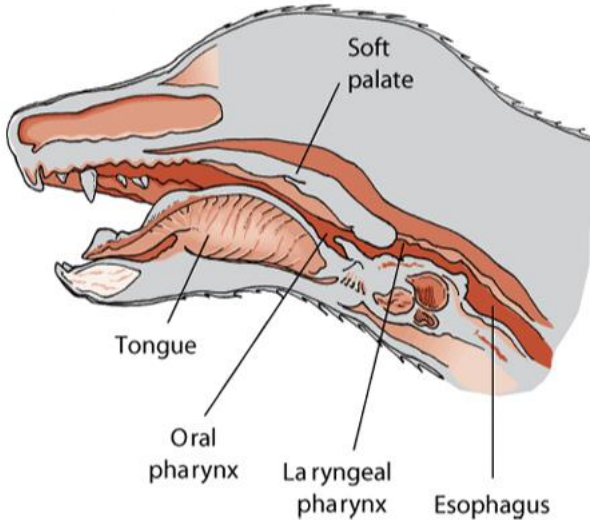
https://pixabay.com/photos/head-anatomy-dog-sagittal-section-114077/



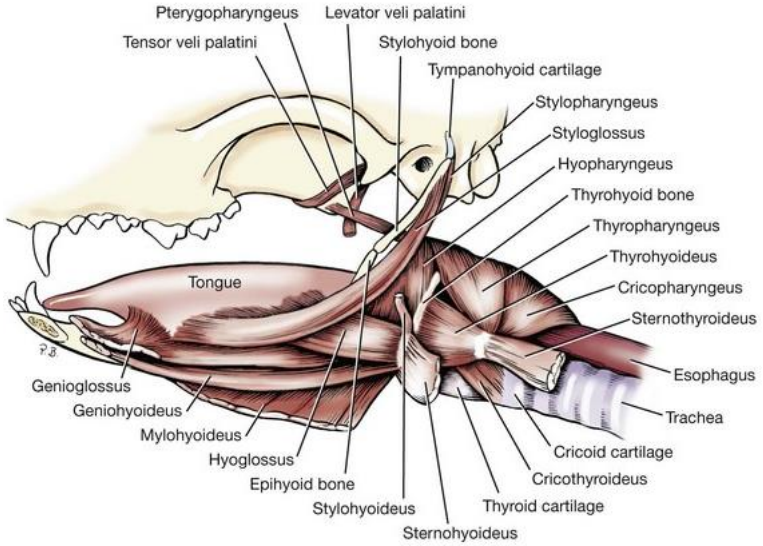
https://www.petmd.com/dog/conditions/mouth/c_multi_salivary_mucocele



https://veteriankey.com/digestive-system/



https://www.merckvetmanual.com/dog-owners/digestive-disorders-of-dogs/disorders-of-the-pharynx-throat-in-dogs



ORAL CAVITY

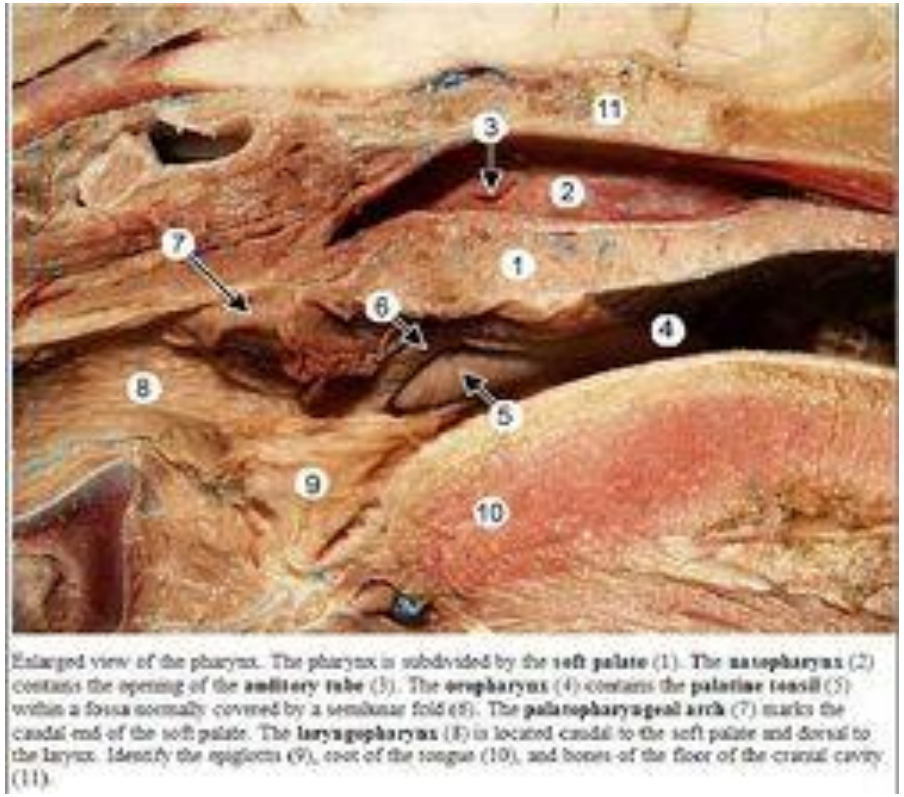
- **caudally communicates with the oropharynx**

OROPHARYNX:

- **is the isthmus faucium (narrow isthmus) formed by the:**

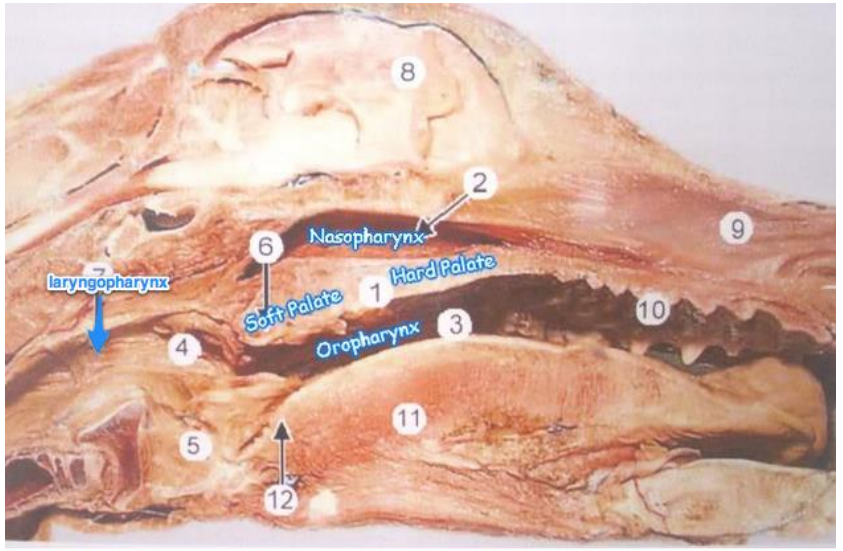
a) root of the tongue

b) soft palate (palatum molle)

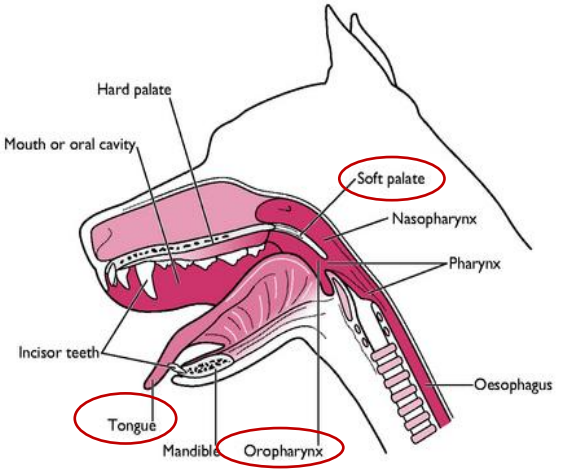


Enlarged view of the pharynx. The pharynx is subdivided by the **soft palate** (1). The **nasopharynx** (2) contains the opening of the **auditory tube** (3). The **oropharynx** (4) contains the **palatine tonsil** (5) within a fossa normally covered by a semilunar fold (6). The **palatopharyngeal arch** (7) marks the caudal end of the soft palate. The **laryngopharynx** (8) is located caudal to the soft palate and dorsal to the larynx. Identify the epiglottis (9), root of the tongue (10), and bones of the floor of the cranial cavity (11).

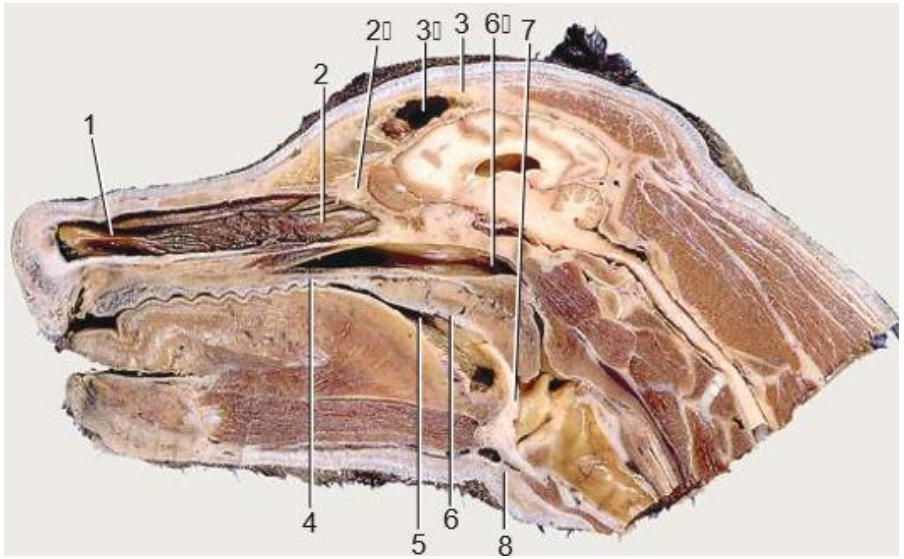
https://en.wikivet.net/Pharynx_-_Anatomy_%26_Physiology



http://bvetmed1.blogspot.com/2013/02/tongue-hyoid-pharynx-deglutition_22.html



https://veteriankey.com/digestive-system/



1. Ventral nasal concha
2. Ethmoid turbinates
2′. Cribriform plate
3. Frontal bone
3′. Frontal sinus
4. Hard palate
5. Oropharynx
6. Soft palate
6′. Nasopharynx
7. Epiglottis
8. Basihyoid

ORAL CAVITY

- **divided by the teeth and the alveolar processes into the:**

A. VESTIBULE

B. ORAL CAVITY PROPER

- **vestibule and oral cavity proper communicate via:**

- **the interdental spaces (diastema)**

- **and the space behind the last molars**

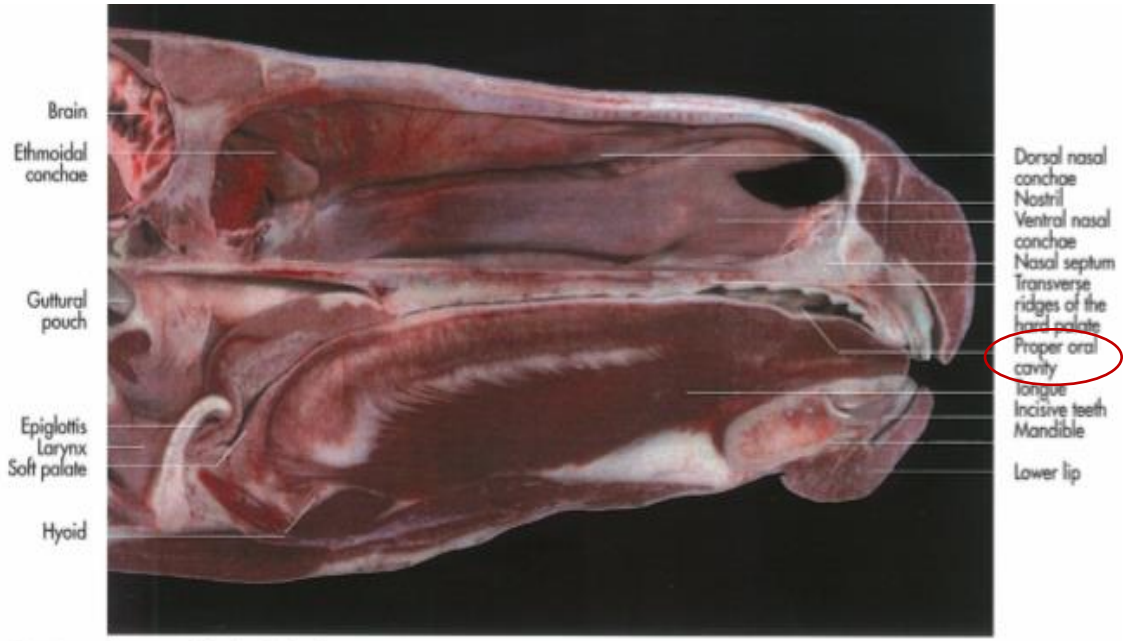
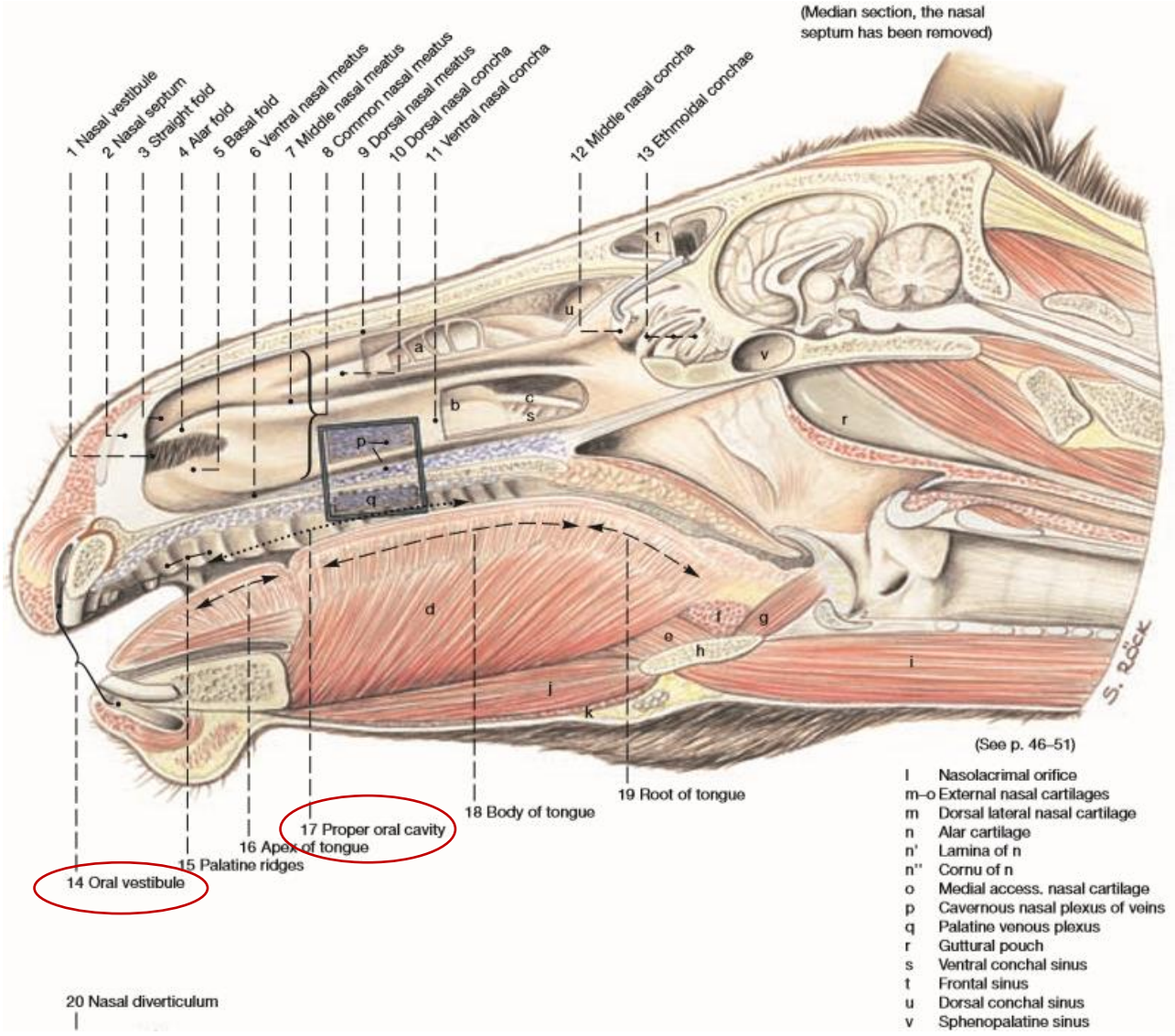


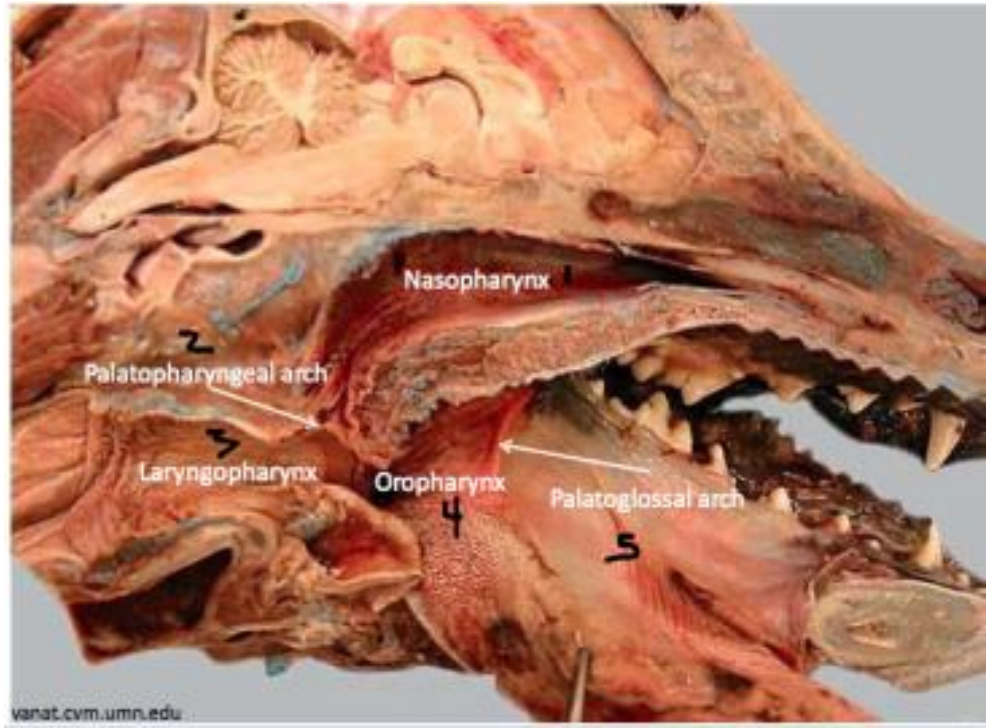
Fig 7-2. Sagittal section of the head of a horse.



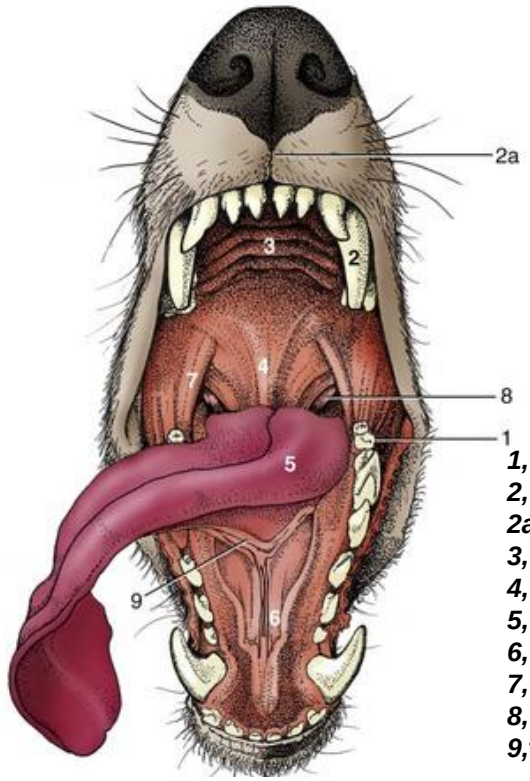
ORAL CAVITY

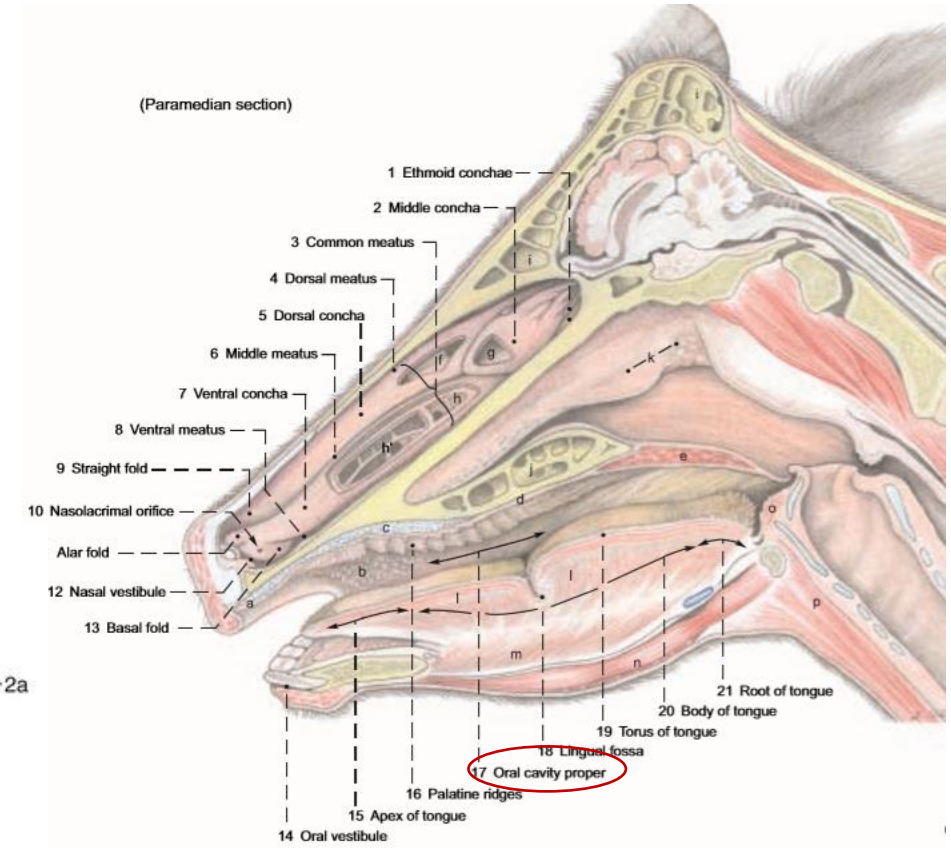
ORAL CAVITY PROPER (CAVUM ORIS PROPRIUM):

- **enclosed by the teeth**
- **limited caudally by the arcus palatoglossus**



https://www.studyblue.com/notes/note/n/anatomy-ii-exam-2/deck/17495593





***1,* vestibule**
***2,* canine tooth**
***2a,* philtrum**
***3,* hard palate**
***4,* soft palate**
***5,* tongue**
***6,* sublingual caruncle**
***7,* palatoglossal arch**
***8,* palatine tonsil**
***9,*frenulum**

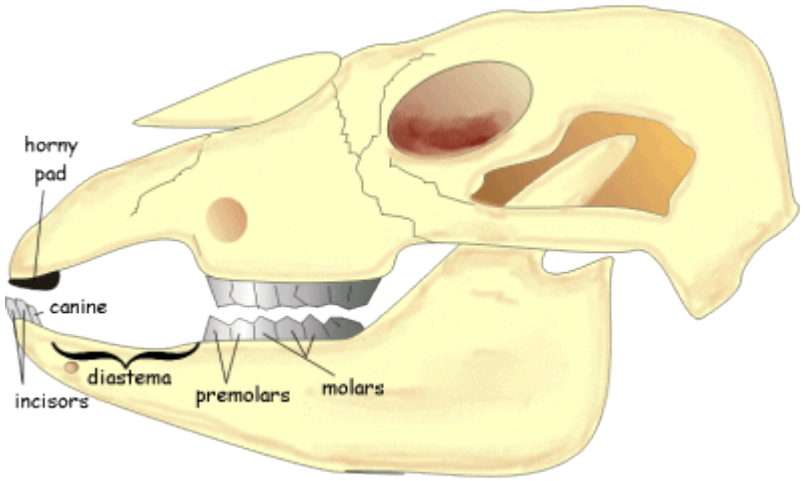
https://veteriankey.com/soft-tissues-of-the-oral-cavity/

ORAL CAVITY

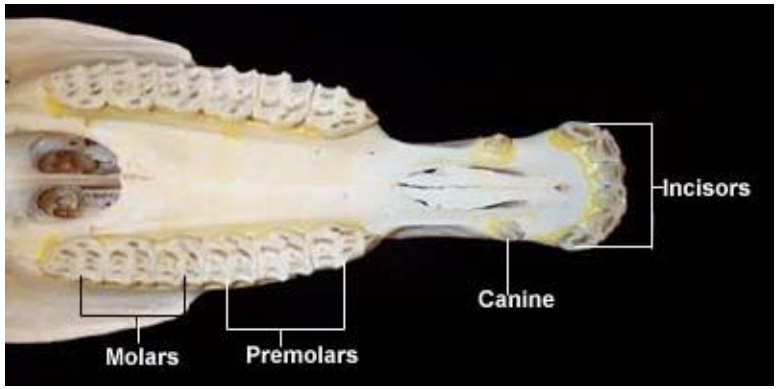
DIASTEMA:

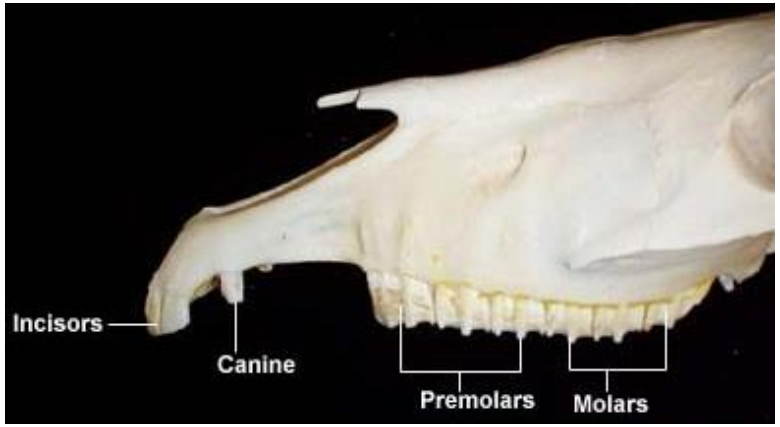
space between the:

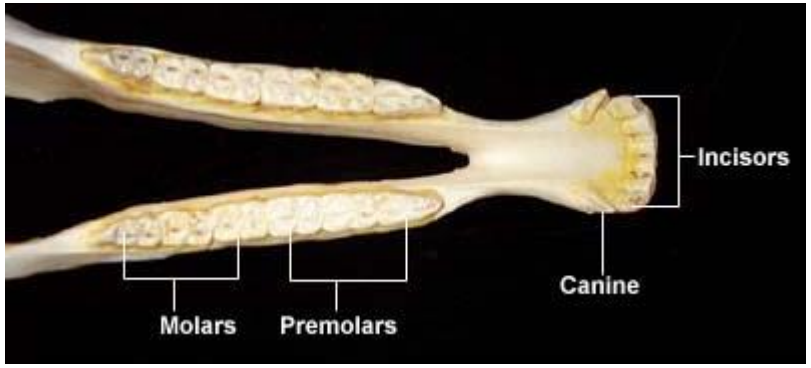
- **incisors**
- **cheek teeth**

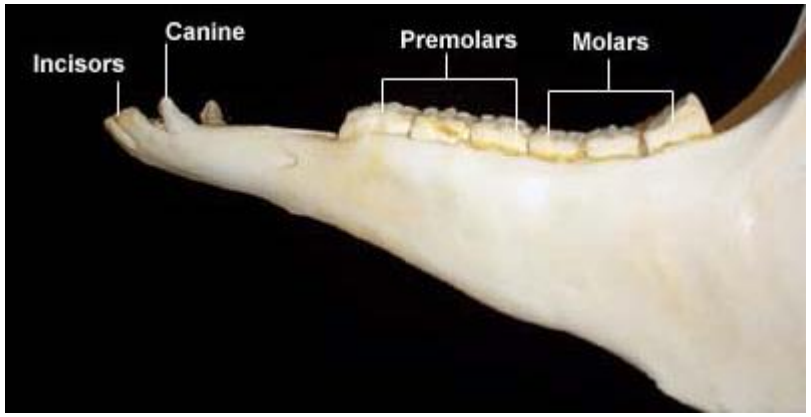


https://moodle.beverleyhigh.net/mod/resource/view.php?id=6107









http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/horsepage.html

ORAL CAVITY

https://www.flickr.com/photos/anythreewords/10541387004

LIPS (LABIA ORIS):

1. **UPPER LIP (LABIUM SUPERIUS)**
2. **LOWER LIP (LABIUM INFERIUS)**
3. **Labial glands:**

- **in submucosa**
- **well developed near the angle of the mouth**

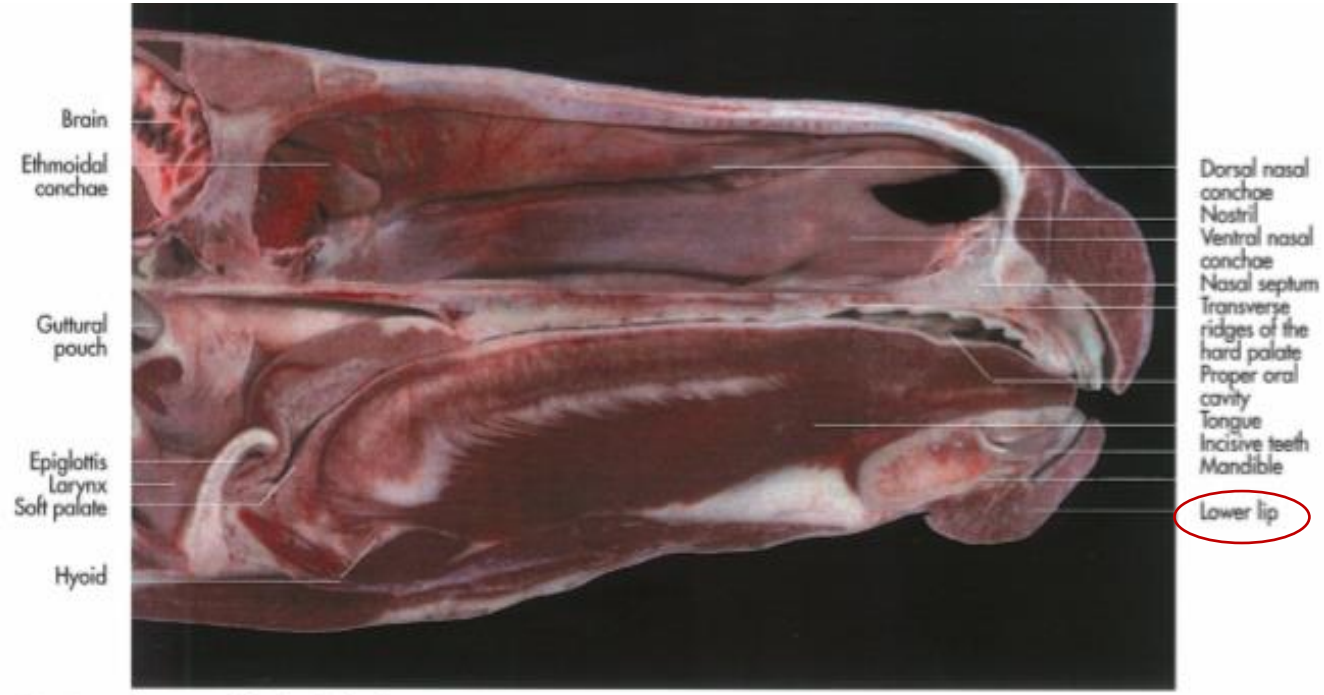
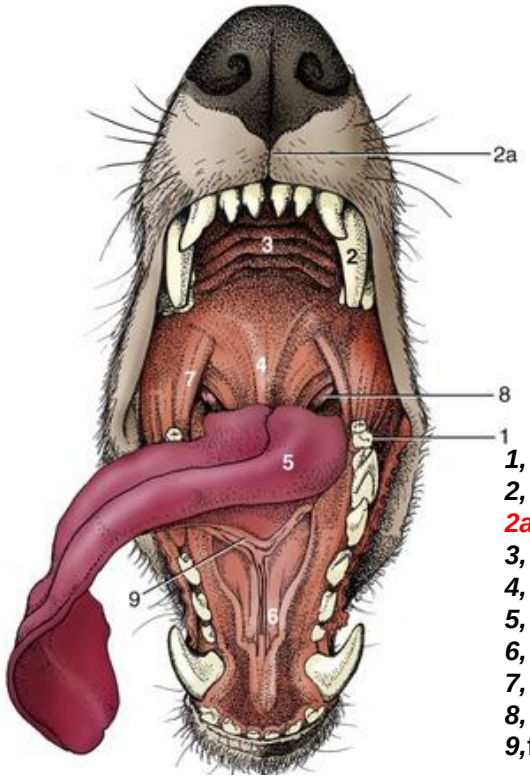


Fig 7-2. Sagittal section of the head of a horse.

ORAL CAVITY

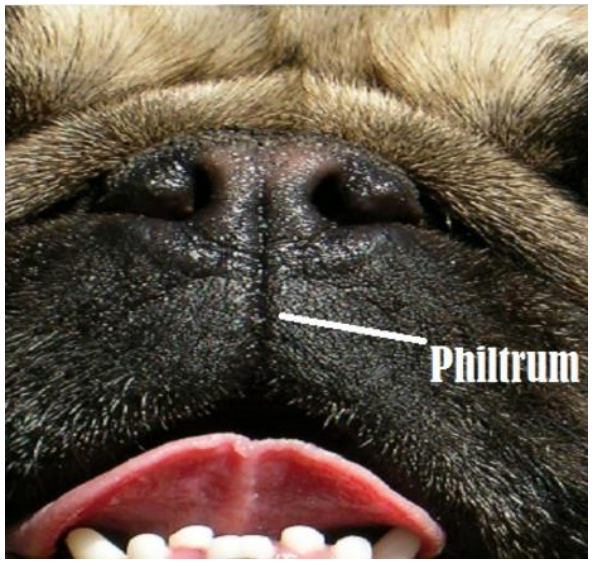
PHILTRUM:

- **distinct median cleft from the nasal septum to the upper lip**
- **divides the upper lip of carnivores and small ruminants**

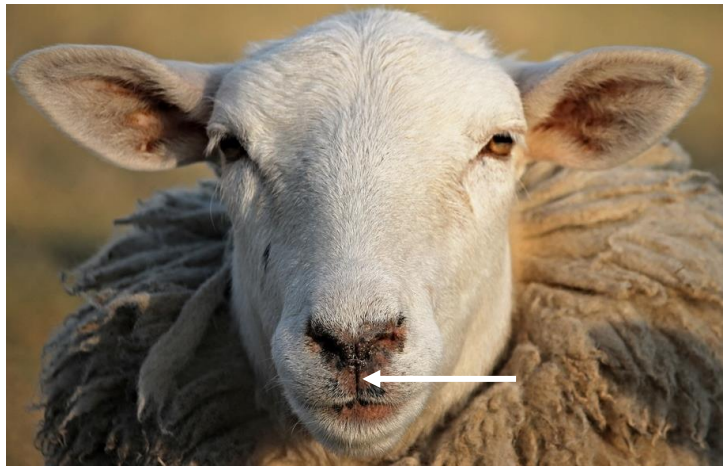


1, **vestibule**
2, **canine tooth**
2a, **philtrum**
3, **hard palate**
4, **soft palate**
5, **tongue**
6, **sublingual caruncle**
7, **palatoglossal arch**
8, **palatine tonsil**
9, **frenulum**

https://veteriankey.com/soft-tissues-of-the-oral-cavity/



https://dogdiscoveries.com/dogs-philtrum/



http://quesodeoveja.org/como-son-realmente-las-ovejas/como-son-realmente-las-ovejas-2/

ORAL CAVITY

LOWER LIP:

- **in carnivores and pigs smaller**
- **in horse and ox it presents the CHIN (MENTUM)**

https://www.flickr.com/photos/anythreewords/10541387004

https://www.petmd.com/dog/conditions/mouth/c_multi_salivary_mucocele

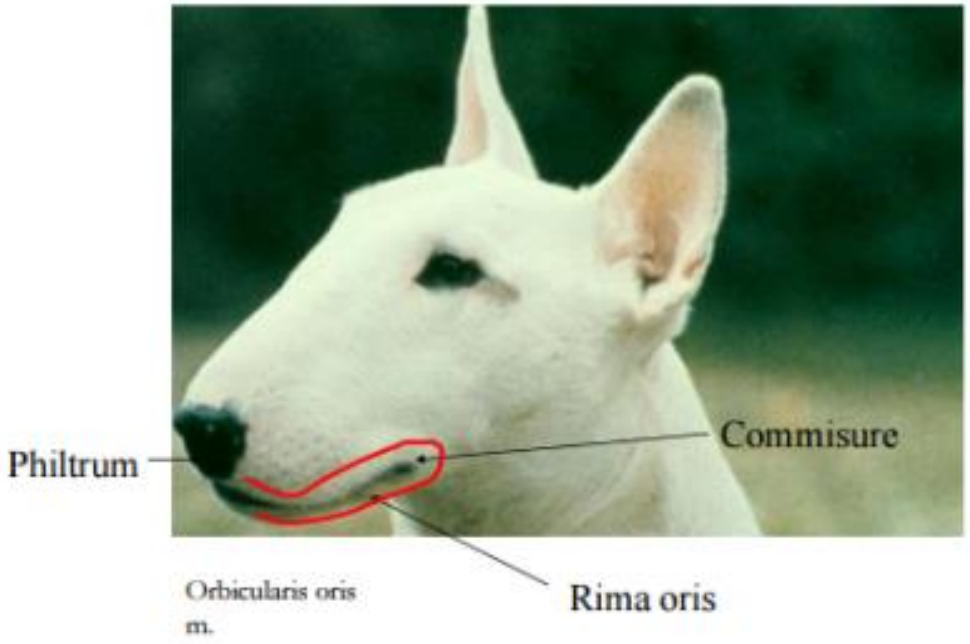
https://casanctuary.org/august-is-sponsor-a-pig-month/

http://www.vetstreet.com/our-pet-experts/10-things-you-didnt-know-about-cows

ORAL CAVITY

ORAL CLEFT (RIMA ORIS):

- **entrance to the oral cavity**
- **bounded by the edges of the upper and lower lips**
- **unite on each side at the ANGLE OF THE MOUNTH (ANGULUS ORIS)**



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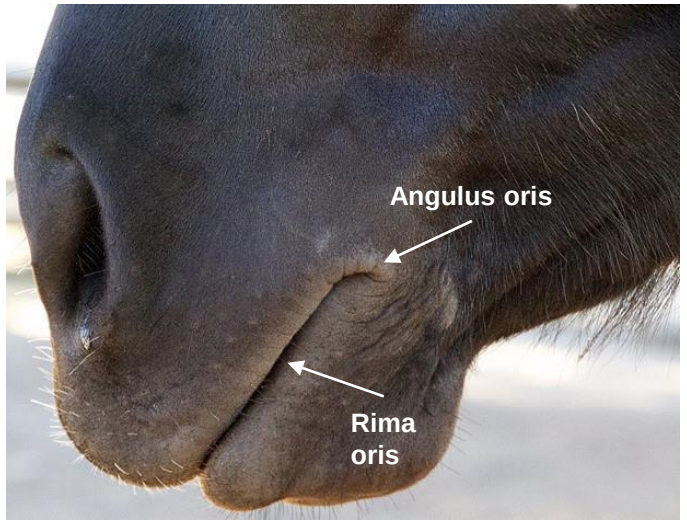

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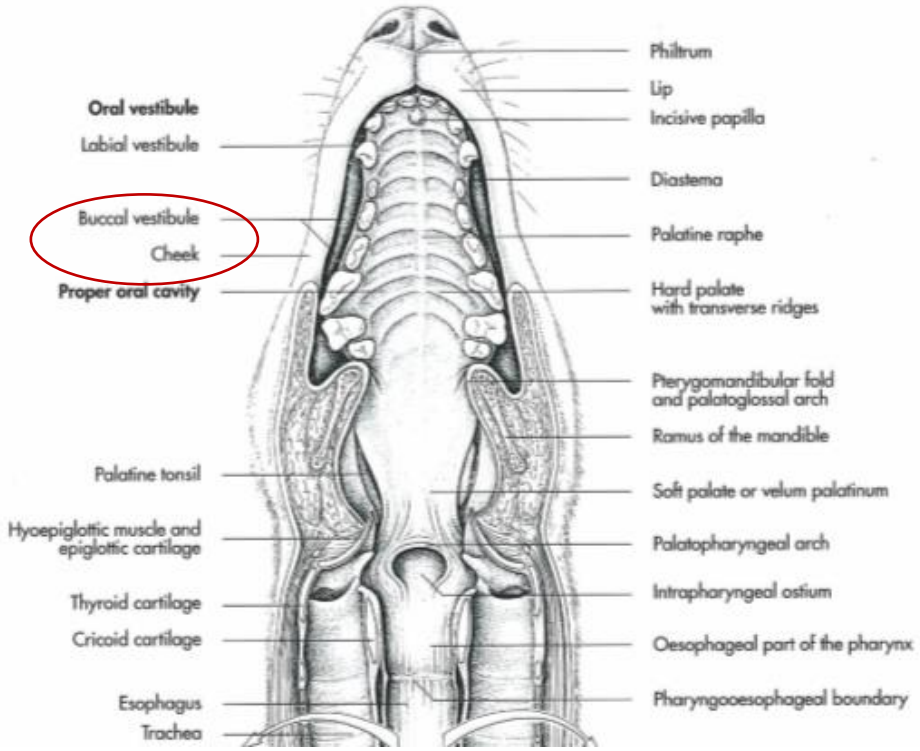
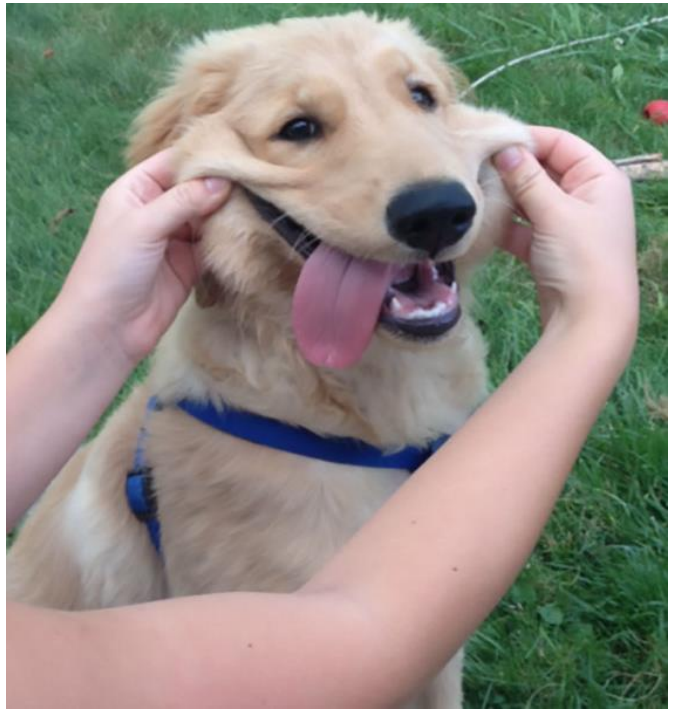
ORAL CAVITY

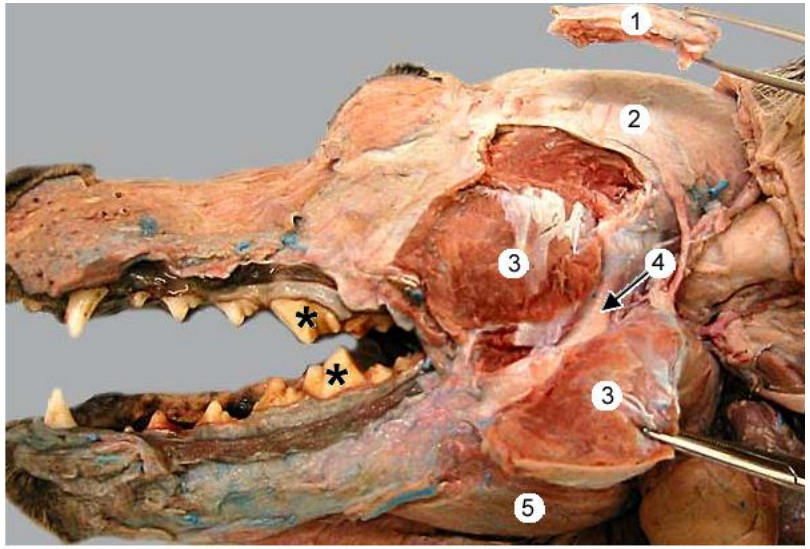
CHEEKS (BUCCAE):

- **forms the lateral wall of the vestibule**
- **atteched to the alveolar margine of the mandible and maxilla in the region of the cheek teeth**
- **its caudal portion contains the masseter muscle**





https://www.boredpanda.com/squishy-dog-cheeks/?utm_source=google&utm_medium=organic&utm_campaign=organic



Cut bone rostrally and caudally to remove the **zygomatic arch** (1). Identify the **temporal m.** (2), the partially reflected **masseter m.** (3), the mandible (4), and the **digastricus m.** (5). Notice the fourth upper premolar and first lower molar teeth (asterisks).

http://vanat.cvm.umn.edu/carnLabs/Lab23/Img23-5.html

ORAL CAVITY

CHEEKS (BUCCAE):

BUCCAL GLANDS:

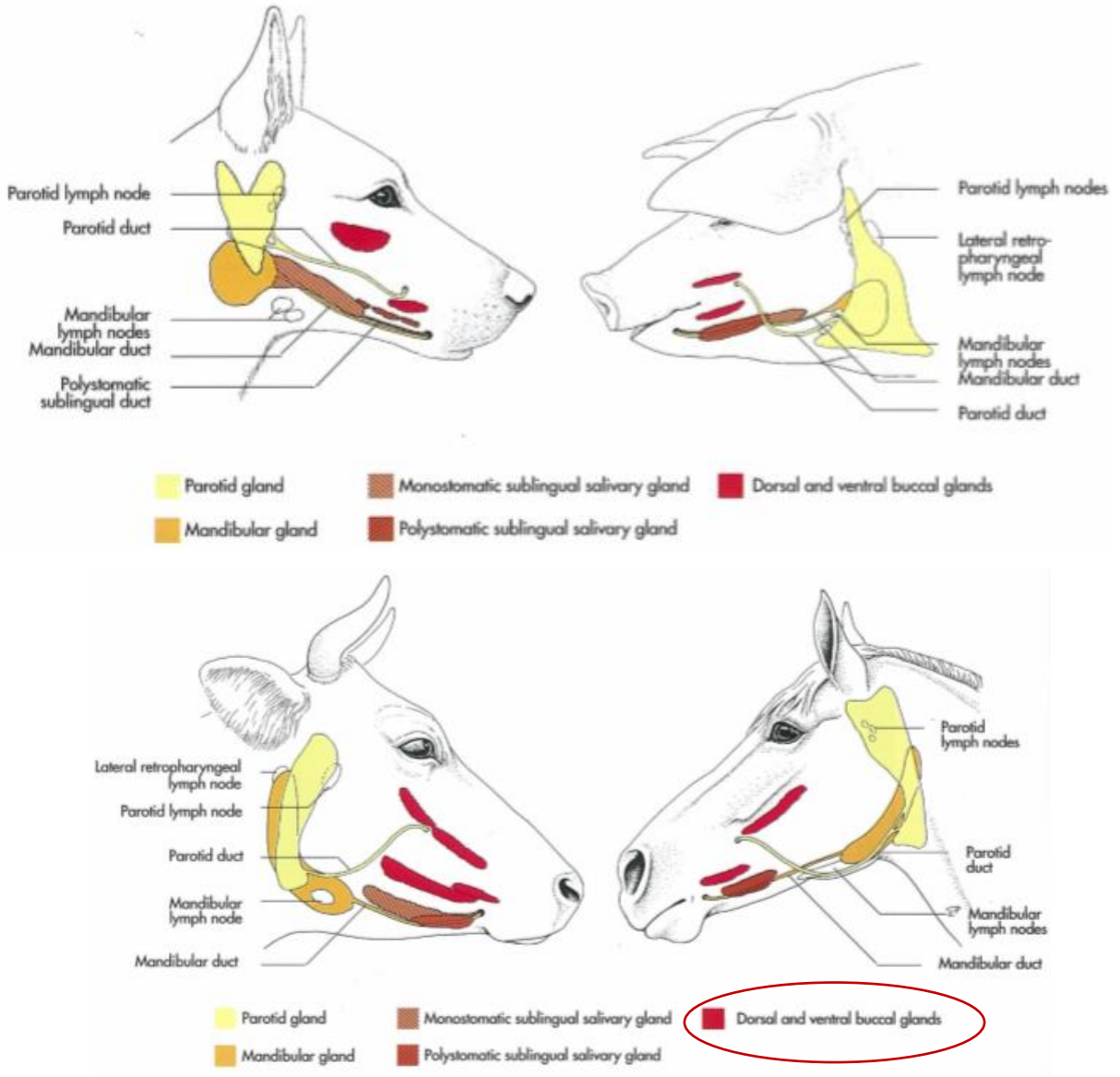
- **between mucosa and buccal muscles**

a) dorsal buccal glands

b) ventral buccal glands

c) middle buccal glands – in the ox

- their ducts open into the vestibule

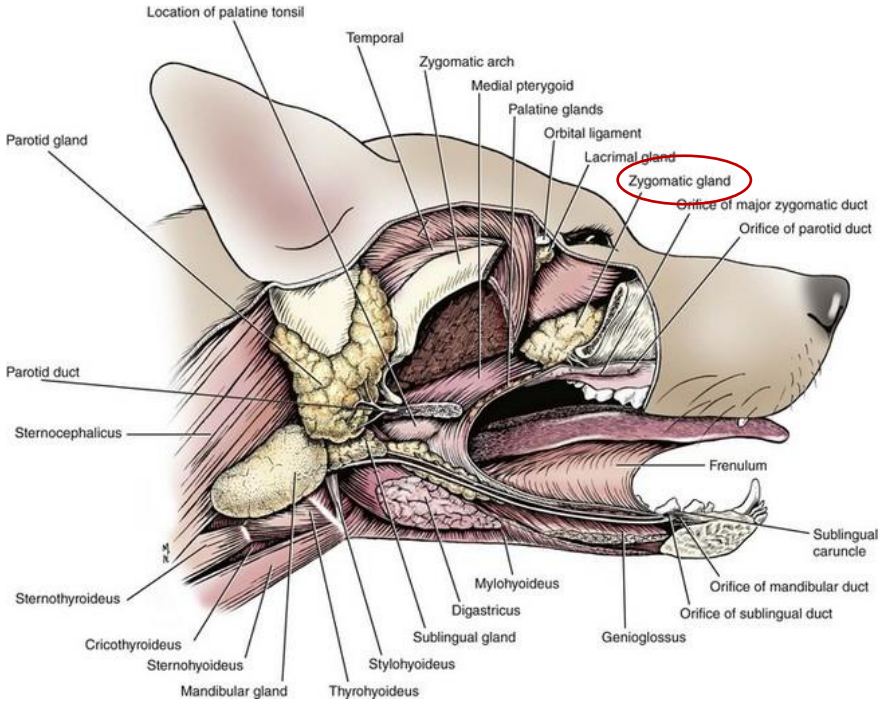


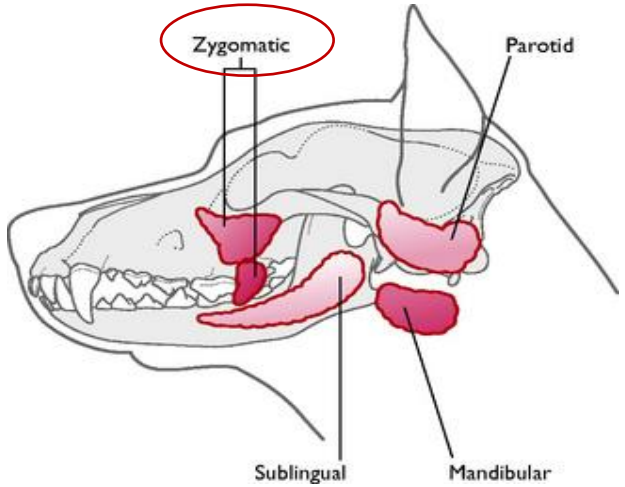
ORAL CAVITY

CHEEKS (BUCCAE):

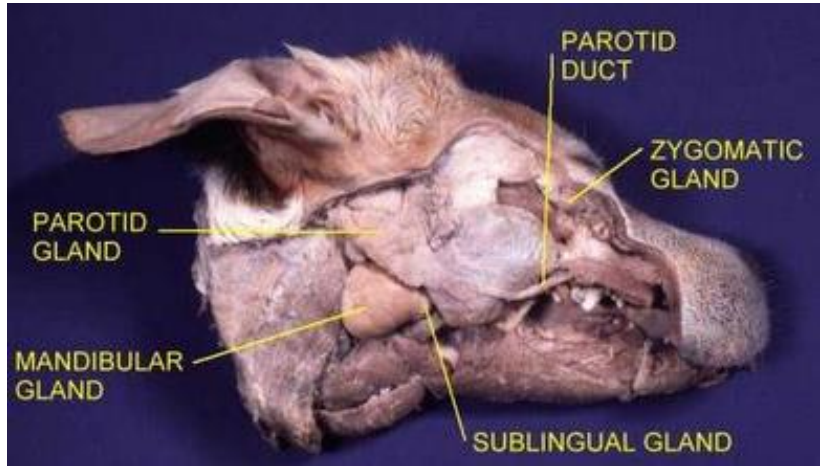
DORSAL BUCCAL GLANDS in CARNIVORES:

- **located medial of the zygomatic arch**
- **called as the ZYGOMATIC GLAND**





https://veteriankey.com/digestive-system/



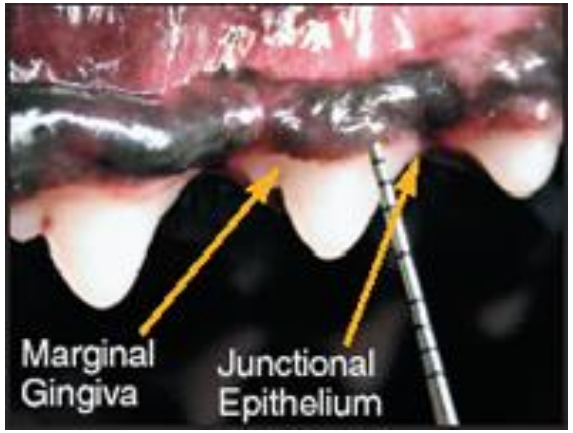
http://bvetmed1.blogspot.com/2013/02/oral-cavity-lecture-131.html

ORAL CAVITY

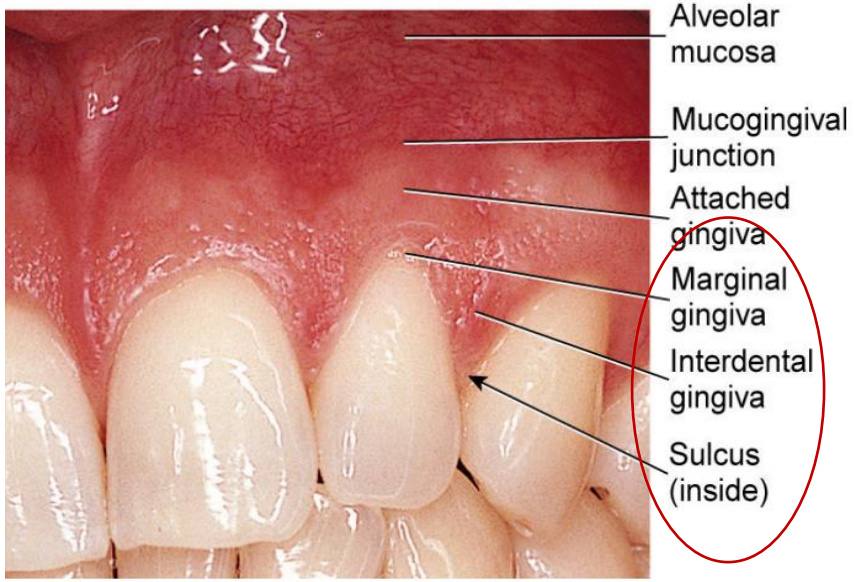
GUMS (GINGIVAE):

- **parts of the oral mucosa**
- **united to the periosteum of the alveolar processes of the jaws**
- **encircle the necks of the teeth – <u>margo gingivalis</u>**
- **<u>papilla gingivalis</u> (interdentalis) – mucosal elevation between the teeth**
- **<u>sulcus gingivalis</u> – groove between gingiva and tooth**

http://www.vohc.org/perio.htm



https://veterinarydentistry.net/navigating-clinical-oral-anatomy-imperative-successful-oral-care/



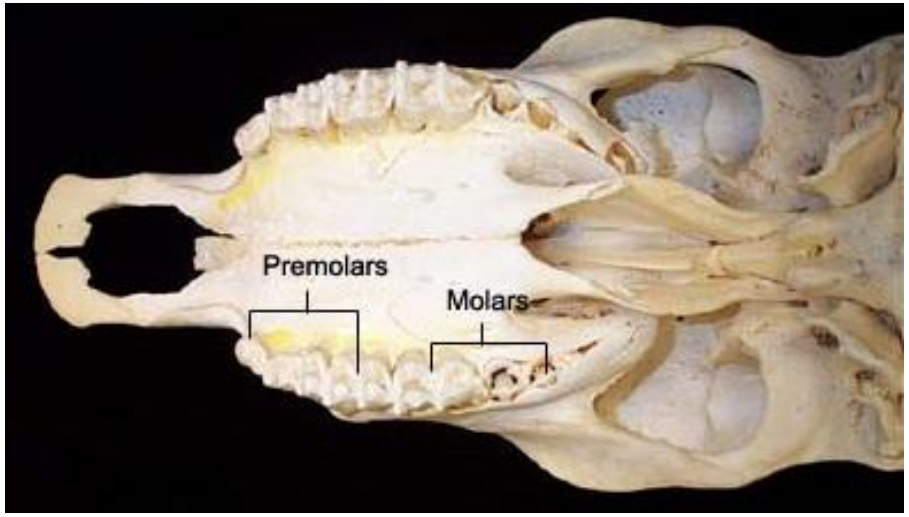
http://www.fscjdental.com/StudentPortal/home/term-1/ewExternalFiles/Lecture%201%20Oral%20%26%20Dental%20Anatomy.pdf

ORAL CAVITY

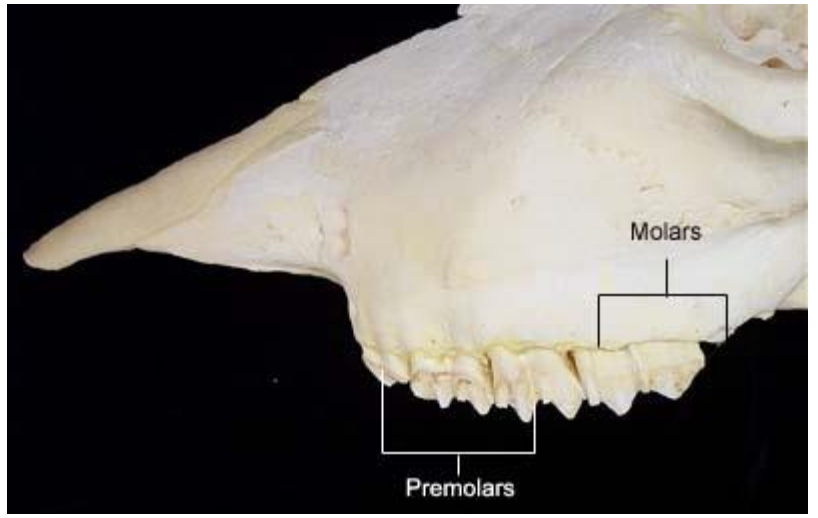
http://woolshed1.blogspot.com/2014/07/problems-with-cows-teeth.html

GUMS (GINGIVAE) IN THE RUMINANTS:

- the gums are modified
- form DENTAL PAD (PULVINUS DENTALIS)
- dental pad takes the place of the upper incisors
- *in ruminant takes the place of the missing incisors*



http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/cowpage.html

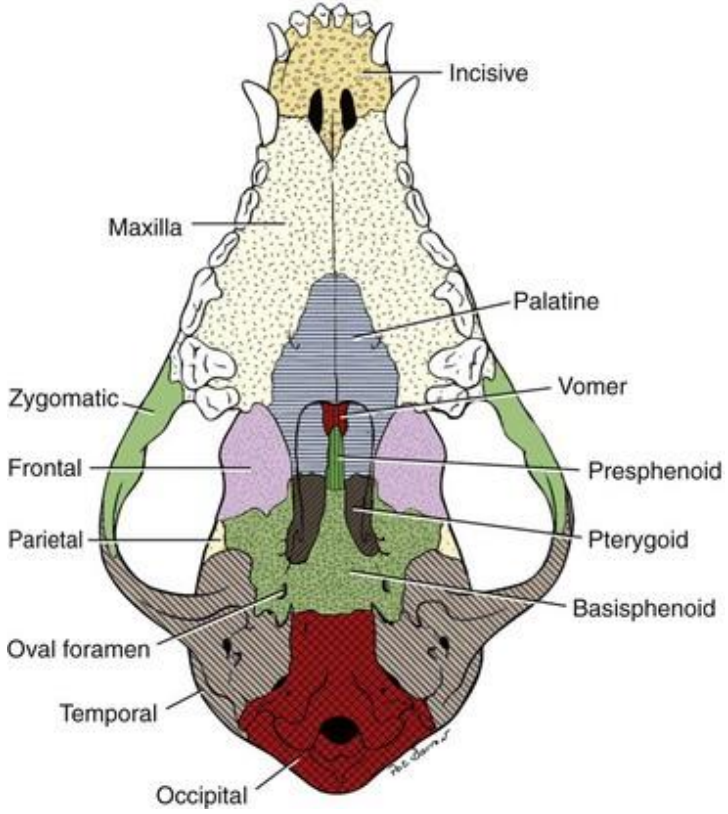


ORAL CAVITY

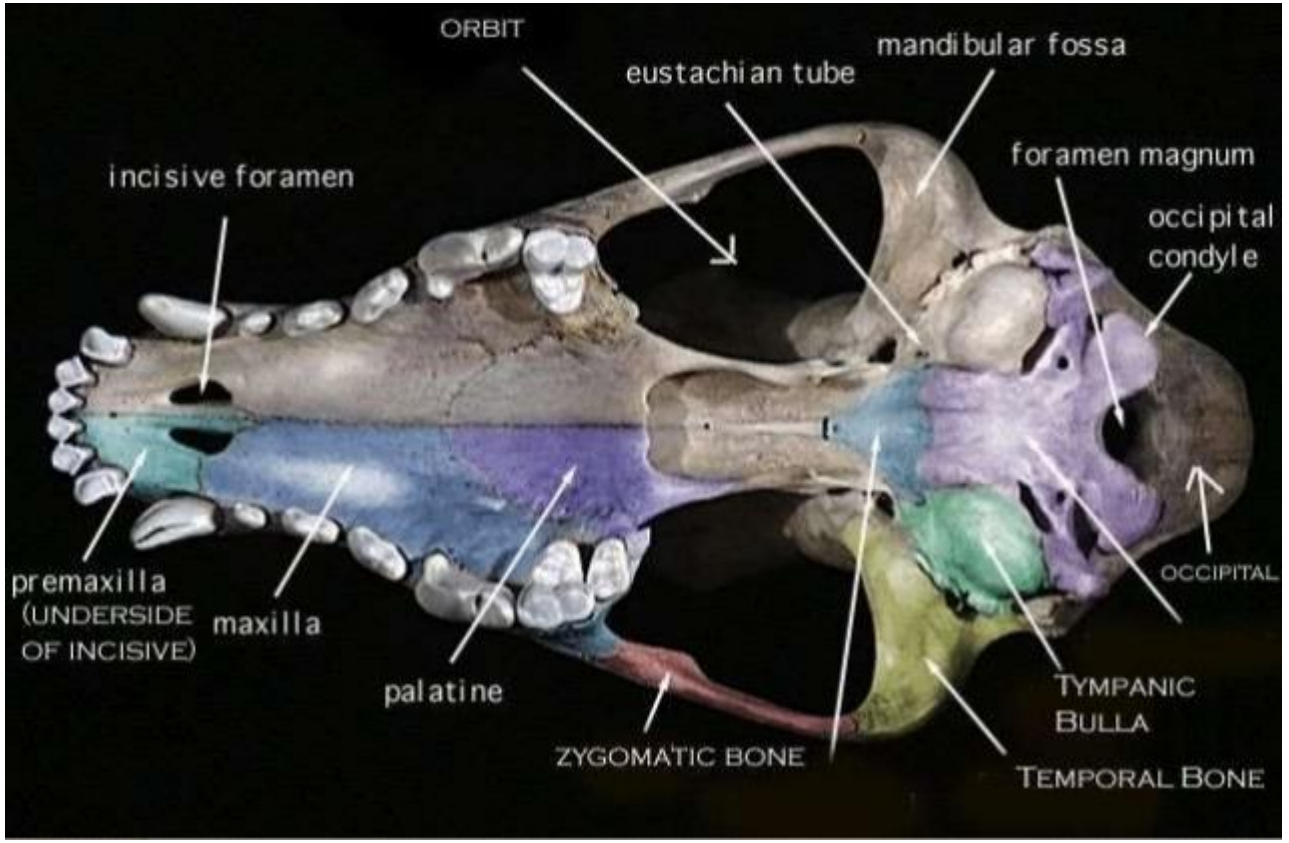
HARD PALATE (PALATUM DURUM):

- roof of the oral cavity proper

- bounded laterally and rostrally by the upper dental arch



https://veteriankey.com/palate/

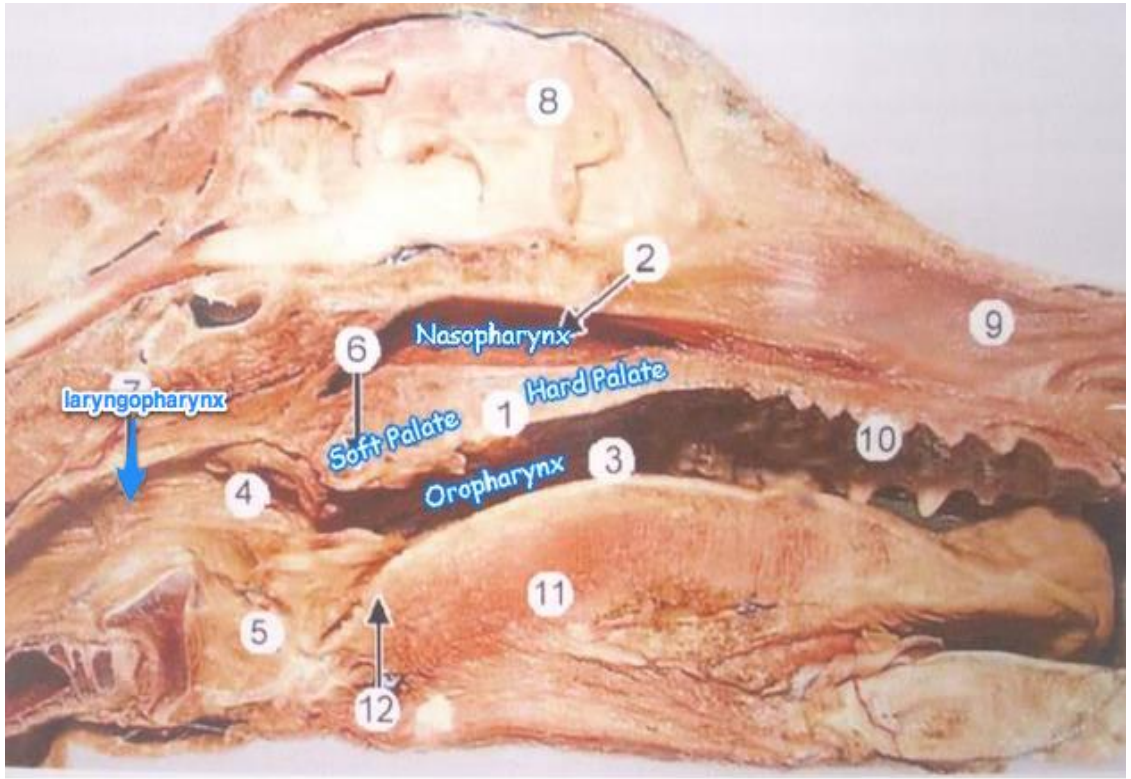


https://www.slideshare.net/VetAbdulrhmanSubhi/short-notes-in-dog-skeleton

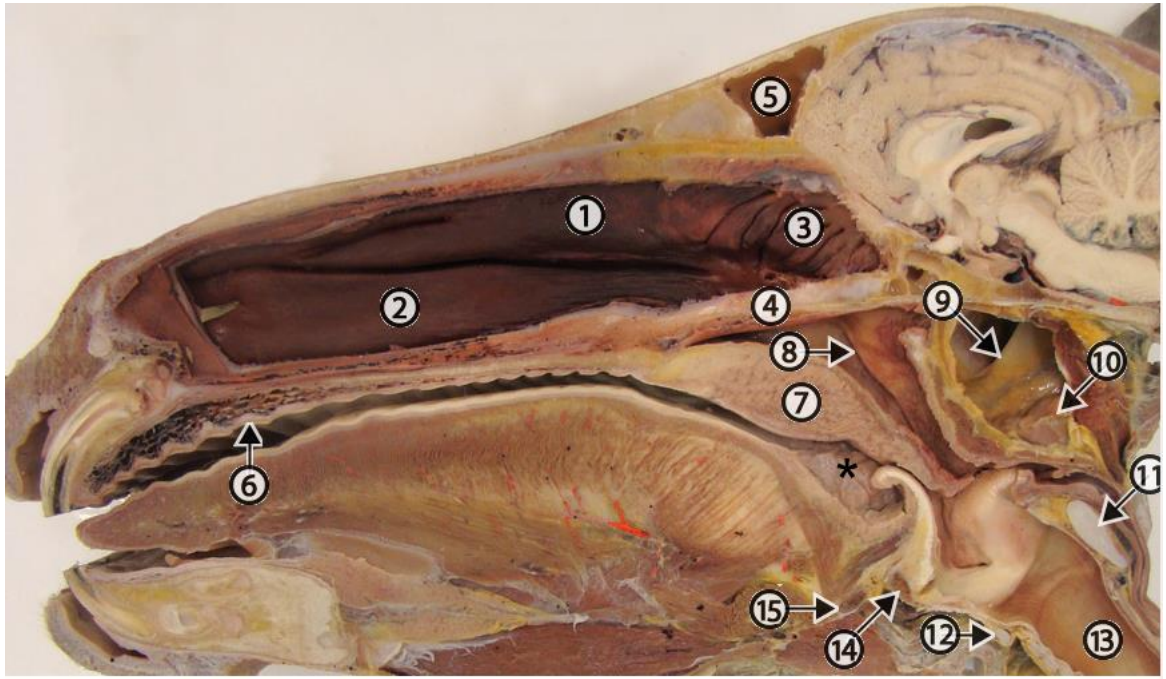
ORAL CAVITY

HARD PALATE (PALATUM DURUM):

- in horse its mucosa contains VENOUS PLEXUSES



http://bvetmed1.blogspot.com/2013/02/tongue-hyoid-pharynx-deglutition_22.html



Equine split head after removal of the nasal septum to expose the nasal cavity. 1, dorsal concha; 2, ventral concha; 3 ethmoidal conchas; 4, vomer (bone); 5, frontal sinus; 6, hard palate; 7, soft palate; 8, orifice of the auditory tube on the lateral wall of the nasopharynx. At this place, an endoscope can be passed into the guttural pouch. 9, stylohyoid bone; 10, medial retropharyngeal lymph nodes adjacent to the ventral wall of the guttural pouch; 11, cricoid cartilage; 12, cricoid cartilage (ventral), 13, trachea; 14, ossified rostral edge of the thyroid cartilage; 15, basihyoid bone; asterisk, palatine tonsil.

http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-2.html

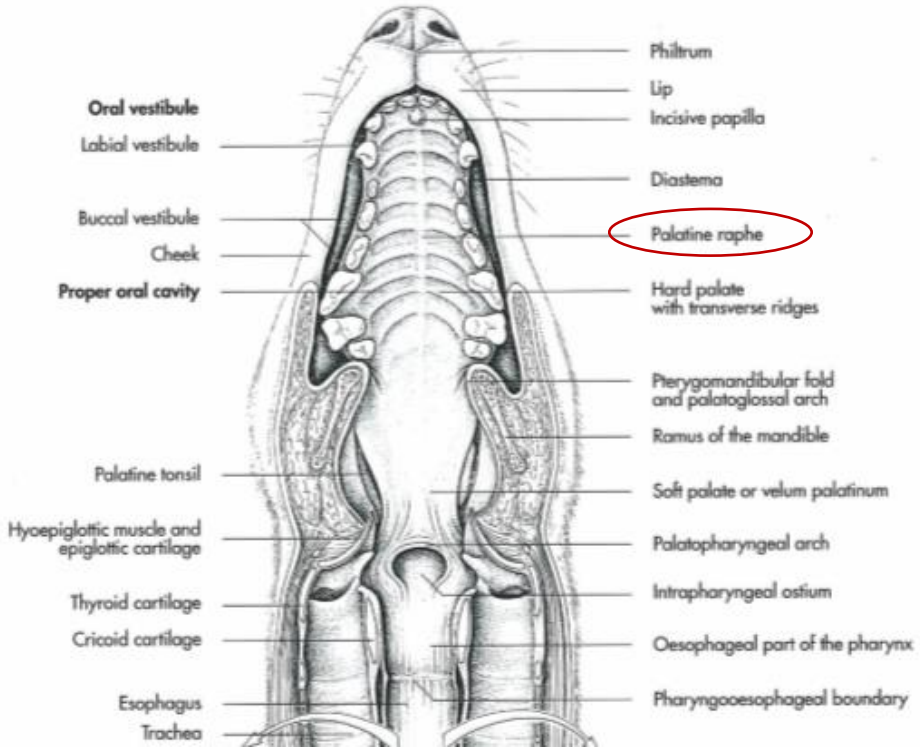
ORAL CAVITY

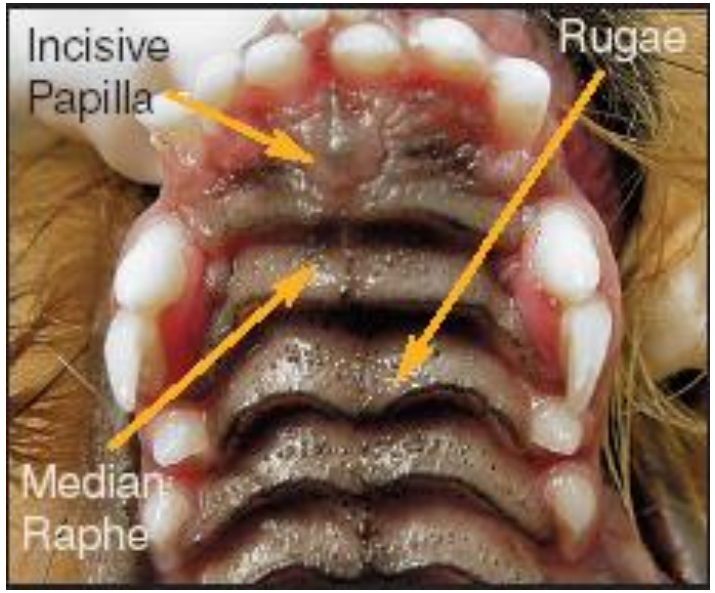
HARD PALATE (PALATUM DURUM):

I. PALATINE RAPHE (RAPHE PALATI):

- median line

- **divides the hard palate into two symmetrical halves**





https://veterinarydentistry.net/navigating-clinical-oral-anatomy-imperative-successful-oral-care/

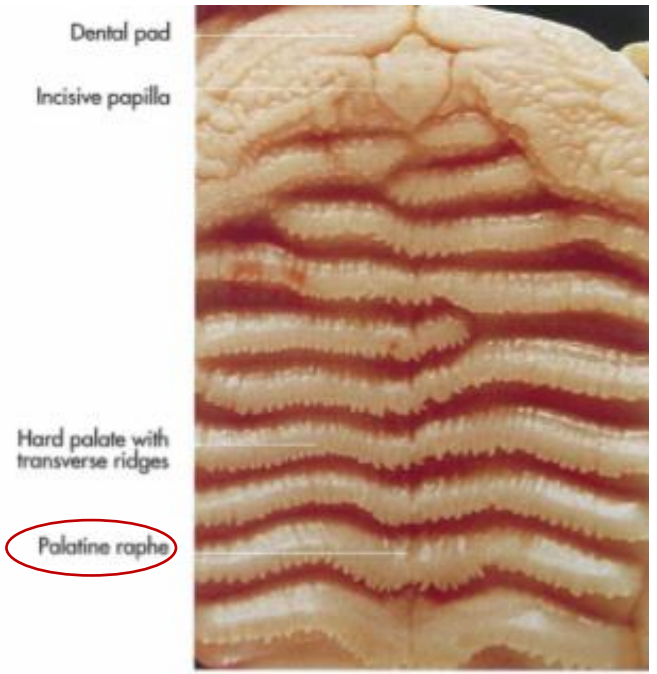


Fig 7-6. Roof of the oral cavity of an ox.

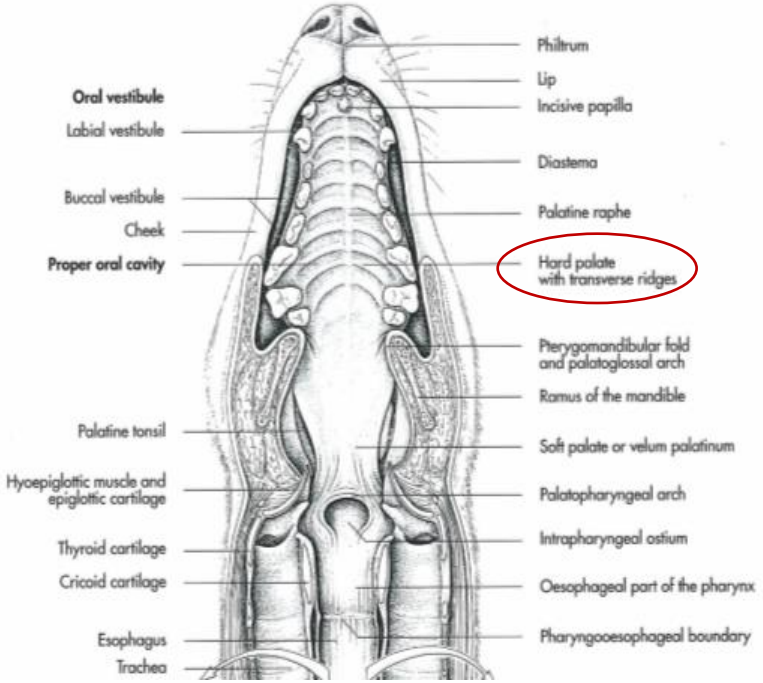
ORAL CAVITY

HARD PALATE (PALATUM DURUM):

II. PALATINE RIDGES (rugae palatinae):

- **on either side of the palatine raphe**
- **cornified**
- **in the ox – the crests of the ridges are studded by cornified papillae**

http://pedigreedogsexposed.blogspot.com/2015/11/brachy-week-frite-bite.html



https://veteriankey.com/dental-and-oral-diseases/

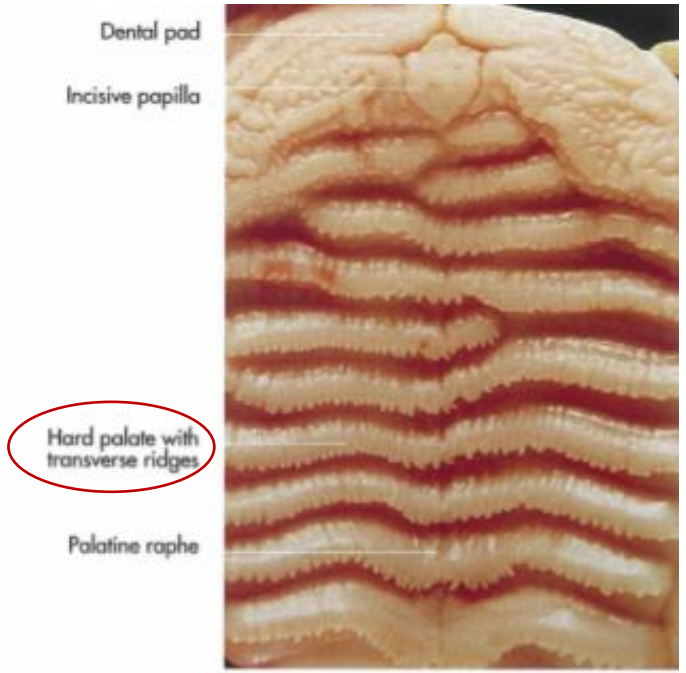


Fig 7-6. Roof of the oral cavity of an ox.

ORAL CAVITY

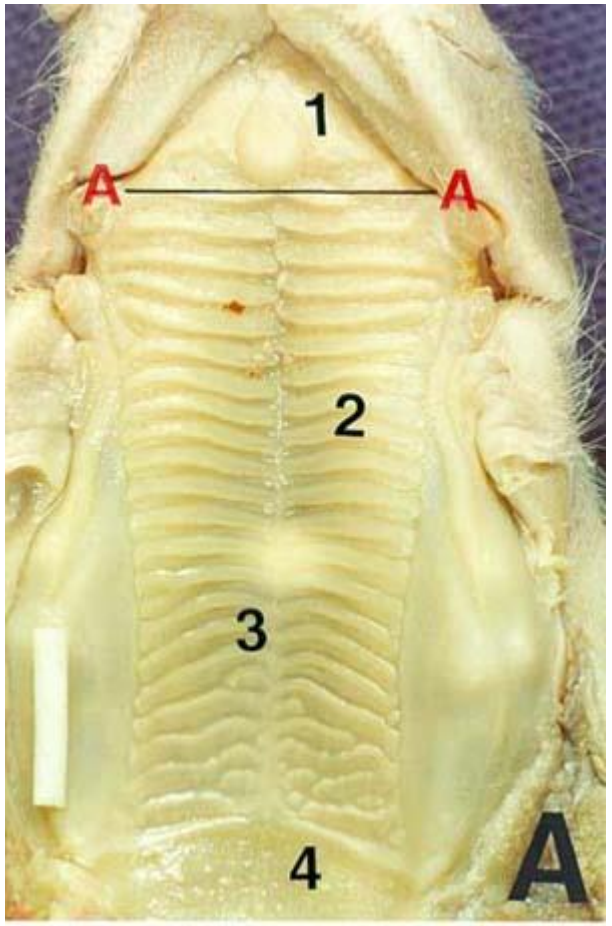
THE NUMBER OF THE PALATINE RIDGES differs with the species:

A. **DOG: 6 – 10 pairs**

B. **PIG: 20 - 23**

C. **OX: 15 - 20**

D. **HORSE: 16 - 18**



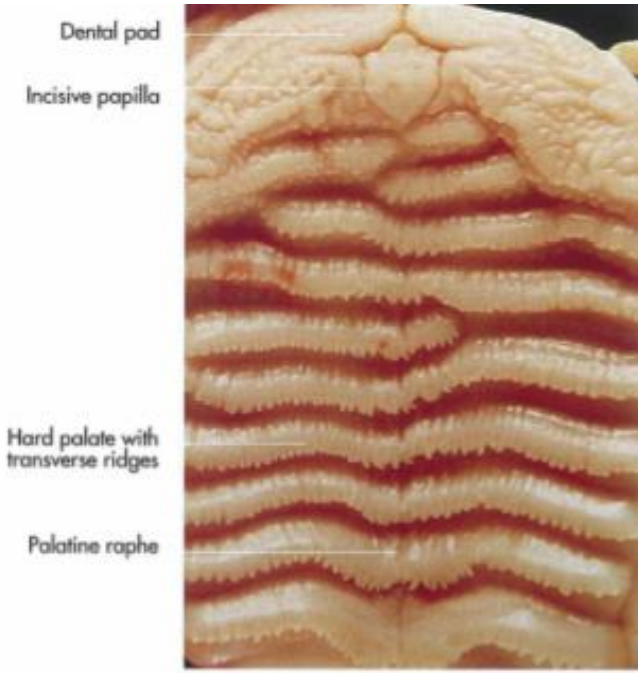


Fig 7-6. Roof of the oral cavity of an ox.

Fig. 1. The incisive papilla (*papilla incisiva*) of pig's fetus from the 77th day of gestation. The original (A), 1 cm.
1 - incisive papilla, 2 - palate rugae, 3 - palatine raphae, 4 - soft palate, A-A - growth line

http://www.ejpau.media.pl/volume6/issue1/veterinary/art-04.html

ORAL CAVITY

HARD PALATE (PALATUM DURUM):

III. INCISIVE PAPILLA (PAPILLA INCISIVA):

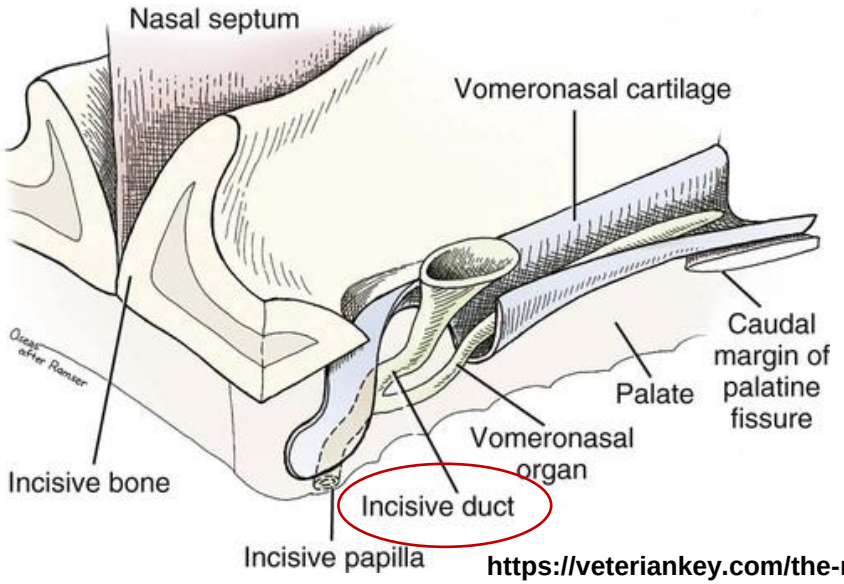
- **elevation of mucous membrane at the rostral end of raphe palati**

found behind:

a) the upper incisors

b) the dental pad

- conceals the orifices of the DUCTUS INCISIVI



https://veteriankey.com/the-respiratory-system/

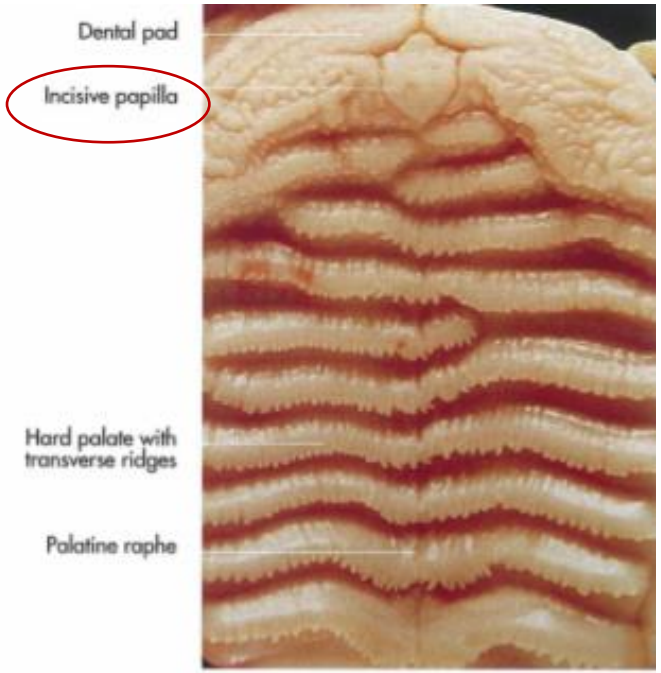


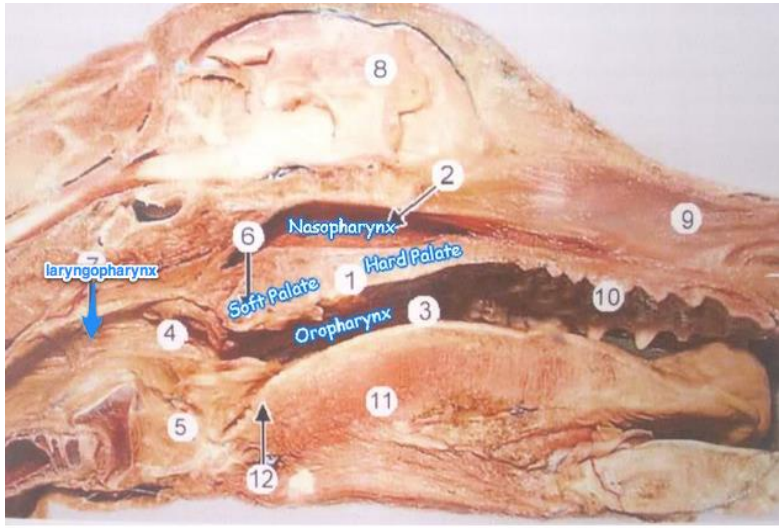
Fig 7-6. Roof of the oral cavity of an ox.

http://pedigreedogsexposed.blogspot.com/2015/11/brachy-week-frite-bite.html

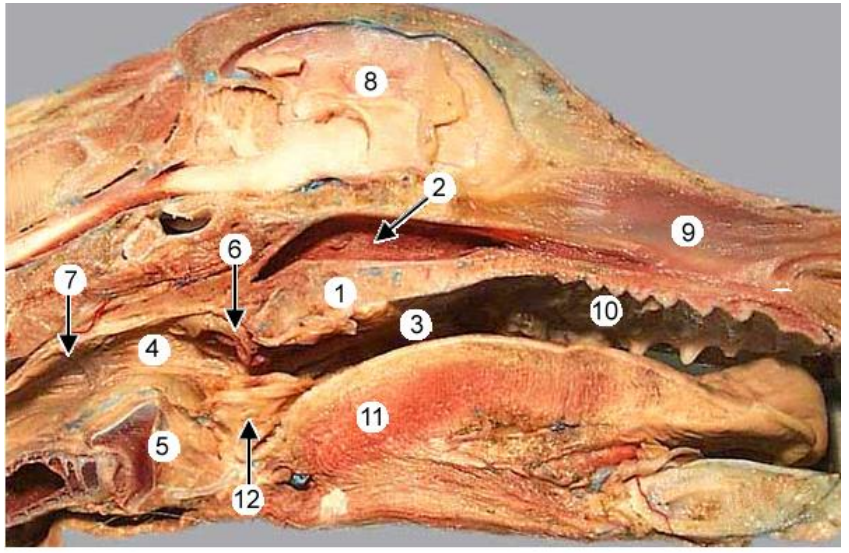
ORAL CAVITY

SOFT PALATE (PALATUM MOLLE, VELUM PALATINUM):

- caudal continuation of the hard palate
- extends into the pharyngeal cavity
- lies near the base of the epiglottis
- forms the roof of the oropharynx
- its dorsal surface forms the floor of the nasopharynx



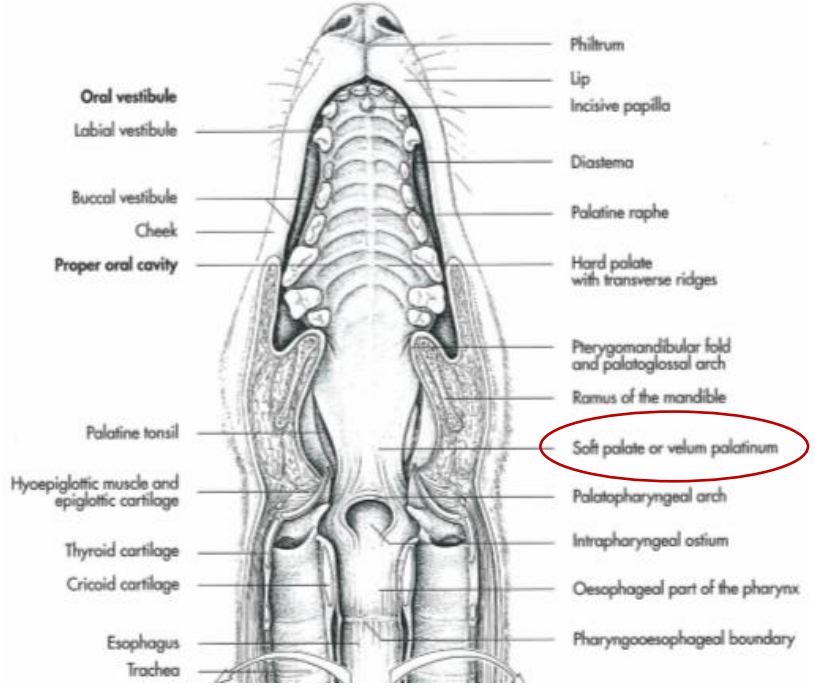
http://bvetmed1.blogspot.com/2013/02/tongue-hyoid-pharynx-deglutition_22.html



Bisected canine head. The pharynx is subdivided by the **soft palate** (1) into a **nasopharynx** (2), an **oropharynx** (3), and a **laryngopharynx** (4). The latter is located caudal to the soft palate and dorsal to the larynx (5). The **palatopharyngeal arch** (6) marks the caudal end of the soft palate. The **pharyngoesophageal limen** (7) marks the boundary between the pharynx and esophagus.

Identify: brain (8) in the cranial cavity, nasal septum (9), hard palate (10), root of the tongue (11) and epiglottis (12).

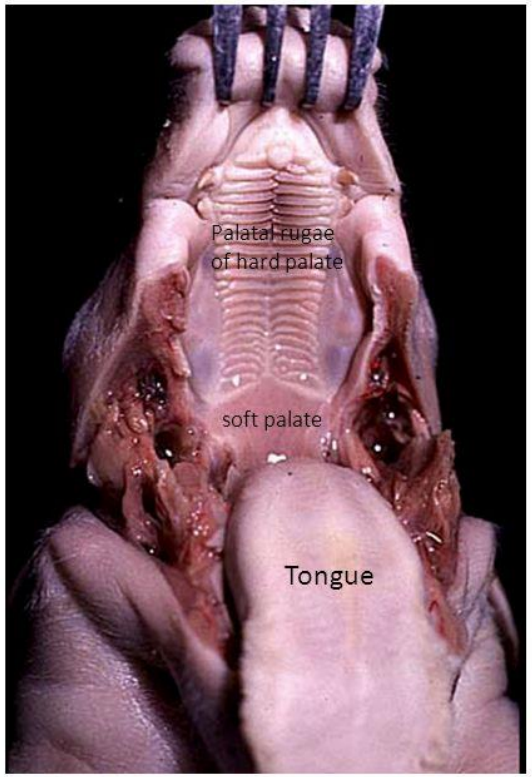
http://vanat.cvm.umn.edu/carnLabs/Lab22/Img22-9.html



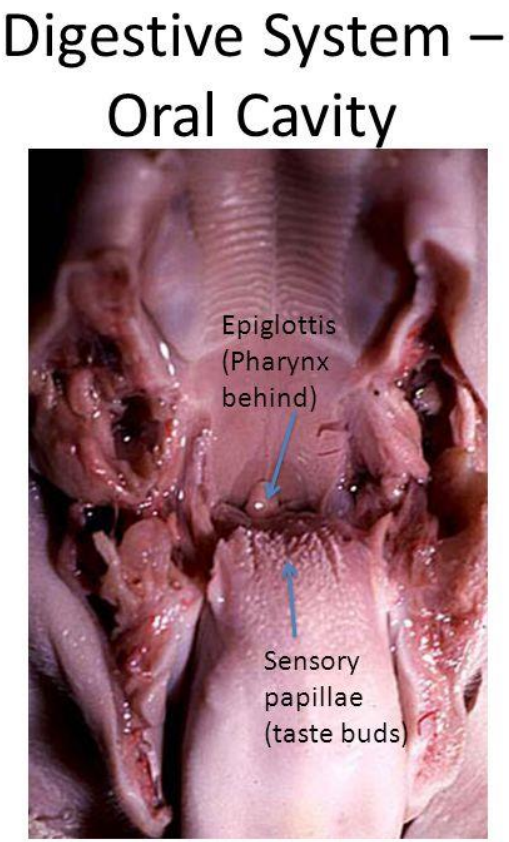
ORAL CAVITY

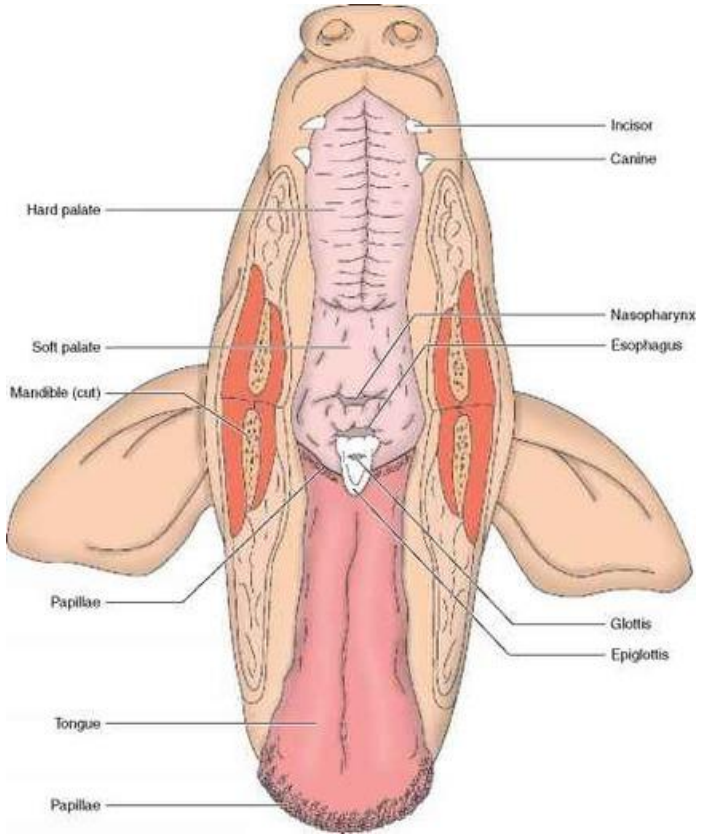
SOFT PALATE (PALATUM MOLLE, VELUM PALATINUM):

- **rudimentary UVULA – in Su**



https://slideplayer.com/slide/7403348/





https://quizlet.com/318495825/fetal-pig-dissection-practical-flash-cards/

ORAL CAVITY

MUSCLES OF THE SOFT PALATE:

1. **M. palatinus**
2. **M. tensor veli palatini**
3. **M. levator veli palatini**

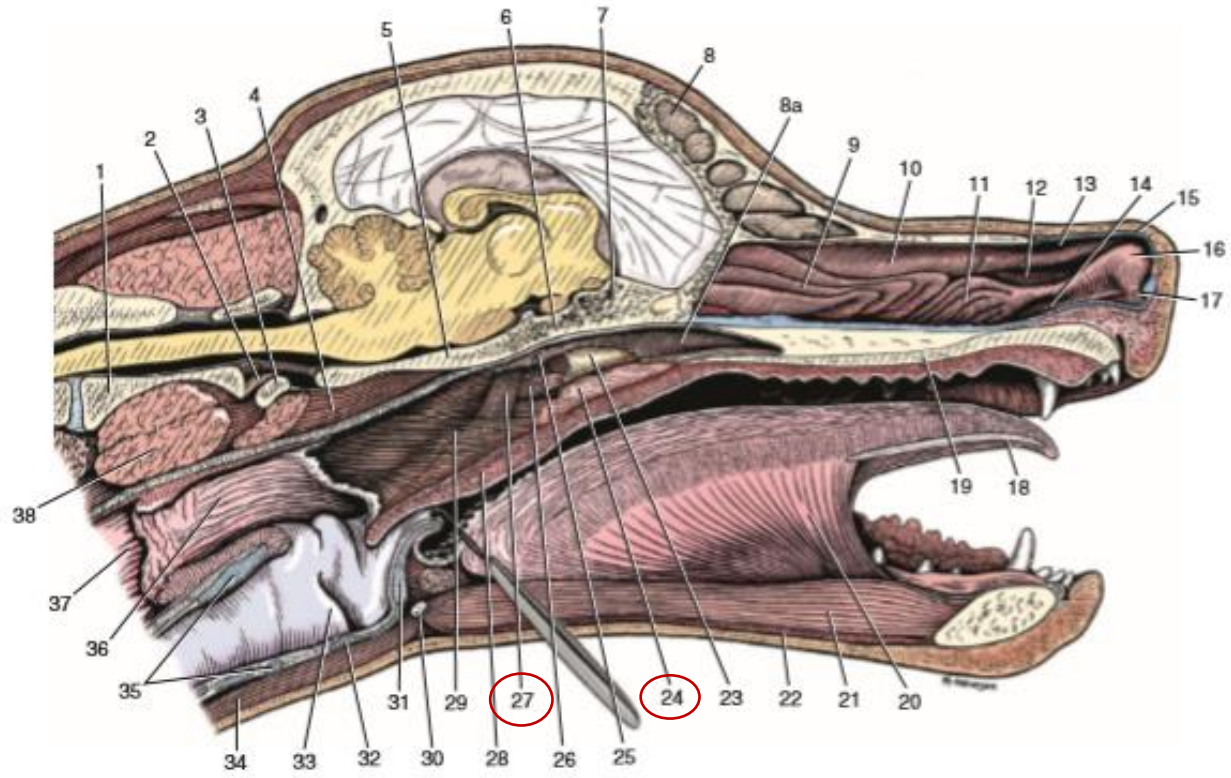


FIGURE 7-3 Mid-sagittal section of head.

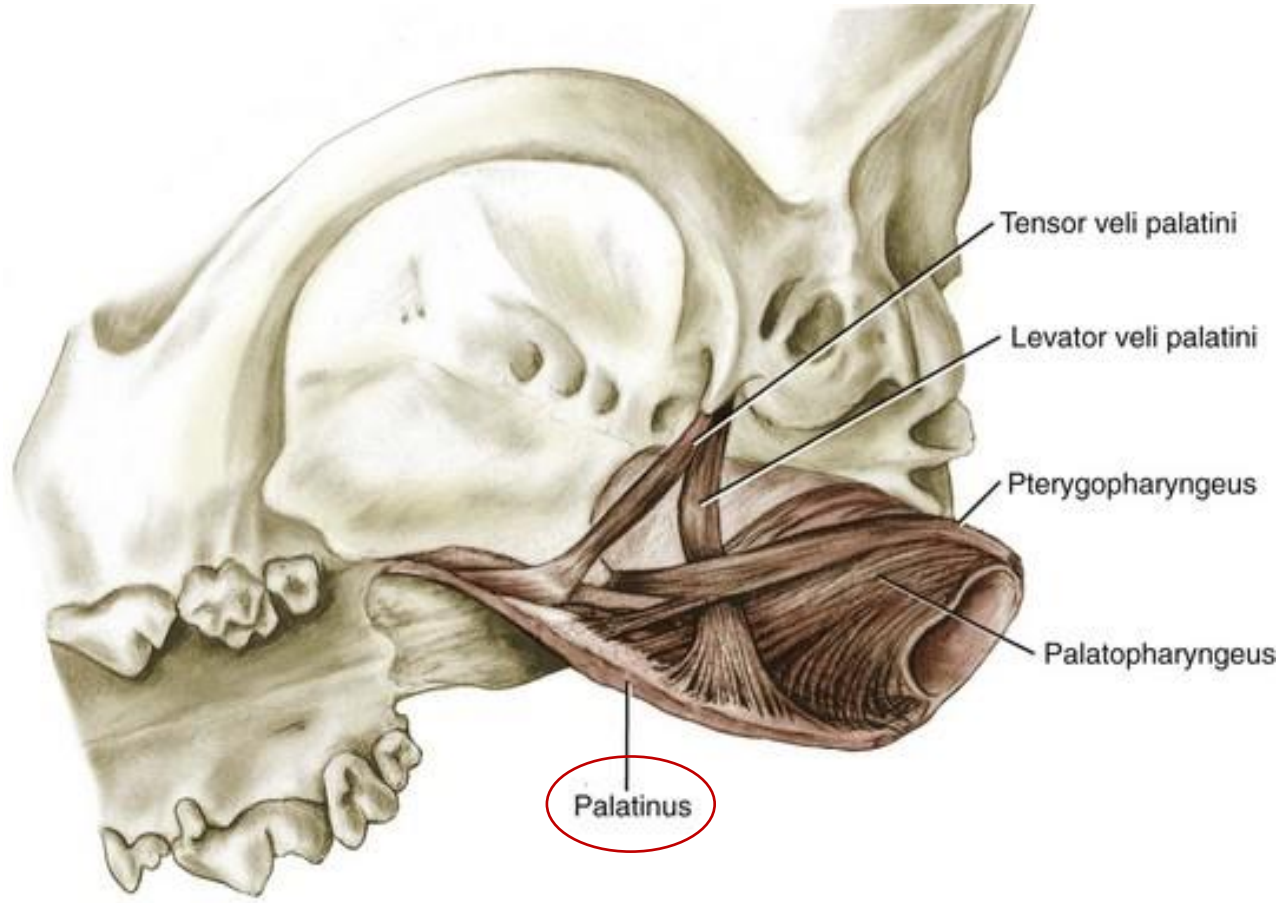
1. Axis
2. Dens
3. Atlas
4. Longus capitis
5. Basiocciptal
6. Basisphenoid
7. Presphenoid
8. Frontal sinus
8a. Nasal pharynx
9. Ethmoid labyrinth
10. Dorsal nasal concha
11. Ventral nasal concha
12. Middle nasal meatus
13. Dorsal nasal meatus
14. Ventral nasal meatus
15. Dorsal lateral nasal cartilage
16. Alar fold
17. Nasolacrimal duct orifice
18. Lyssa
19. Hard palate
20. Genioglossus
21. Geniohyoideus
22. Mylohyoideus
23. Pterygoid bone
24. Tensor veli palatini
25. Pharyngeal orifice of auditory tube
26. Pterygopharyngeus
27. Levator veli palatini
28. Soft palate
29. Palatopharyngeus
30. Basihyoid
31. Epiglottis
32. Thyroid cartilage
33. Vocal fold
34. Sternohyoideus
35. Cricoid cartilage
36. Laryngopharynx
37. Esophagus
38. Longus colli

ORAL CAVITY

MUSCLES OF THE SOFT PALATE:

M. palatinus:

- **origin – free border of palatine bone**
- **insertion – caudal border of soft palate**
- **action – shortens the soft palate**



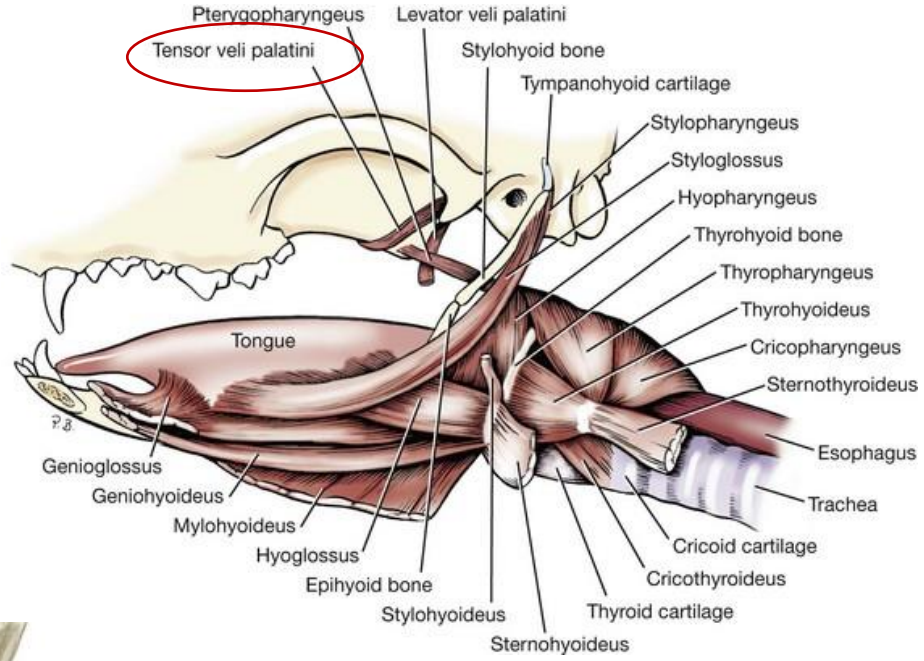
https://veteriankey.com/palate/

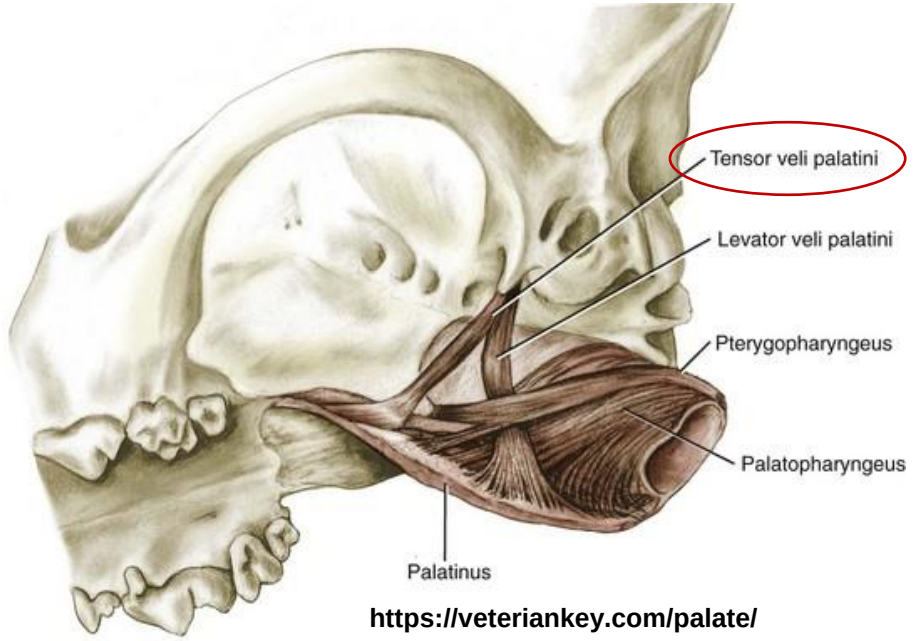
ORAL CAVITY

MUSCLES OF THE SOFT PALATE:

M. tensor veli palatini:

- **origin – proc. muscularis of tympanic part of temporal bone**
- **insertion – aponeurosis of soft palate**
- **action – tenses, straightens the rostral part of the soft palate**





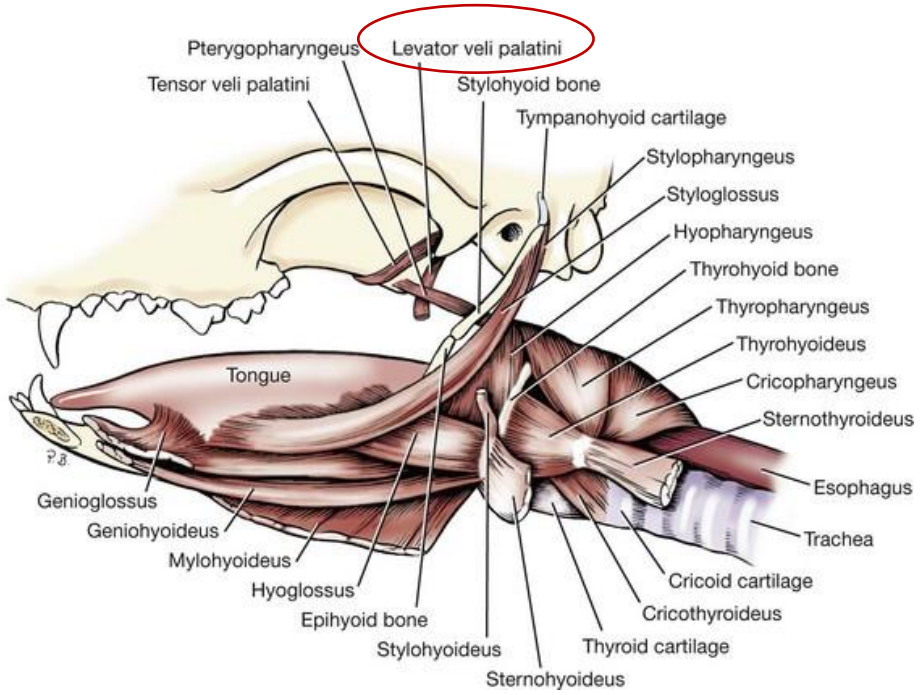
https://veteriankey.com/palate/

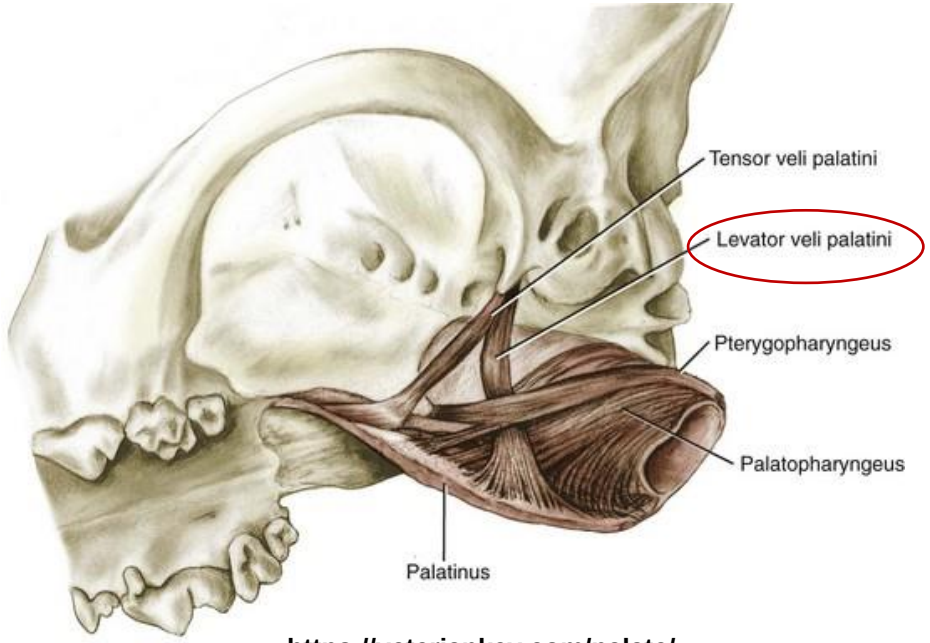
ORAL CAVITY

MUSCLES OF THE SOFT PALATE:

M. levator veli palatini:

- **origin – proc. muscularis of tympanic part of temporal bone**
- **insertion – soft palate**
- **action – raises the soft palate toward the basis cranii**





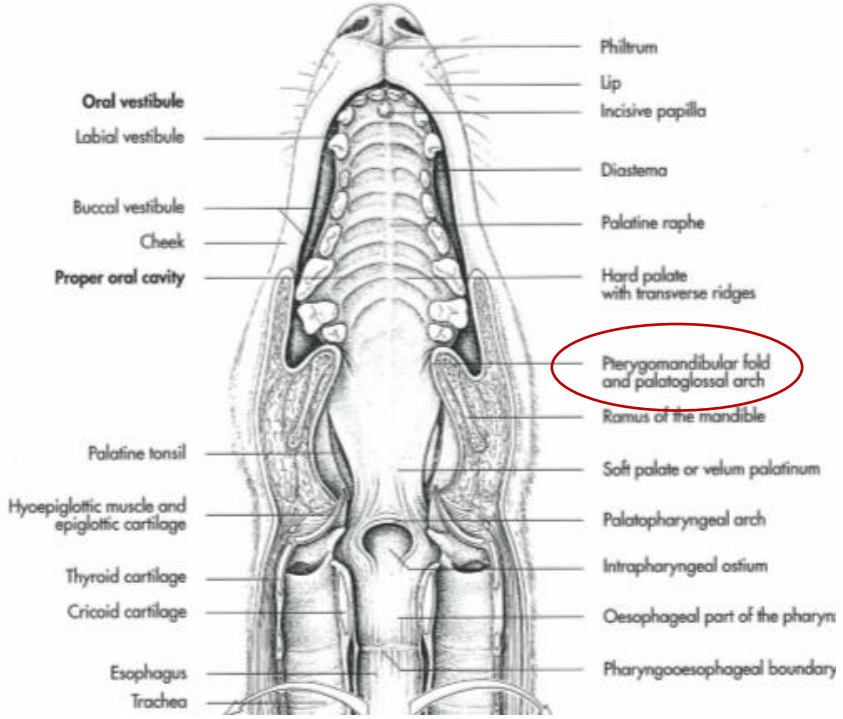
https://veteriankey.com/palate/

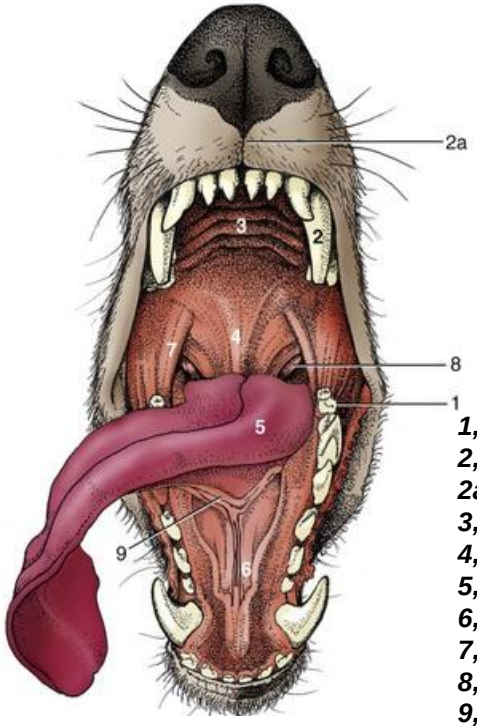
ORAL CAVITY

SOFT PALATE (PALATUM MOLLE, VELUM PALATINUM):

1. PALATOGLOSSAL ARCHES (ARCUS PALATOGLOSSUS):

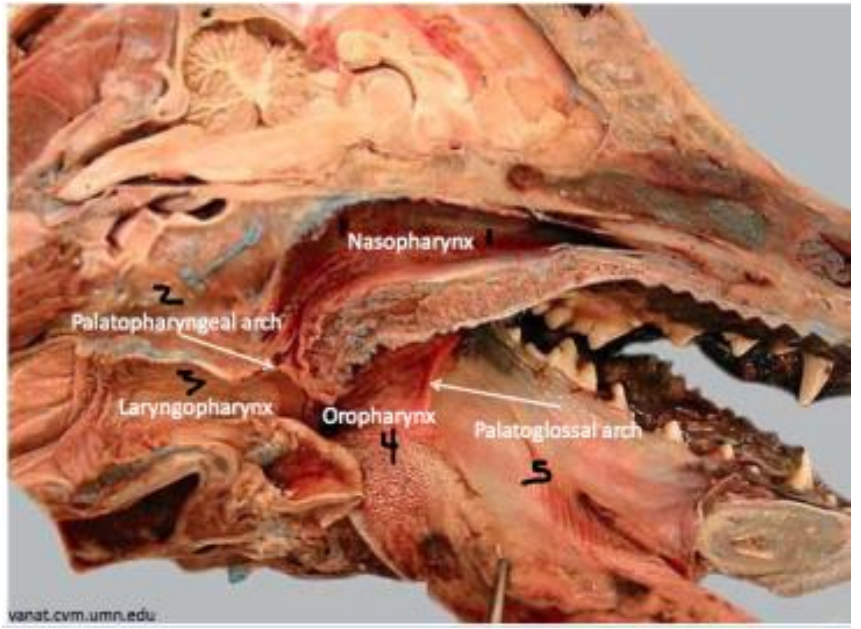
- muscosal pillars
- connect the soft palate with the root of the tongue
- form the lateral boundaries of the isthmus faucium



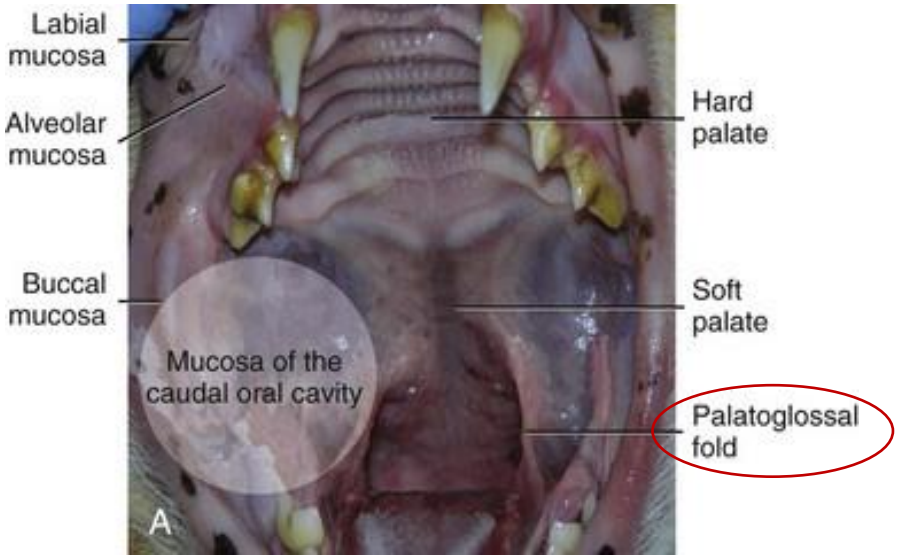


1, **vestibule**
2, **canine tooth**
2a, **philtrum**
3, **hard palate**
4, **soft palate**
5, **tongue**
6, **sublingual caruncle**
7, **palatoglossal arch**
8, **palatine tonsil**
9, **frenulum**

https://veteriankey.com/soft-tissues-of-the-oral-cavity/



https://www.studyblue.com/notes/note/n/anatomy-ii-exam-2/deck/17495593



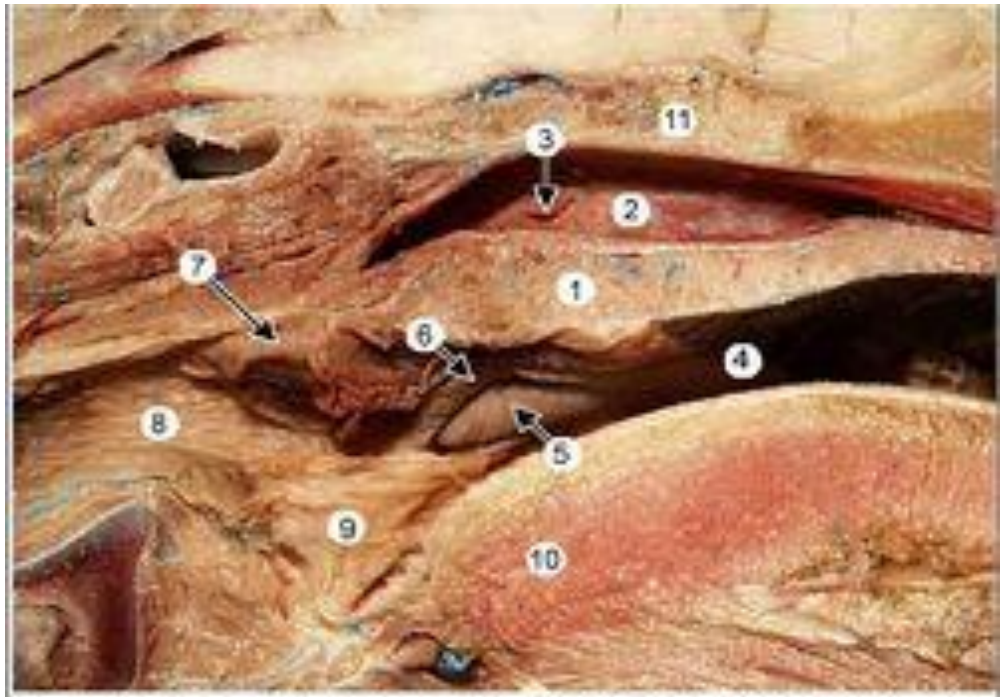
https://veteriankey.com/dental-and-oral-diseases/

ORAL CAVITY

SOFT PALATE (PALATUM MOLLE, VELUM PALATINUM):

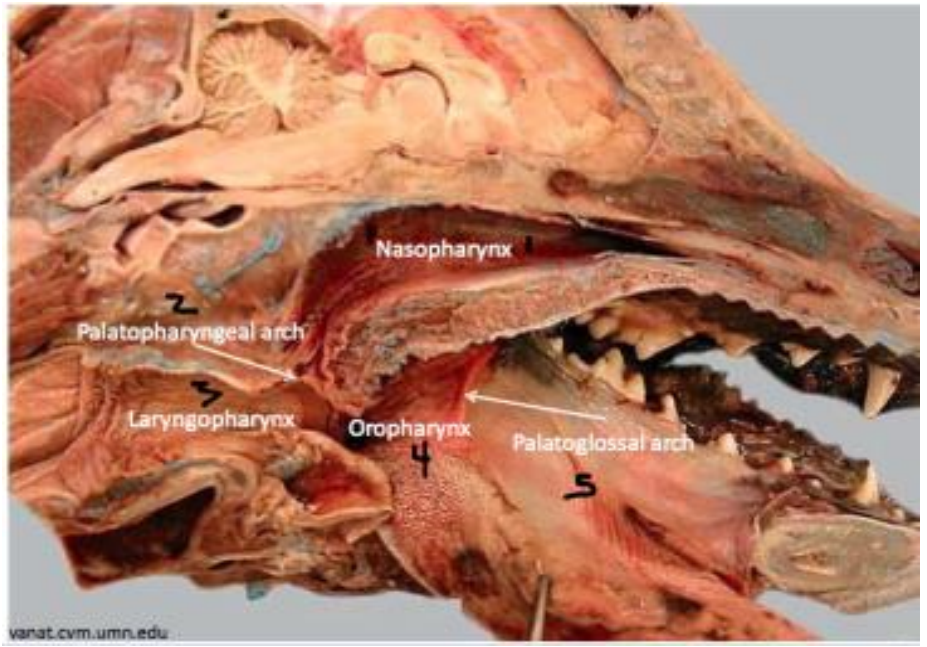
2. PALATOPHARYNGEAL ARCHES (ARCUS PALATOPHARYNGEUS):

- **muscosal pillars**
- **connect the soft palate with the lateral wall of pharynx**
- **contain lymphoid tissue**
- **contain glandulae palatini**



Enlarged view of the pharynx. The pharynx is subdivided by the **soft palate** (1). The **nasopharynx** (2) contains the opening of the **auditory tube** (3). The **oropharynx** (4) contains the **palatine tonsil** (5) within a fossa normally covered by a semilunar fold (6). The **palatopharyngeal arch** (7) marks the caudal end of the soft palate. The **laryngopharynx** (8) is located caudal to the soft palate and dorsal to the larynx. Identify the epiglottis (9), root of the tongue (10), and bones of the floor of the cranial cavity (11).

https://en.wikivet.net/Pharynx_-_Anatomy_%26_Physiology

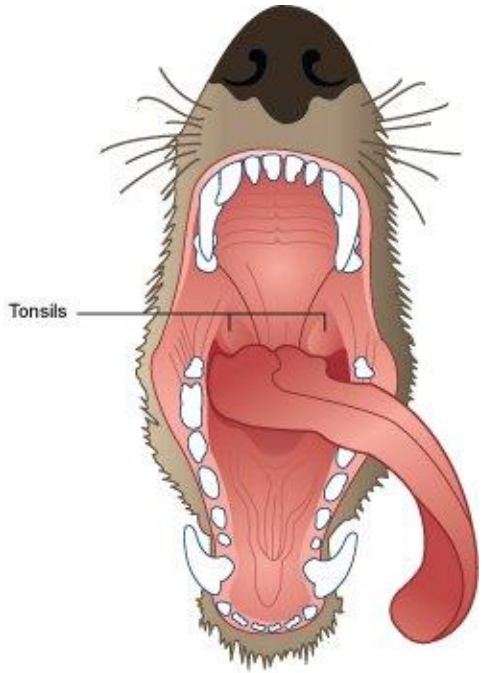


https://www.studyblue.com/notes/note/n/anatomy-ii-exam-2/deck/17495593

ORAL CAVITY

FOSSA TONSILLARIS:

- **in Car**
- **between arcus palatoglossus and palatopharyngeus**
- **houses the tonsilla palatina (palatine tonsile)**



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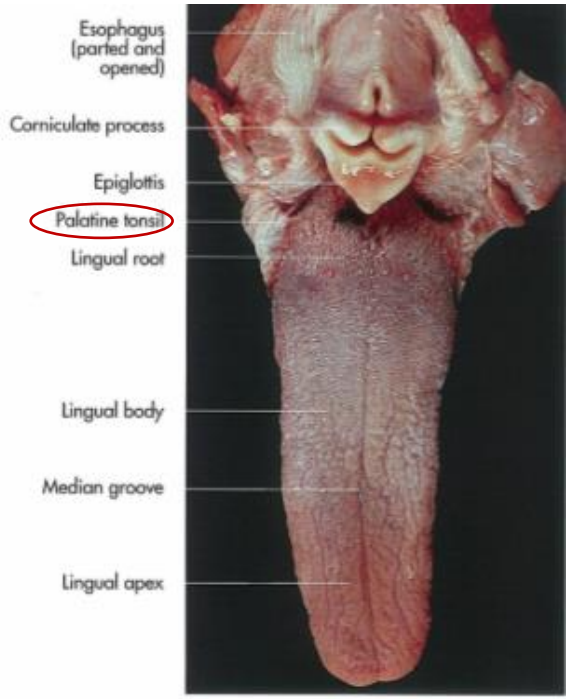
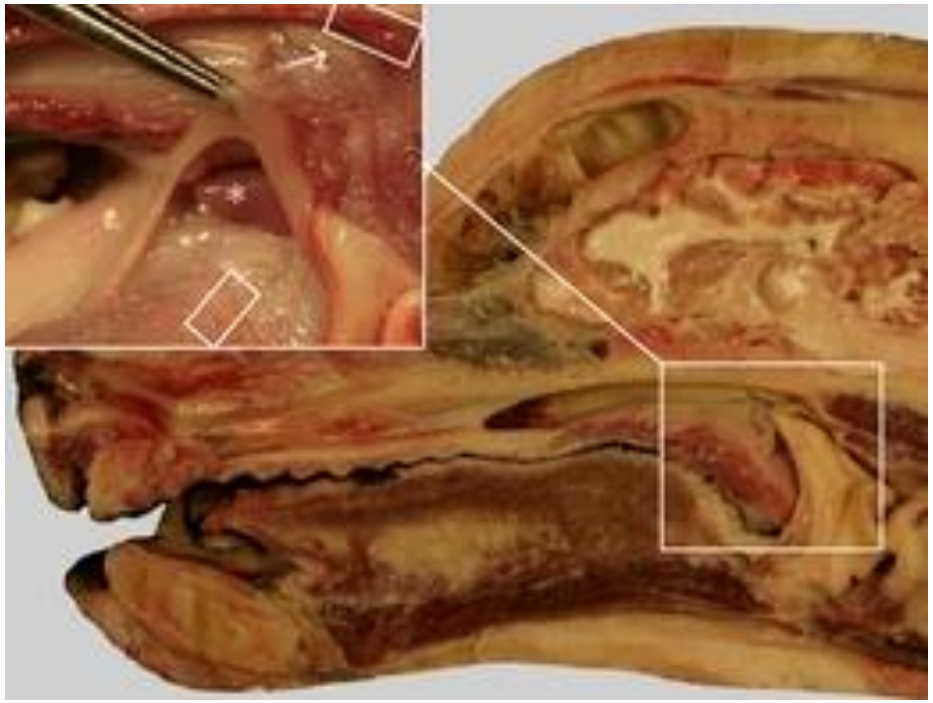


Fig 7-4. Tongue and pharynx of a dog, dorsal aspect.

https://vcahospitals.com/know-your-pet/tonsillitis-in-dogs



Anatomical localization and histological characteristics of the canine tonsils. (a) Median section through a canine head. The insert shows a higher magnification of the region in which the tonsils are located. In the dog, the lingual (lower boxed area of the insert), palatine (asterisk), and pharyngeal tonsils (upper boxed area of the insert caudodorsal to the opening of the auditory tube (arrow)) are present.

https://www.researchgate.net/figure/Anatomical-localization-and-histological-characteristics-of-the-canine-tonsils-a_fig6_51598063

TONGUE (LINGUA)

- **fills the oral cavity**
- **very mobile**
- **supported caudally by the hyoid bone**
- **consists of striated muscles**

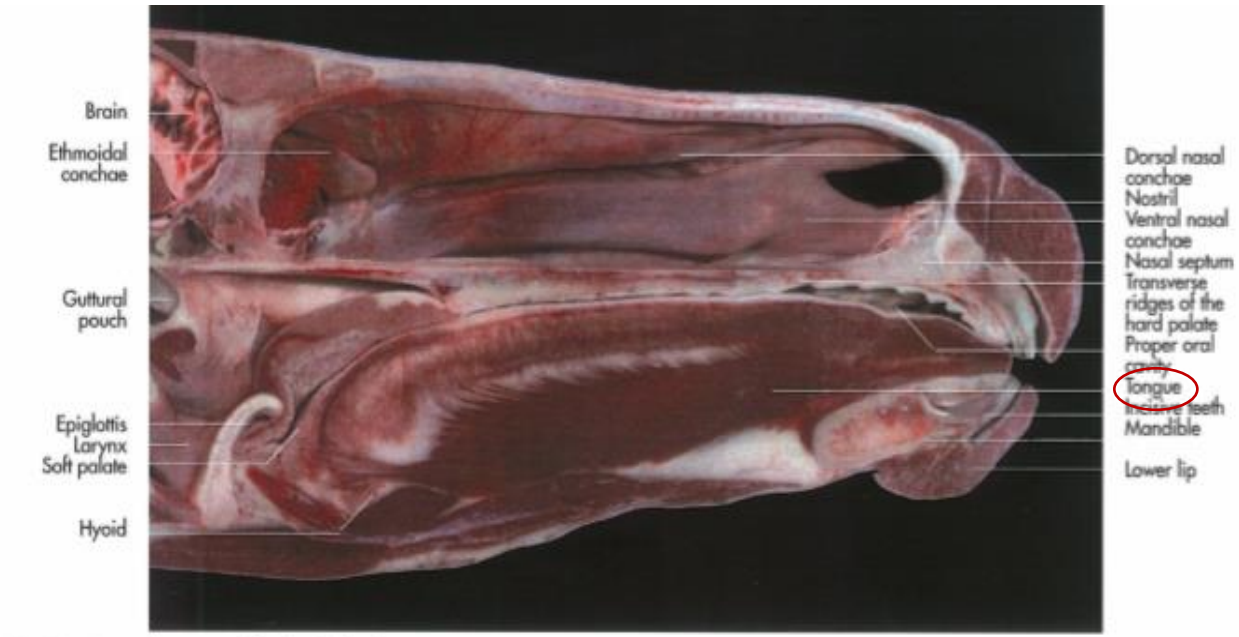
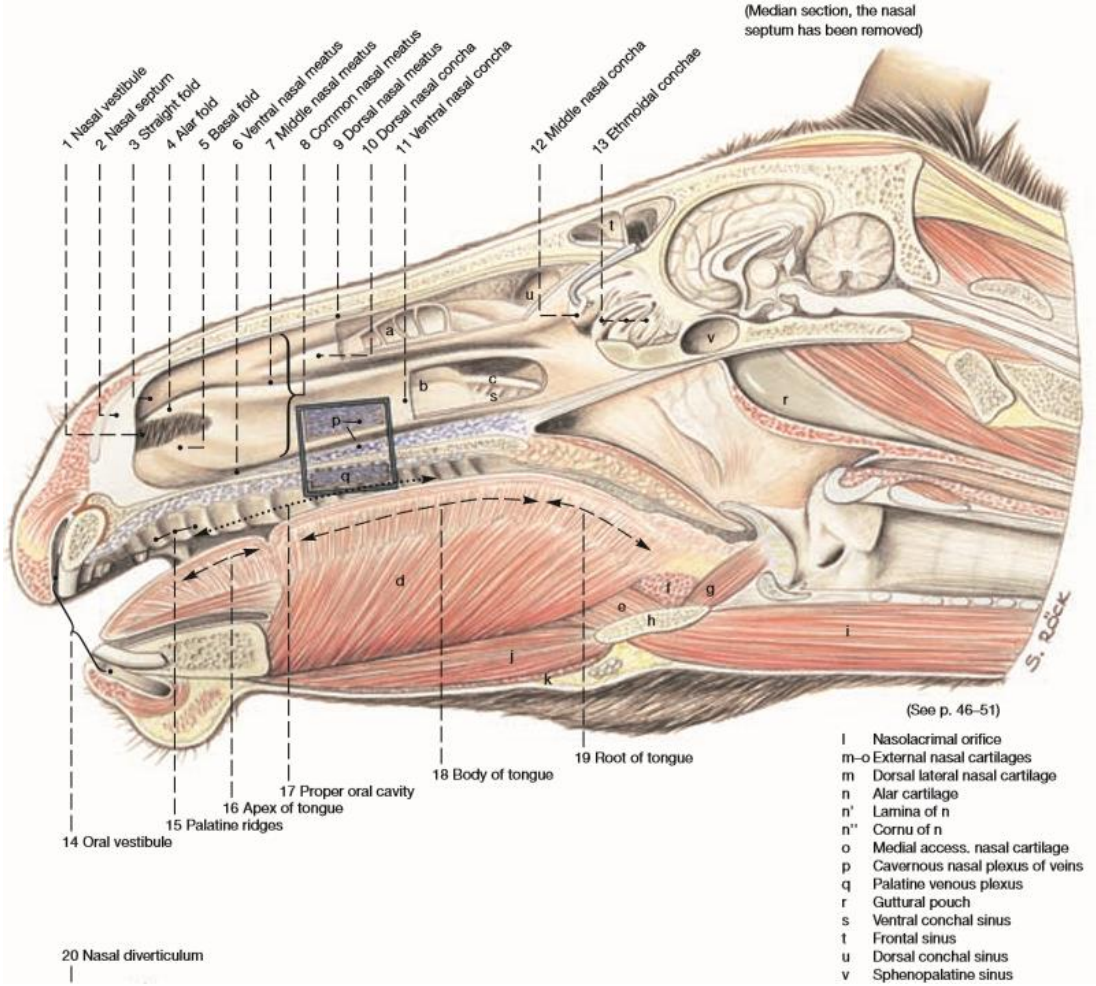


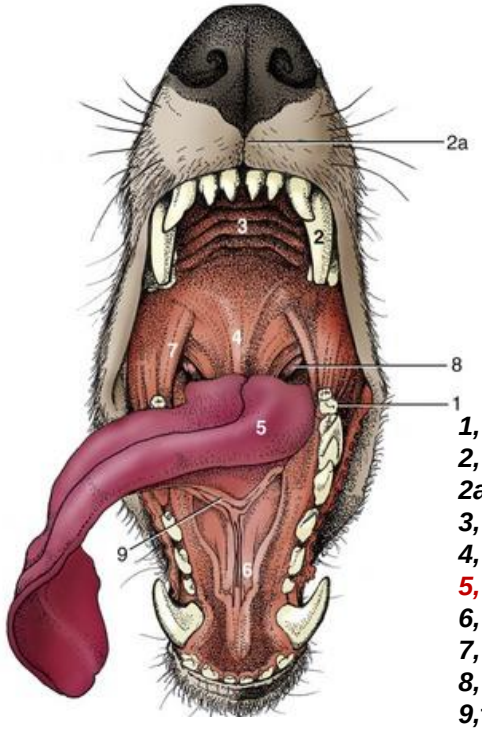
Fig 7-2. Sagittal section of the head of a horse.



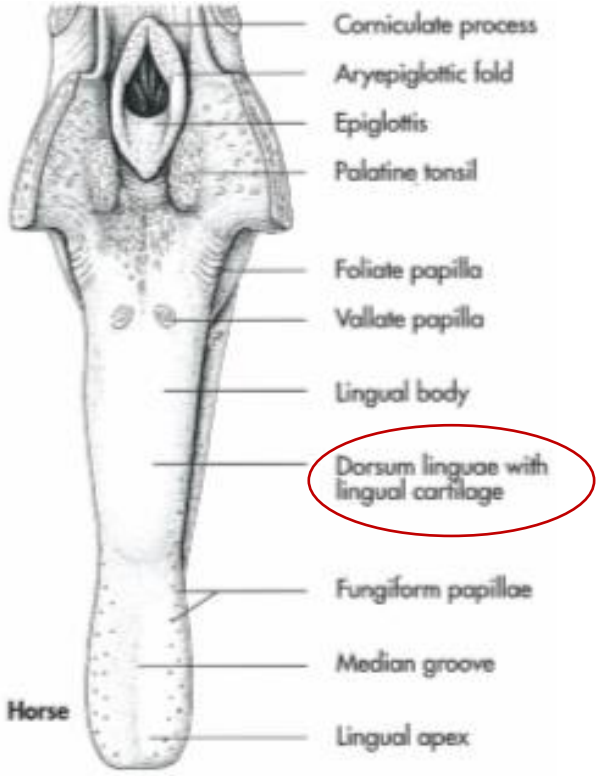
STRUCTURES OF TONGUE (LINGUA)

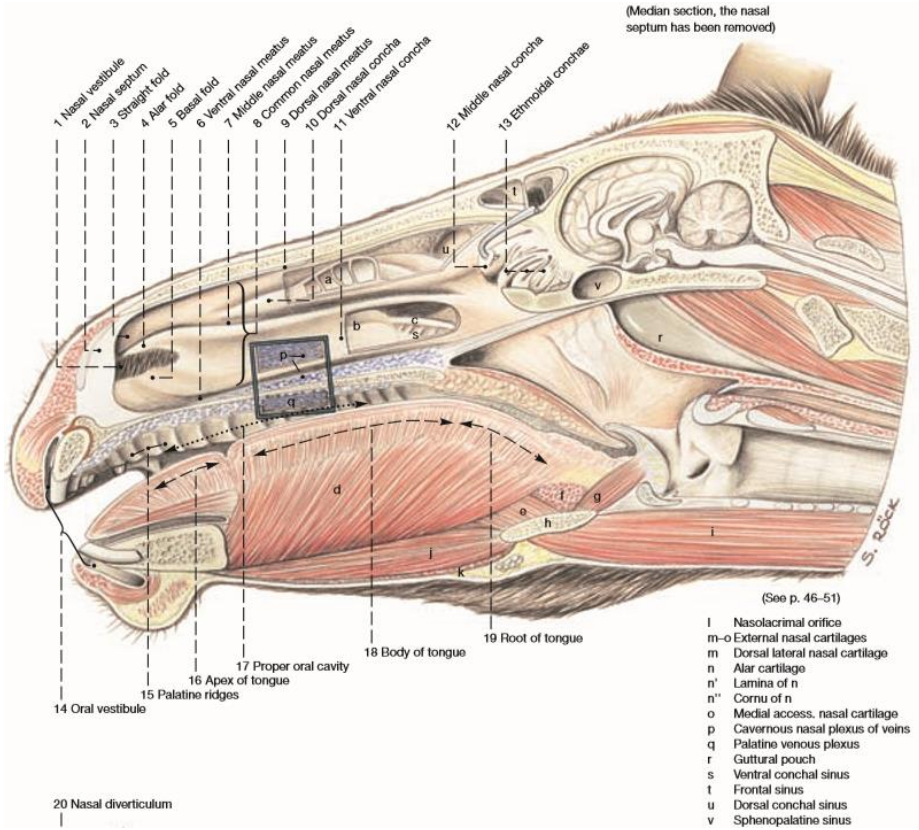
I. DORSUM LINGUAE:

- **surface opposite the palate**



1, **vestibule**
2, **canine tooth**
2a, **philtrum**
3, **hard palate**
4, **soft palate**
5, **tongue**
6, **sublingual caruncle**
7, **palatoglossal arch**
8, **palatine tonsil**
9, **frenulum**





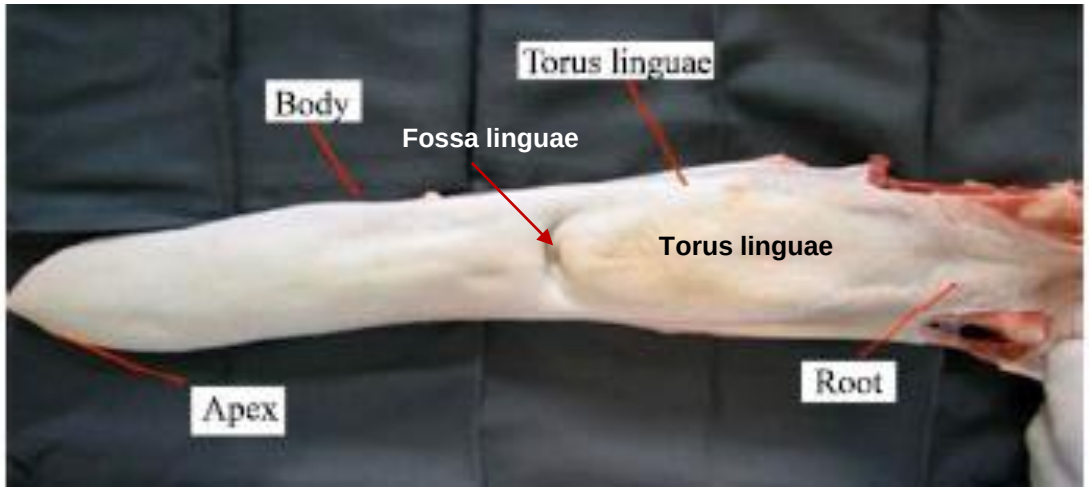
https://veteriankey.com/soft-tissues-of-the-oral-cavity/

STRUCTURES OF TONGUE (LINGUA)

I. DORSUM LINGUAE:

A. TORUS LINGUAE:

- **in the ruminants**
- **prominance of the dorsum linguae**
- **caudal to the fossa linguae**



https://scialert.net/fulltextmobile/?doi=ajava.2010.154.161

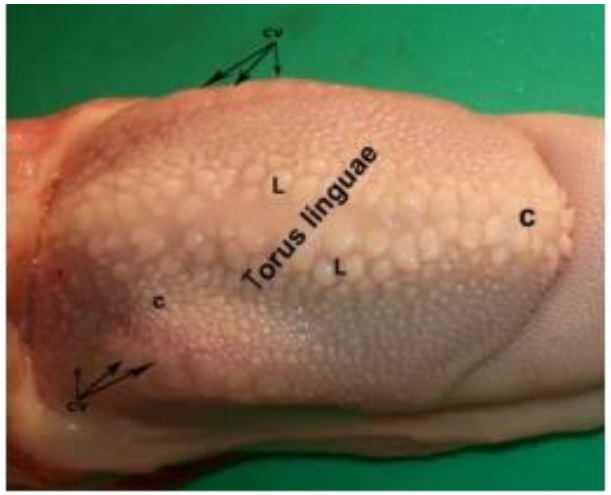
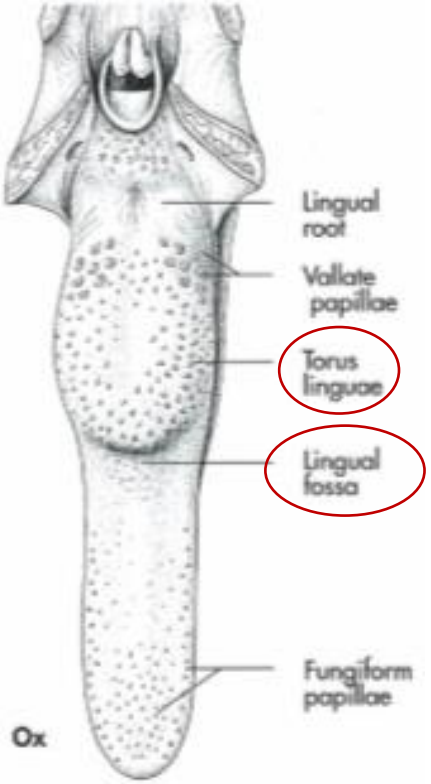


Fig.3: Photograph of dorsal surface of the tongue in the goat, show: Torus linguae CV-vallate papillae, L-lenticular papillae , C-conical papillae.

http://www.journalijar.com/uploads/704_IJAR-3512.pdf

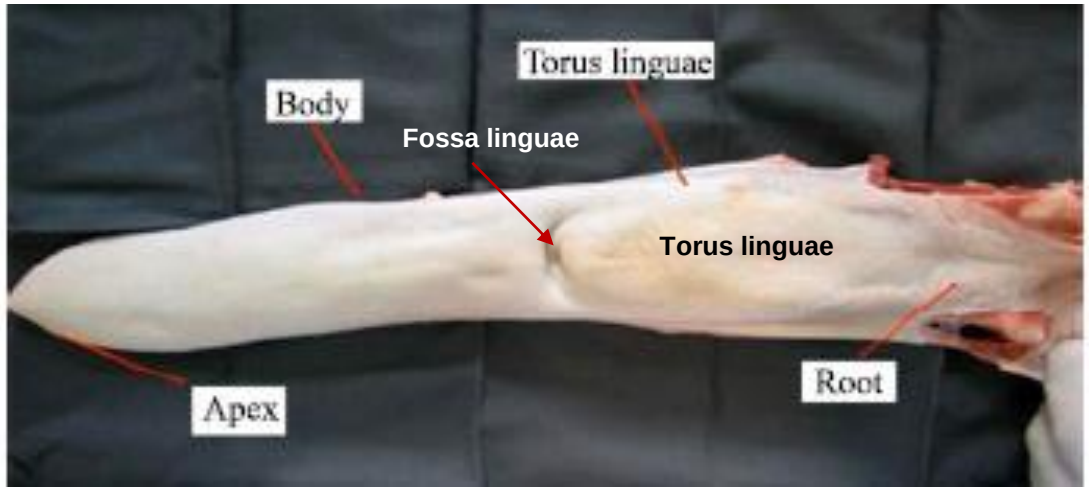


STRUCTURES OF TONGUE (LINGUA)

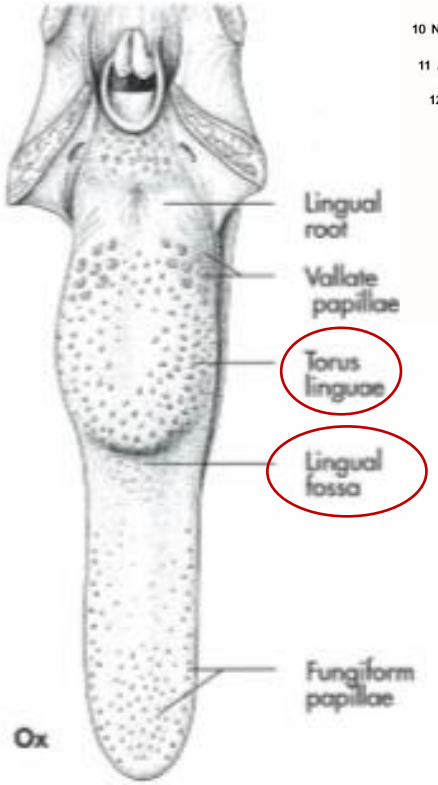
I. DORSUM LINGUAE:

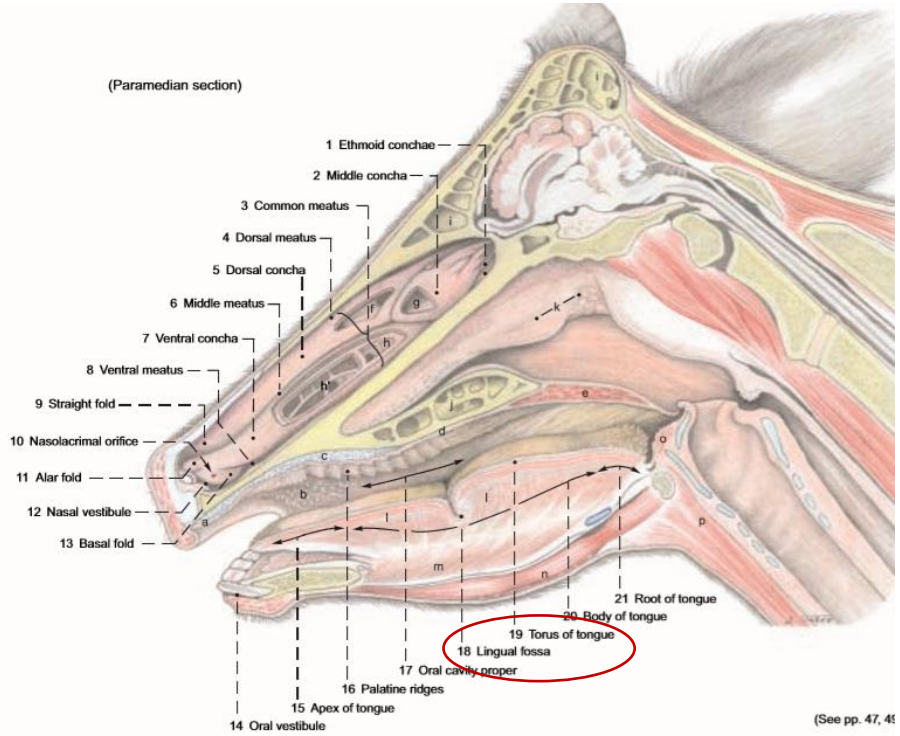
B. FOSSA LINGUAE:

- **in the ruminants**
- **deep pit on the dorsum linguae**
- **rostral to the torus linguae**



https://scialert.net/fulltextmobile/?doi=ajava.2010.154.161



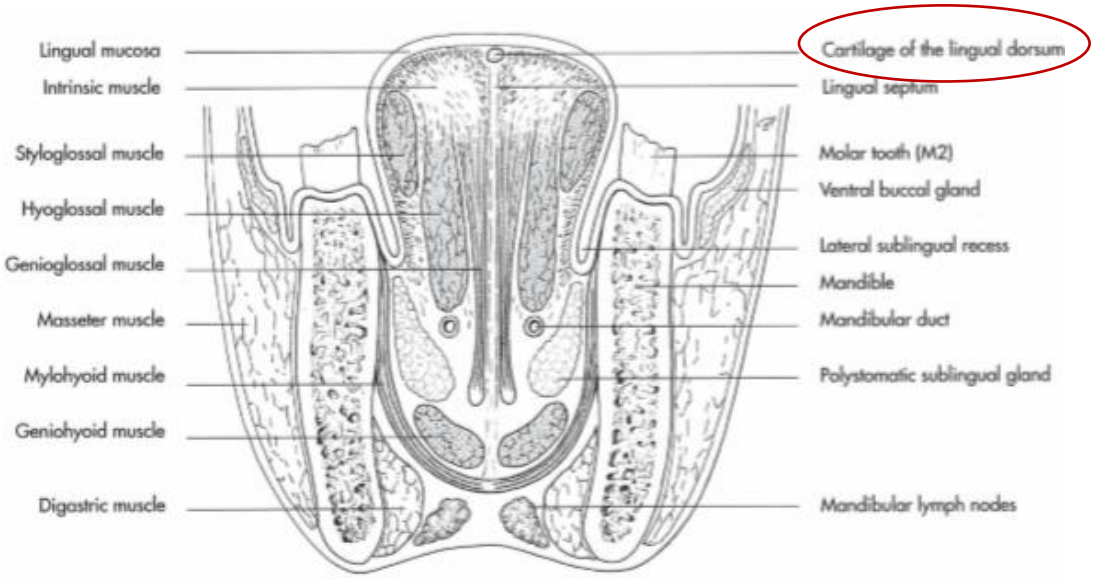


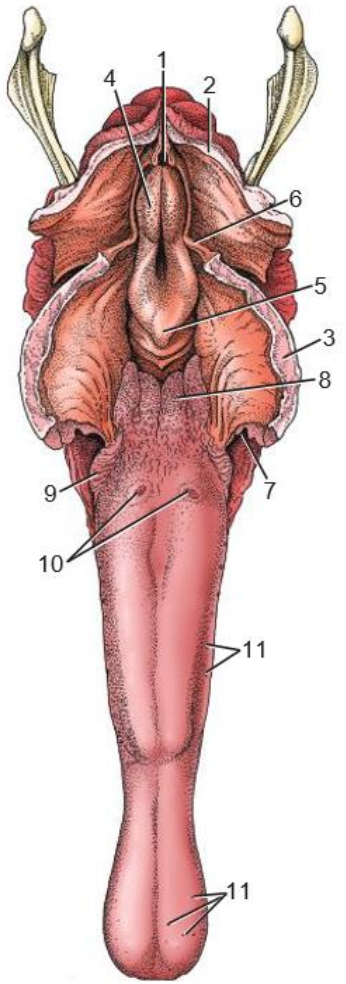
STRUCTURES OF TONGUE (LINGUA)

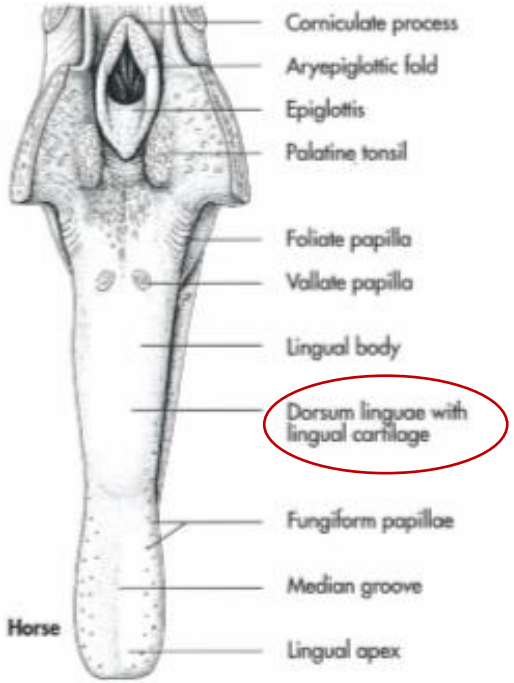
I. DORSUM LINGUAE:

C. CARTILAGO DORSI LINGUAE:

- slender bar of cartilage
- in horse's tongue
- in the median plane
- below the mucos membrane







1. Entrance into esophagus
2. Dorsal wall of nasopharynx (split in median plane)
3. Soft palate (split in median plane)
4. Corniculate process of arytenoid cartilage
5. Epiglottis
6. Free border of soft palate, continued caudally by palatopharyngeal arch
7. Palatoglossal arch
8. Lingual tonsil
9. Foliate papillae
10. Vallate papillae
11. Examples of fungiform papillae

Note: The pharynx has been opened dorsally to expose the entrance to the larynx.

STRUCTURES OF TONGUE (LINGUA)

I. DORSUM LINGUAE:

D. SULCUS MEDIANUS LINGUAE:

- **median dorsal groove**
- **divides the tongue into two equal halves**

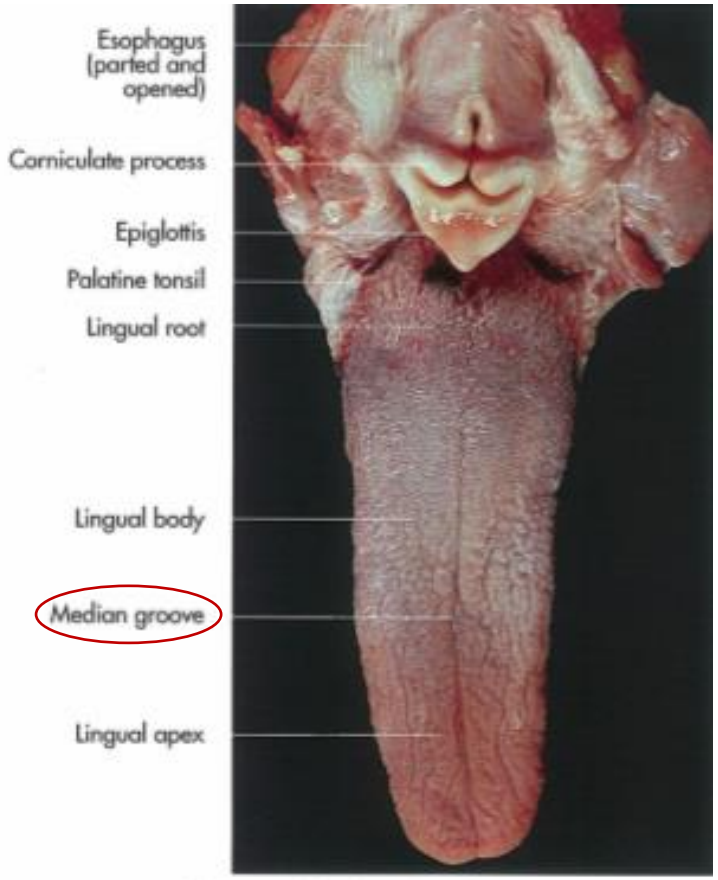
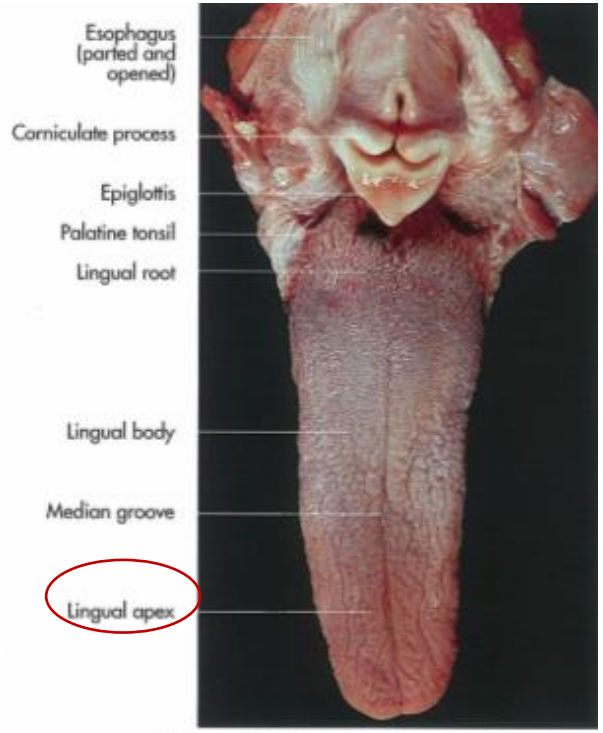


Fig 7-4. Tongue and pharynx of a dog, dorsal aspect.

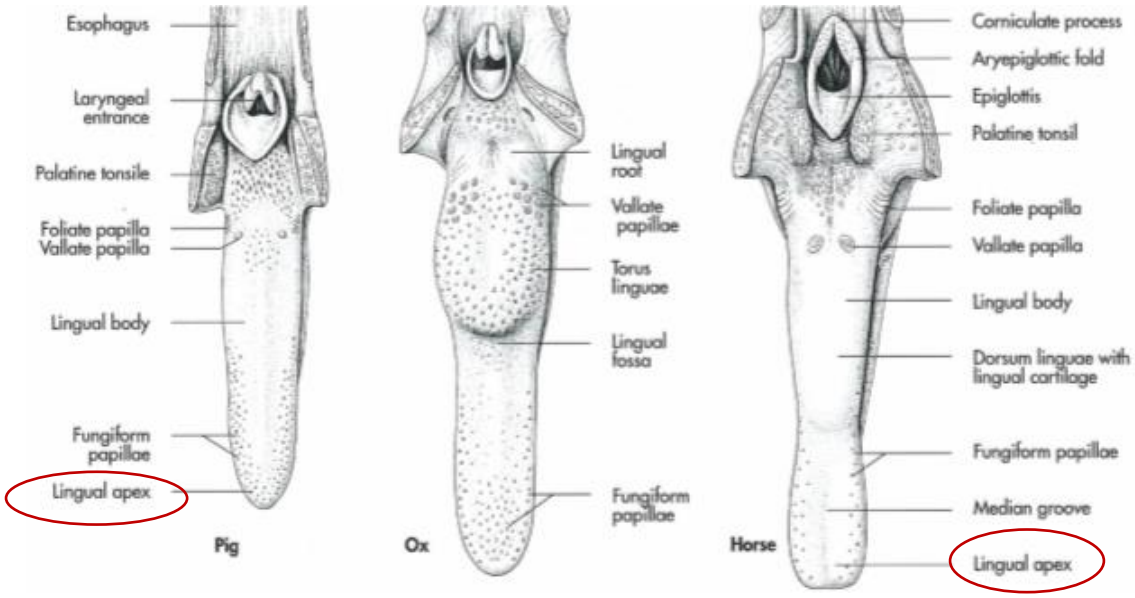
STRUCTURES OF TONGUE (LINGUA)

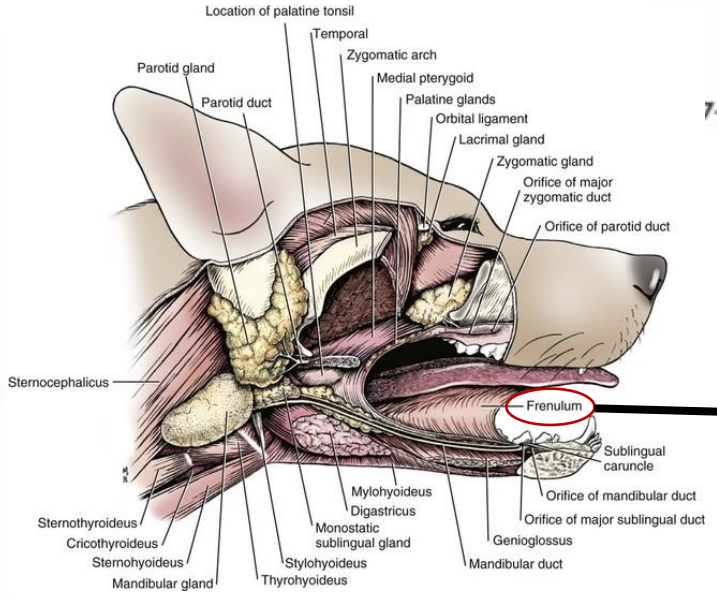
II. APEX LINGUAE:

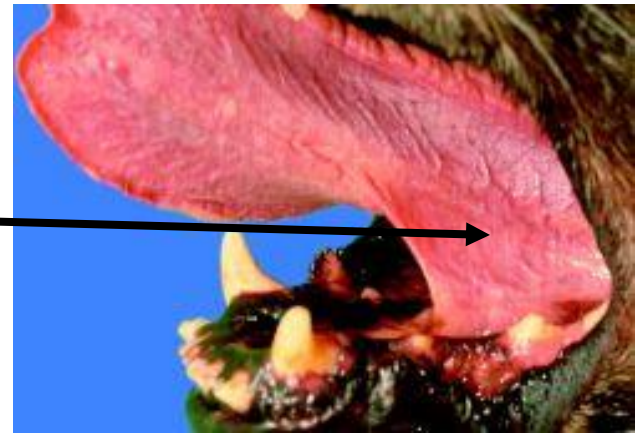
- **free rostral portion**
- **tip of the tongue**
- **presents dorsal and ventral surface**
- **ventral surface – connected to the floor of the oral cavity by median fold (frenulum linguae)**



7-4. Tongue and pharynx of a dog, dorsal aspect.







https://medical-dictionary.thefreedictionary.com/lingual+frenulum

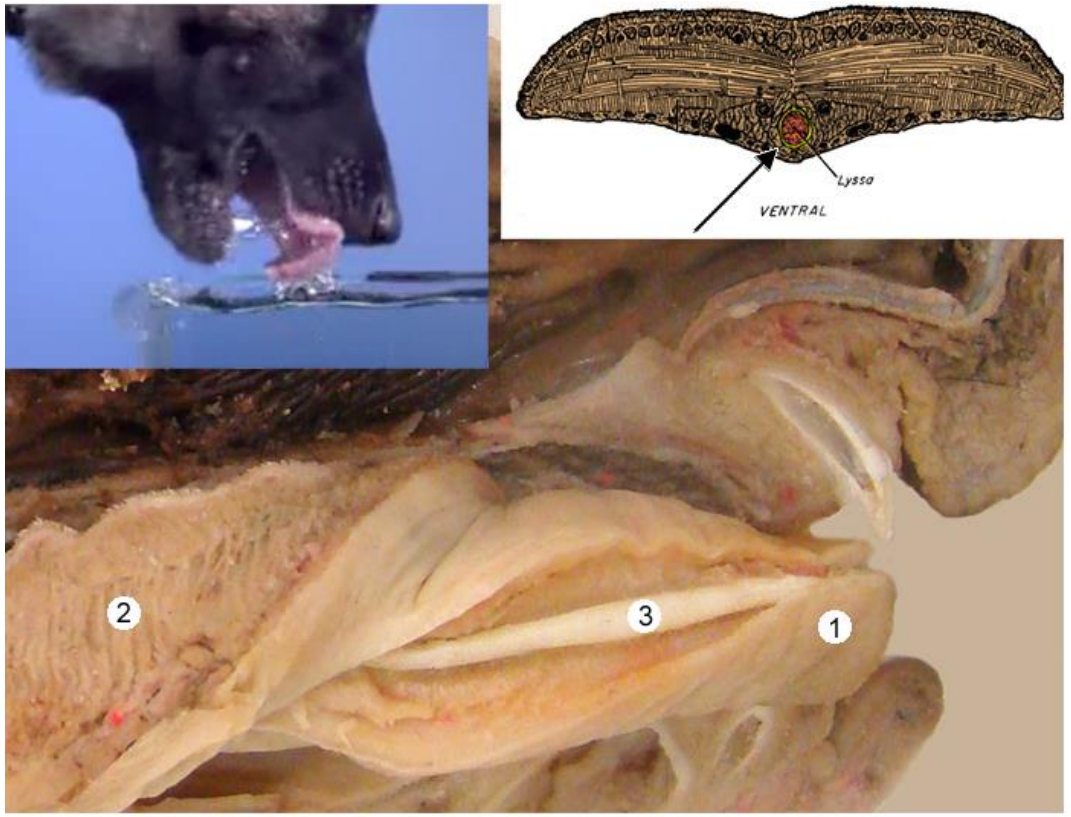
STRUCTURES OF TONGUE (LINGUA)

II. APEX LINGUAE:

A. LYSSA:

- **in carnivores**
- **the apex contains a median filiform structure**
- **embedded in the musculature along the ventral surface of the apex**

L: lyssa, Lf: frenulum linguae
https://www.memorangapp.com/flashcards/186359/Anatomy%3A+Teeth+and+Mastication/



Below: The apex (1) of a canine tongue (2) is incised ventrally to reveal the **lyssa** (3). (The sectioned upper incisor above the tongue apex has a large pulp cavity, which is indicative of a young animal.)

Top right: The **lyssa**, which exists to stiffen the apex of the long canine tongue, consists of a fibrous tissue cylinder containing muscle and fat (arrow).

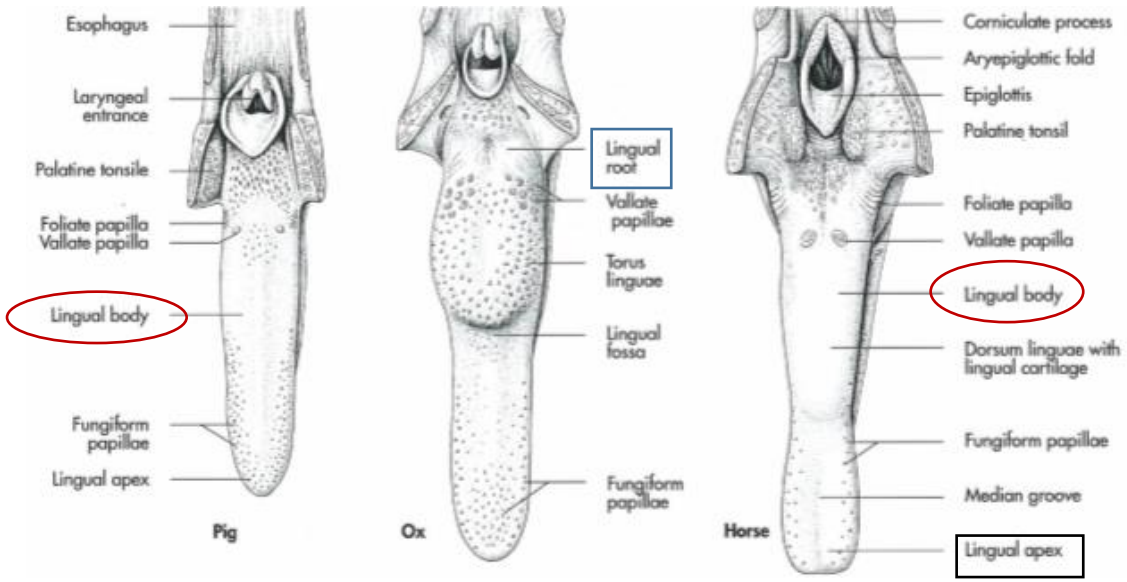
Top left: Position of the tongue during drinking. The drinking image demonstrates the value of a stiff tongue apex, as facilitated by the lyssa.

http://vanat.cvm.umn.edu/carnLabs/Lab22/Img22-7.html

STRUCTURES OF TONGUE (LINGUA)

III. CORPUS LINGUAE:

- **body**
- **between apex and root**



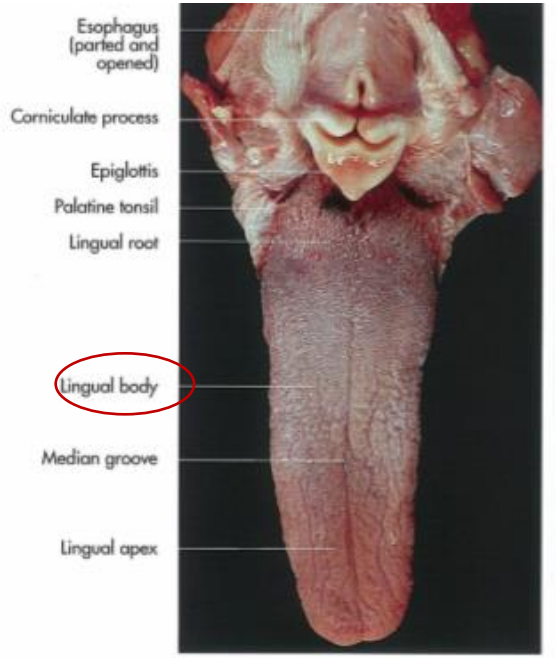


Fig 7-4. Tongue and pharynx of a dog, dorsal aspect.

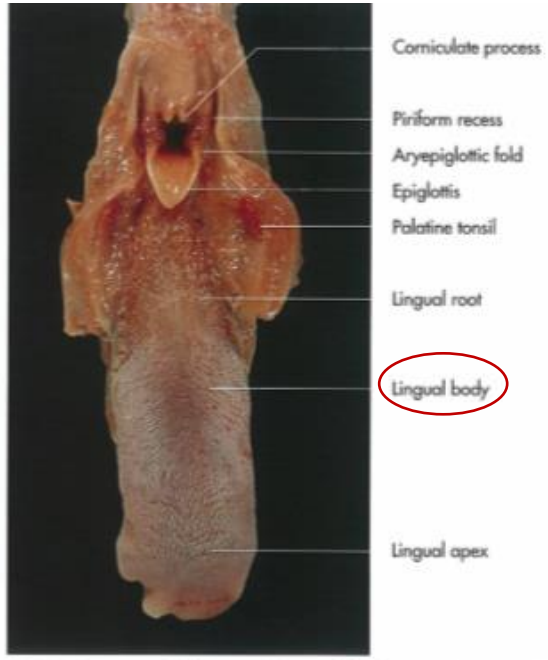


Fig 7-5. Tongue and pharynx of a cat, dorsal aspect (König, 1992).

STRUCTURES OF TONGUE (LINGUA)

IV. RADIX LINGUAE:

- **root**
- **the part caudal to the vallate papillae**
- **slopes ventrally toward the base of the epiglottis**

Fig 7-4. Tongue and pharynx of a dog, dorsal aspect.

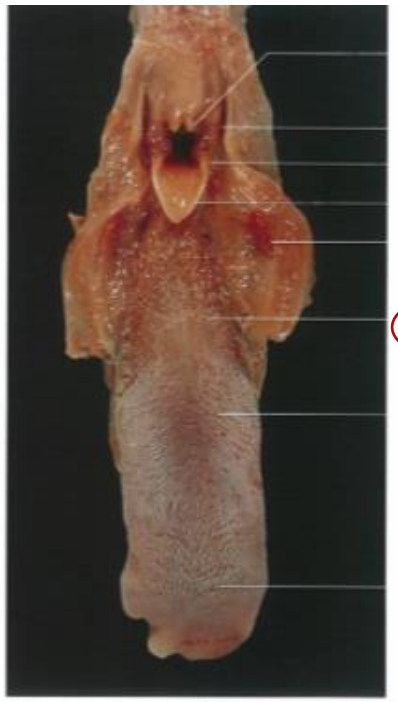
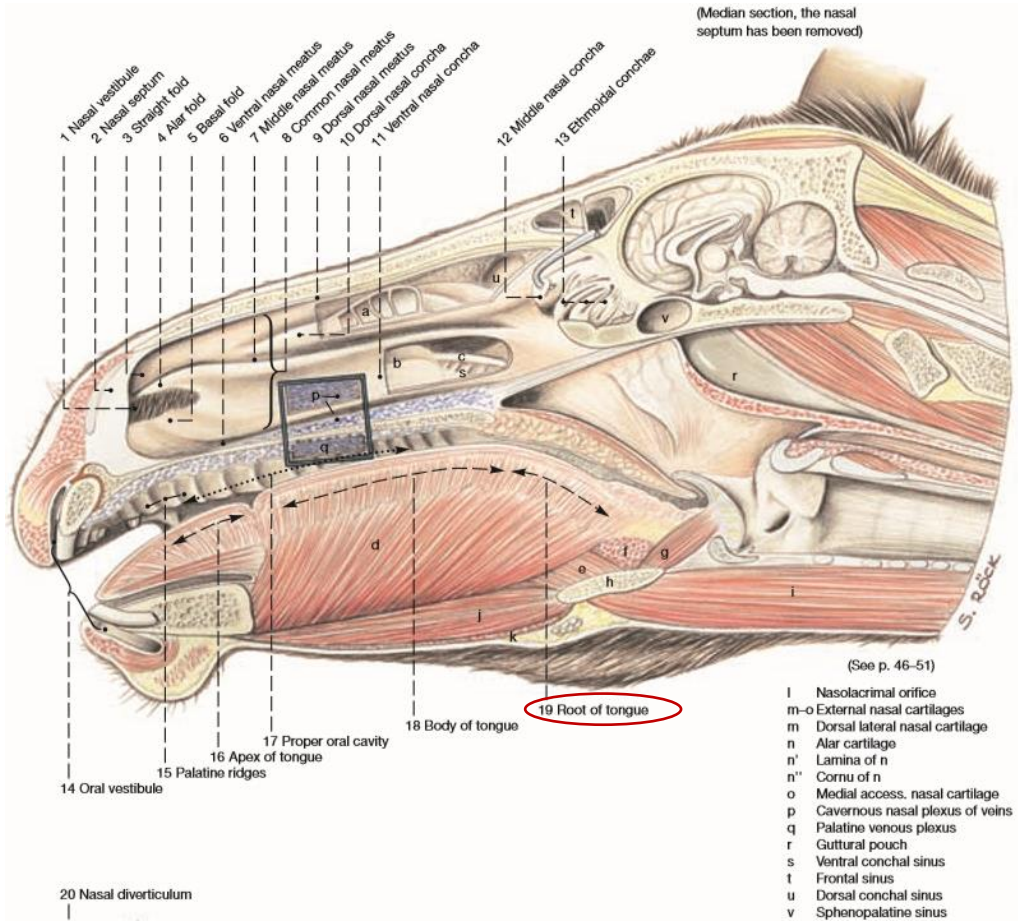


Fig 7-5. Tongue and pharynx of a cat, dorsal aspect (König, 1992).



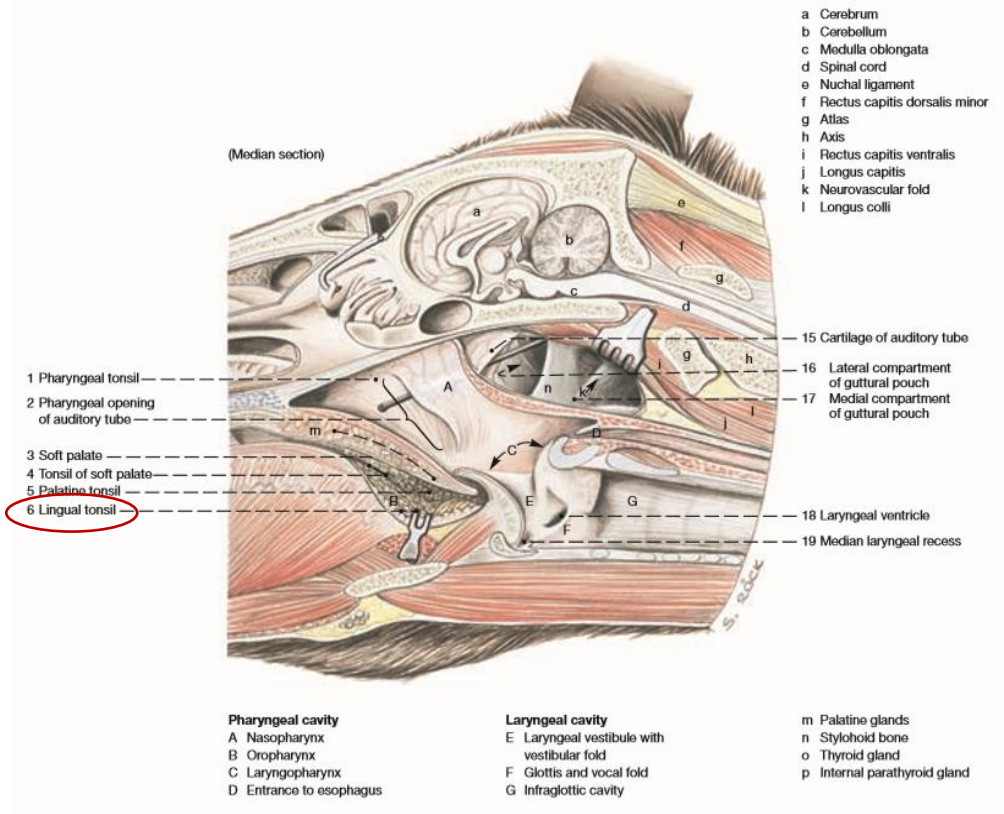
STRUCTURES OF TONGUE (LINGUA)

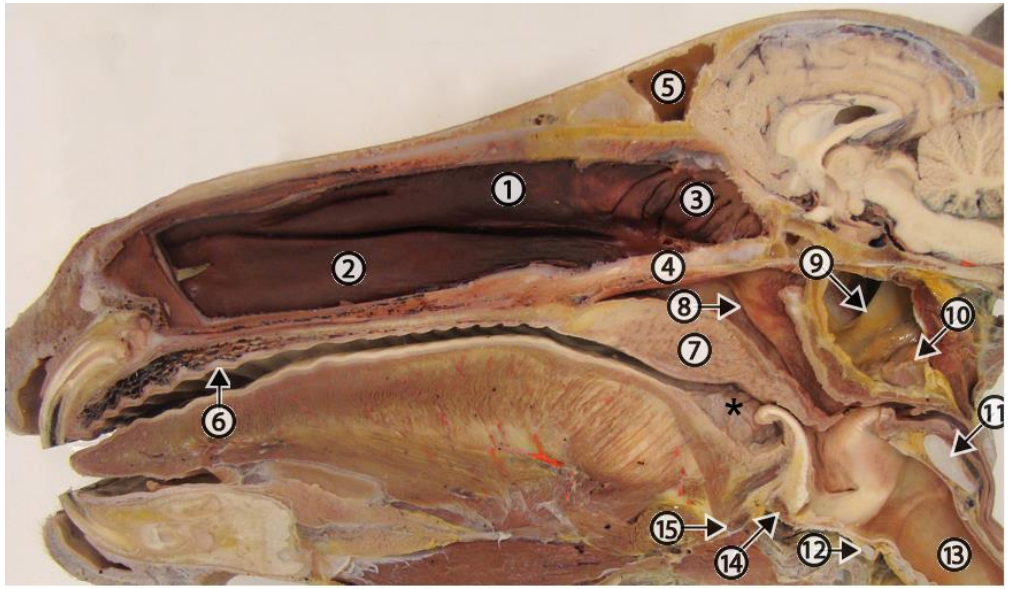
IV. RADIX LINGUAE:

TONSILLA LINGUALIS:

A. lymphatic follicles (folliculi linguales)

- in Bo., Eq.
- on the radix linguae





Equine split head after removal of the nasal septum to expose the nasal cavity. 1, dorsal concha; 2, ventral concha; 3 ethmoidal conchas; 4, vomer (bone); 5, frontal sinus; 6, hard palate; 7, soft palate; 8, orifice of the auditory tube on the lateral wall of the nasopharynx. At this place, an endoscope can be passed into the guttural pouch. 9, stylohyoid bone; 10, medial retropharyngeal lymph nodes adjacent to the ventral wall of the guttural pouch; 11, cricoid cartilage; 12, cricoid cartilage (ventral), 13, trachea; 14, ossified rostral edge of the thyroid cartilage; 15, basihyoid bone; asterisk, palatine tonsil.

NOTE: In this image the tip of the epiglottis is abnormally positioned ventral to the soft palate. The normal position is dorsal to the soft palate.

http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-2.html

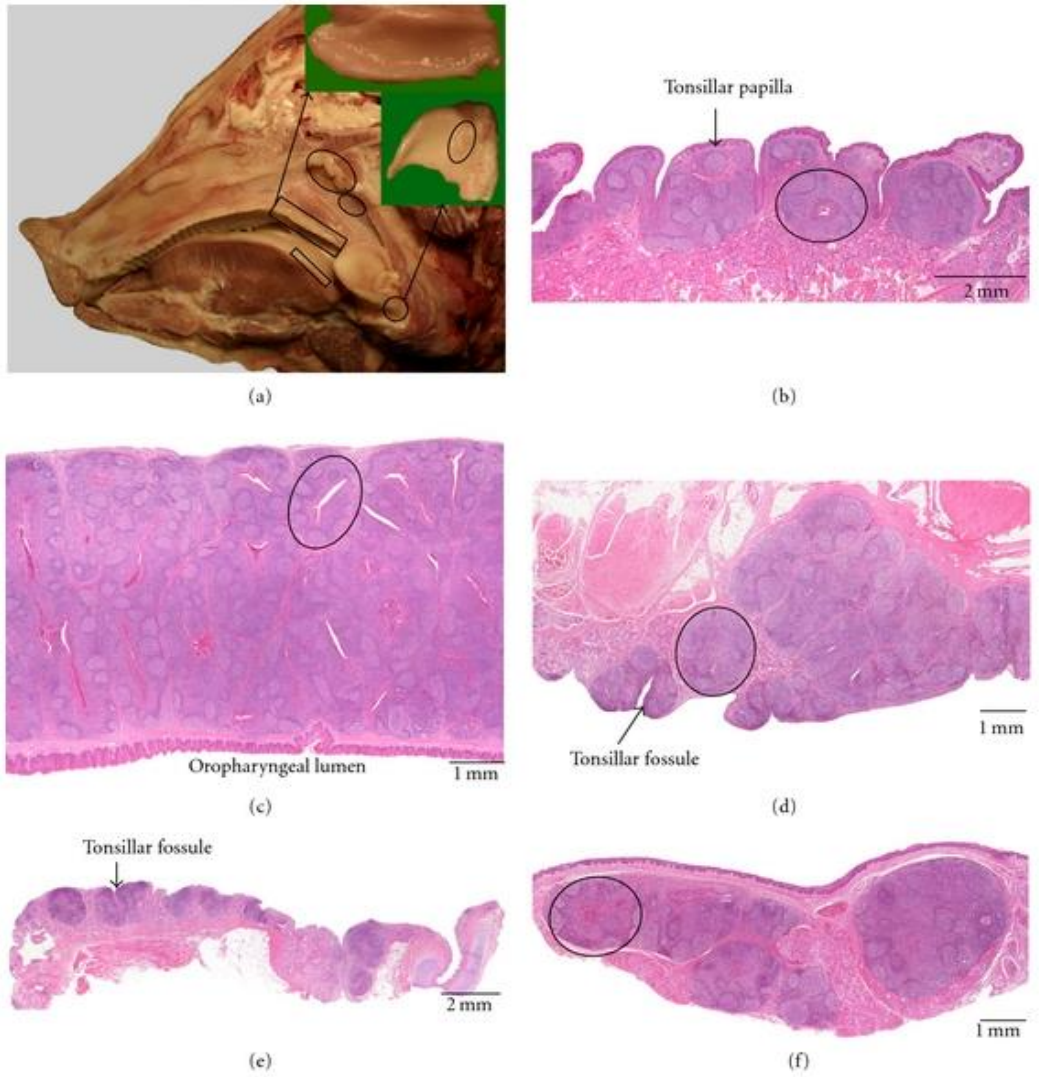
STRUCTURES OF TONGUE (LINGUA)

IV. RADIX LINGUAE:

TONSILLA LINGUALIS:

B. tonsillar papillae (papilla tonsillares):

- **in Su**
- **conical papillae**
- **contains lymphatic nodules**
- **on the radix linguae**



https://www.researchgate.net/figure/Anatomical-localization-and-histological-characteristics-of-the-porcine-tonsils-a_fig4_51598063

STRUCTURES OF TONGUE (LINGUA)

V. MARGO LINGUAE:

- **margin of the tongue**

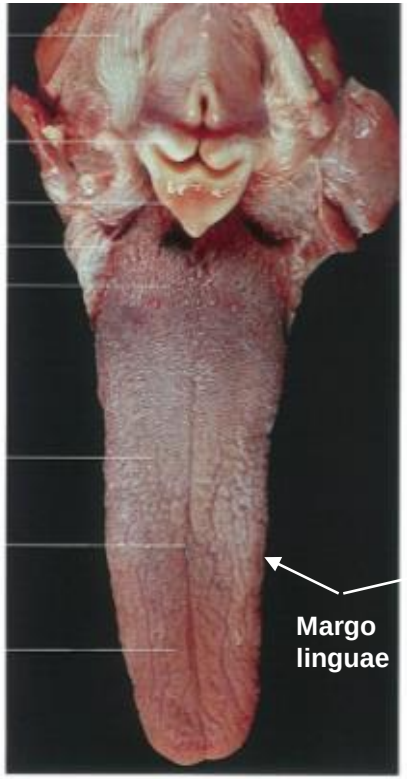


Fig 7-4. Tongue and pharynx of a dog, dorsal aspect.

Fig 7-5. Tongue and pharynx of a cat, dorsal aspect (König, 1992).

STRUCTURES OF TONGUE (LINGUA)

VI. FRENULUM LINGUAE:

- ventral median fold
- atteches the tongue to the floor of the mouth
- dubble in Su. and Bo.

L: lyssa, Lf: frenulum linguae
https://www.memorangapp.com/flashcards/186359/Anatomy%3A+Teeth+and+Mastication/

Lingual frenulum of the dog. By permission fromSack W, Wensing CJG, Dyce KM, Textbook ofVeterinary Anatomy, Saunders, 2002

https://medical-dictionary.thefreedictionary.com/lingual+frenulum

STRUCTURES OF TONGUE (LINGUA)

VII. DUCTUS THYROGLOSSUS:

- **epithelial tube**
- **evaginates from the root**
- **gives rise to the thyroid gland**
- **in foramen cecum**

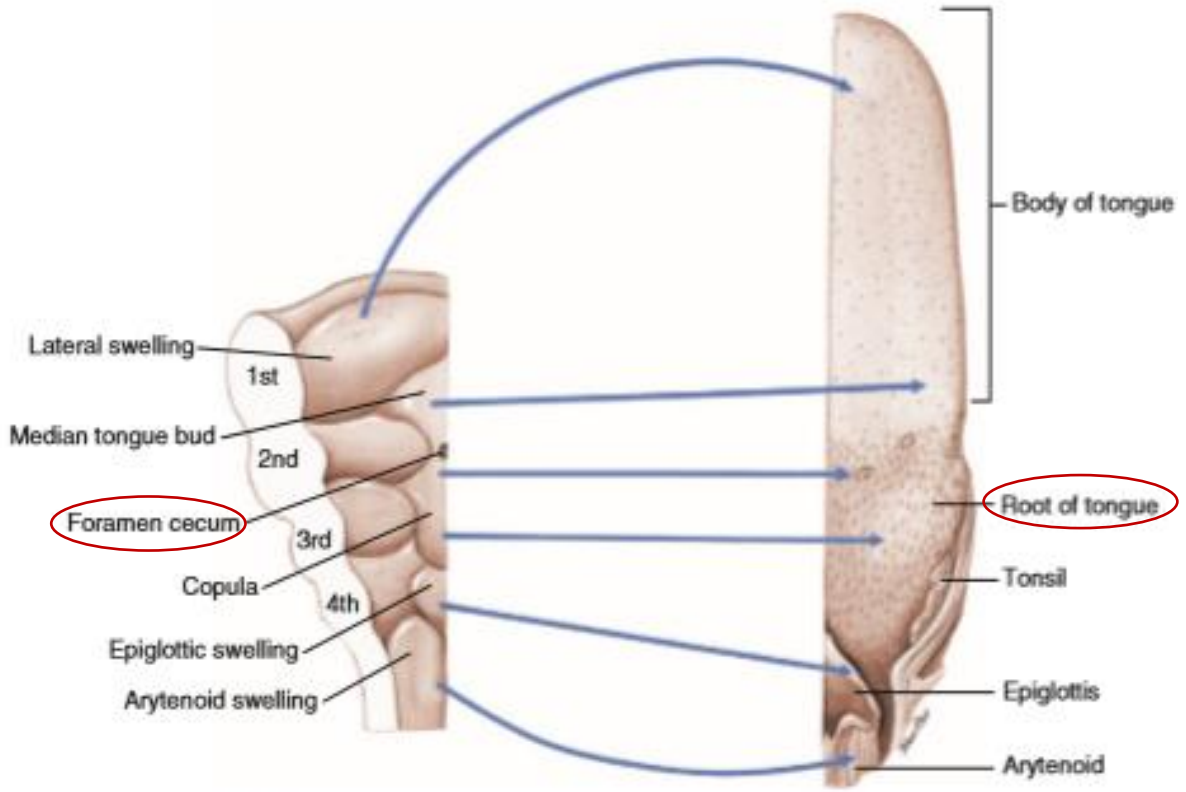
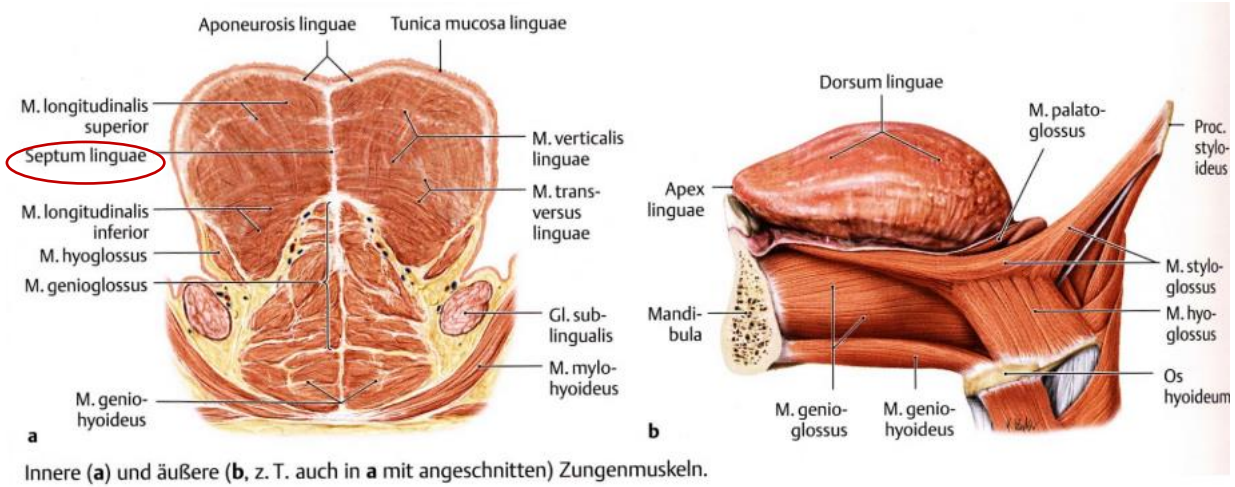


FIGURE 7-8 Parts of the tongue and their origin from structures on the floor of the pharynx.

STRUCTURES OF TONGUE (LINGUA)

VIII. SEPTUM LINGUAE:

- **sheet of connective tissue in the median plane**



Innere (**a**) und äußere (**b**, z. T. auch in **a** mit angeschnitten) Zungenmuskeln.

http://anatomy.szote.u-szeged.hu/Anatomy2/static/hu/referatumok/a_nyelv_fejlodese_es_beidegzese.pdf

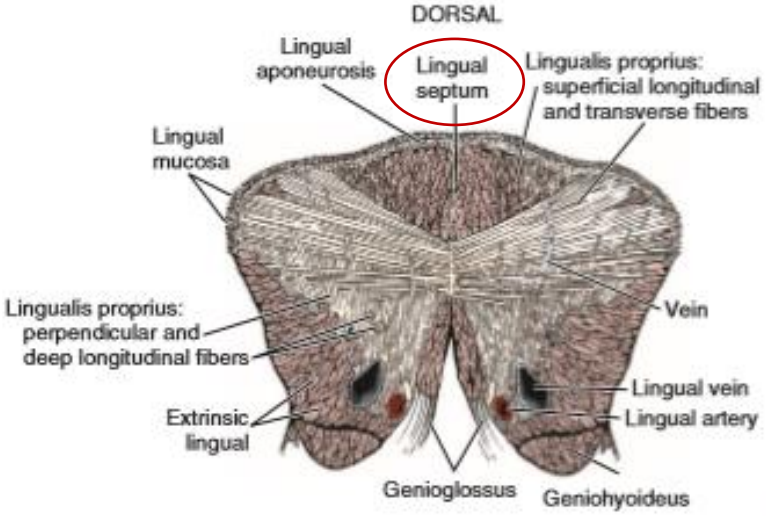


FIGURE 7-18 Transverse section through root of tongue.

STRUCTURES OF TONGUE (LINGUA)

IX. APONEUROSIS LINGUAE:

- **dense layer of connective tissue**
- **covers the musculature**
- **attechment of the muscles**

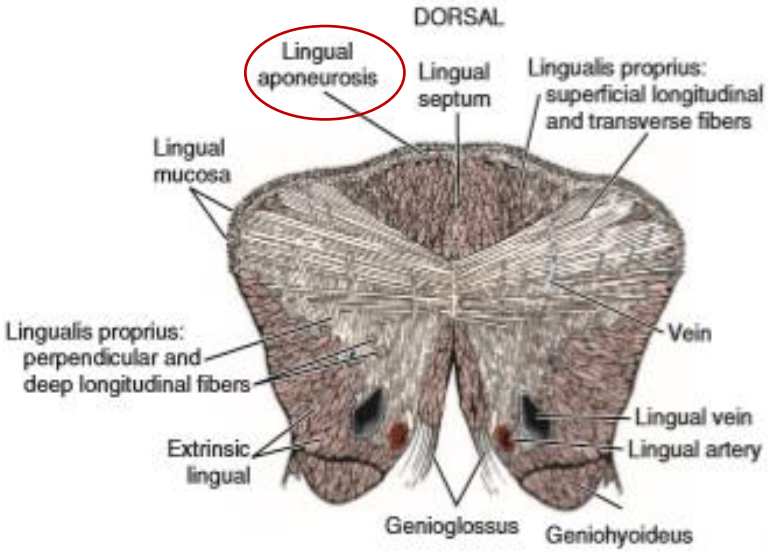
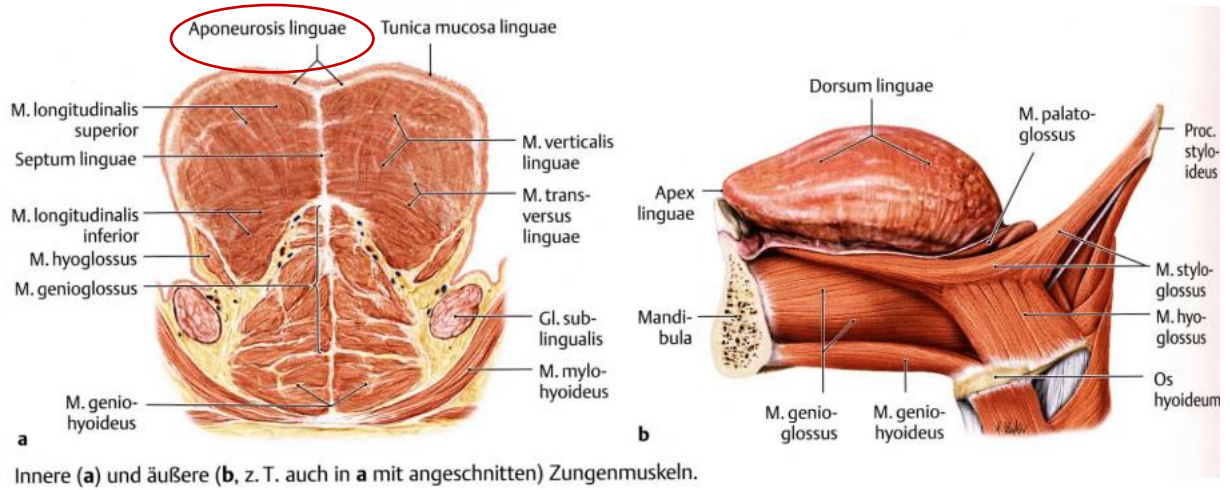


FIGURE 7-18 Transverse section through root of tongue.



Innere (**a**) und äußere (**b**, z. T. auch in **a** mit angeschnitten) Zungenmuskeln.

http://anatomy.szote.u-szeged.hu/Anatomy2/static/hu/referatumok/a_nyelv_fejlodese_es_beidegzese.pdf

MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

1. along the ventral and the lateral surface:

- is thin and delicate

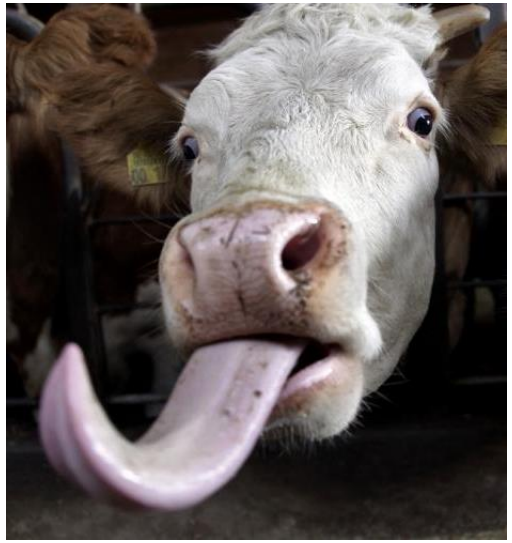
2. on the dorsum linguae:

- **thick**
- **cornification of the epithelium - especially in the ruminants and cat**

https://blog.petmeds.com/1800petmeds/why-do-cats-have-rough-tongues/

Fig 7-4. Tongue and pharynx of a dog, dorsal aspect.

Fig 7-5. Tongue and pharynx of a cat, dorsal aspect (König, 1992).



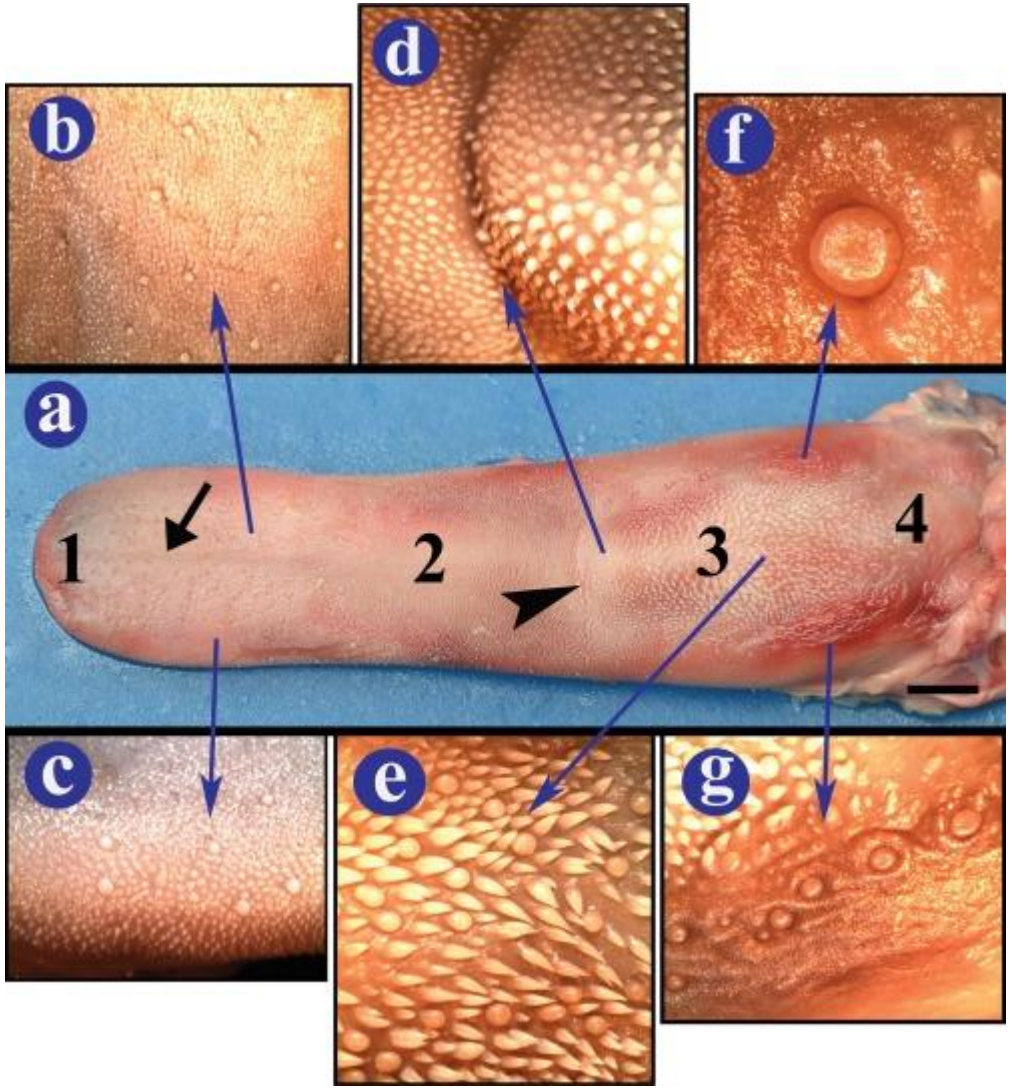
https://www.ibtimes.com.au/drunken-fun-leads-womans-private-parts-stuffed-cow-tongue-had-be-removed-surgically-1508831

MUCOUS MEMBRANE OF TONGUE

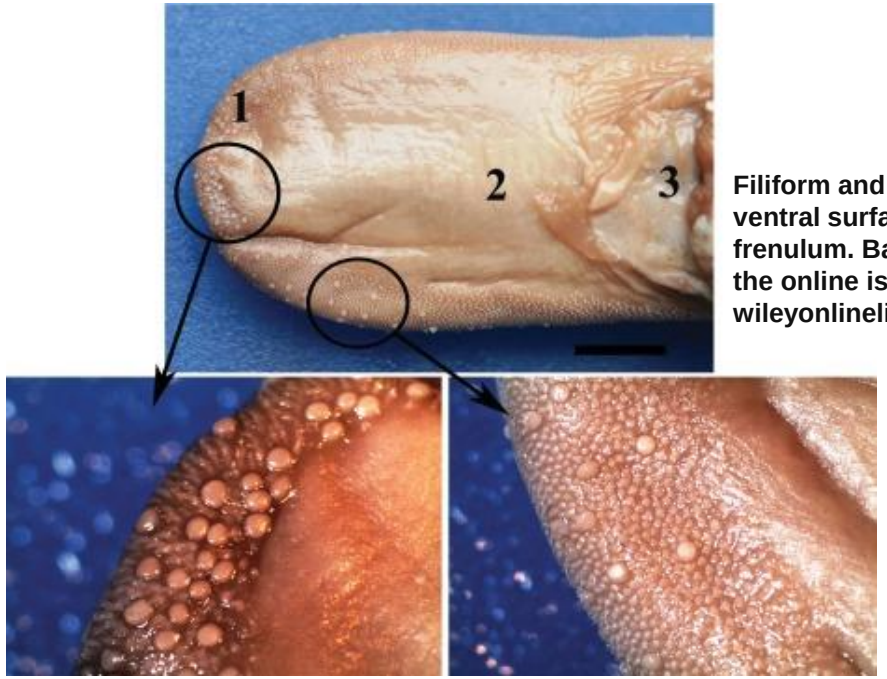
(TUNICA MUCOSA LINGUAE)

LINGUAL PAPILLAE (PAPILLA LINGUALES):

- **formed by mucous membrane**
- **on the dorsum linguae**



Anatomical view of the dorsal surface of the tongue (a). 1: apex, 2: body, 3: torus, 4: radix, arrow: Median sulcus, arrowhead: lingual fossa, (b–c) filiform and fungiform papillae of the lingual body, (d–e) conical and fungiform papillae of the lingual torus, (f–g) circumvallate papillae. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]



Filiform and fungiform papillae (in circles) on the ventral surface of the tongue. 1: apex, 2: body, 3: frenulum. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]

https://www.researchgate.net/figure/Anatomical-view-of-the-dorsal-surface-of-the-tongue-a-1-apex-2-body-3-torus-4_fig8_249648373

MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

LINGUAL PAPILLAE (PAPILLA LINGUALES):

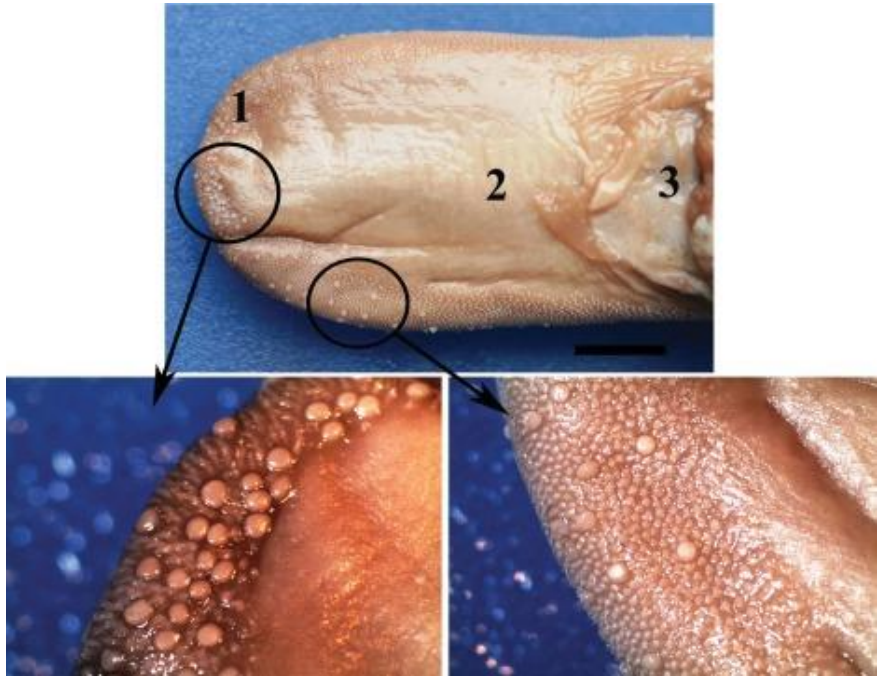
I. MECHANICAL PAPILLAE:

a. Filiform papillae (Papillae filiformis)

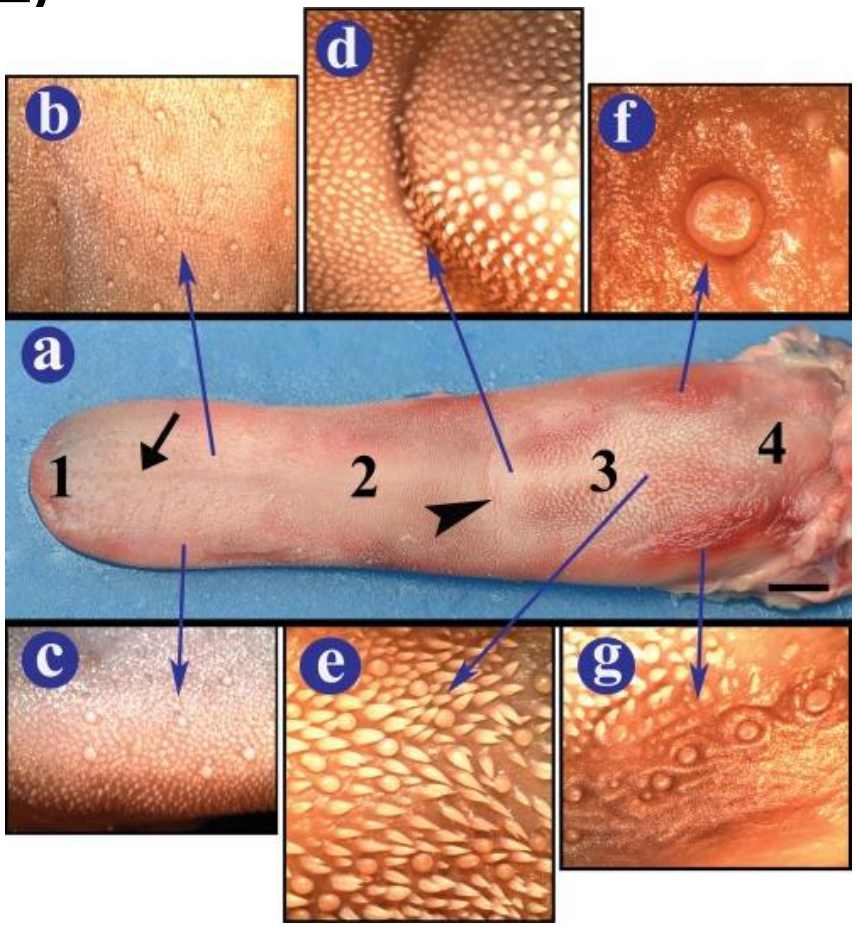
b. Conical papillae (Papillae conicae)

c. Lentiform papillae (Papillae lentiformis)

- **mechanical functions**



Filiform and fungiform papillae (in circles) on the ventral surface of the tongue. 1: apex, 2: body, 3: frenulum. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]



Anatomical view of the dorsal surface of the tongue (a). 1: apex, 2: body, 3: torus, 4: radix, arrow: Median sulcus, arrowhead: lingual fossa, (b–c) filiform and fungiform papillae of the lingual body, (d–e) conical and fungiform papillae of the lingual torus, (f–g) circumvallate papillae. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]

MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

LINGUAL PAPILLAE (PAPILLA LINGUALES):

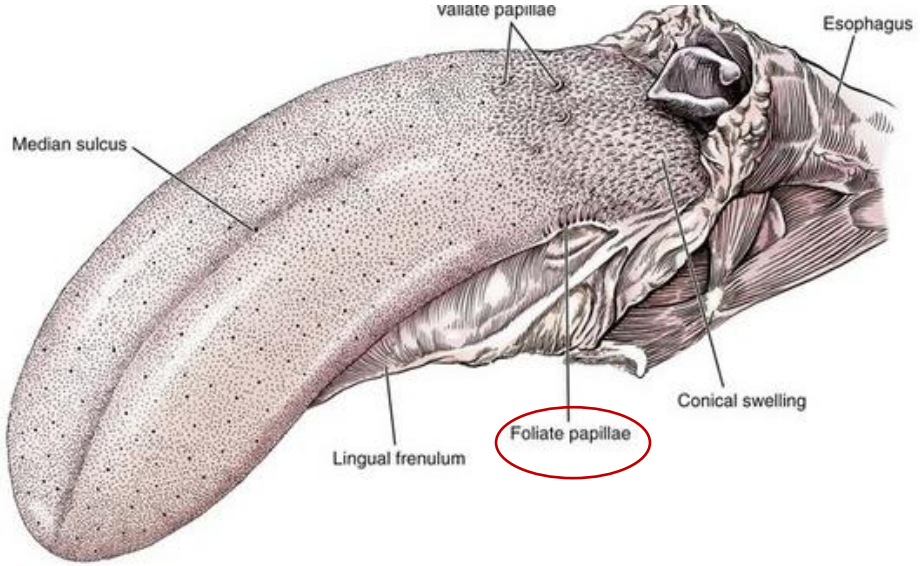
II. GUSTATORY PAPILLAE:

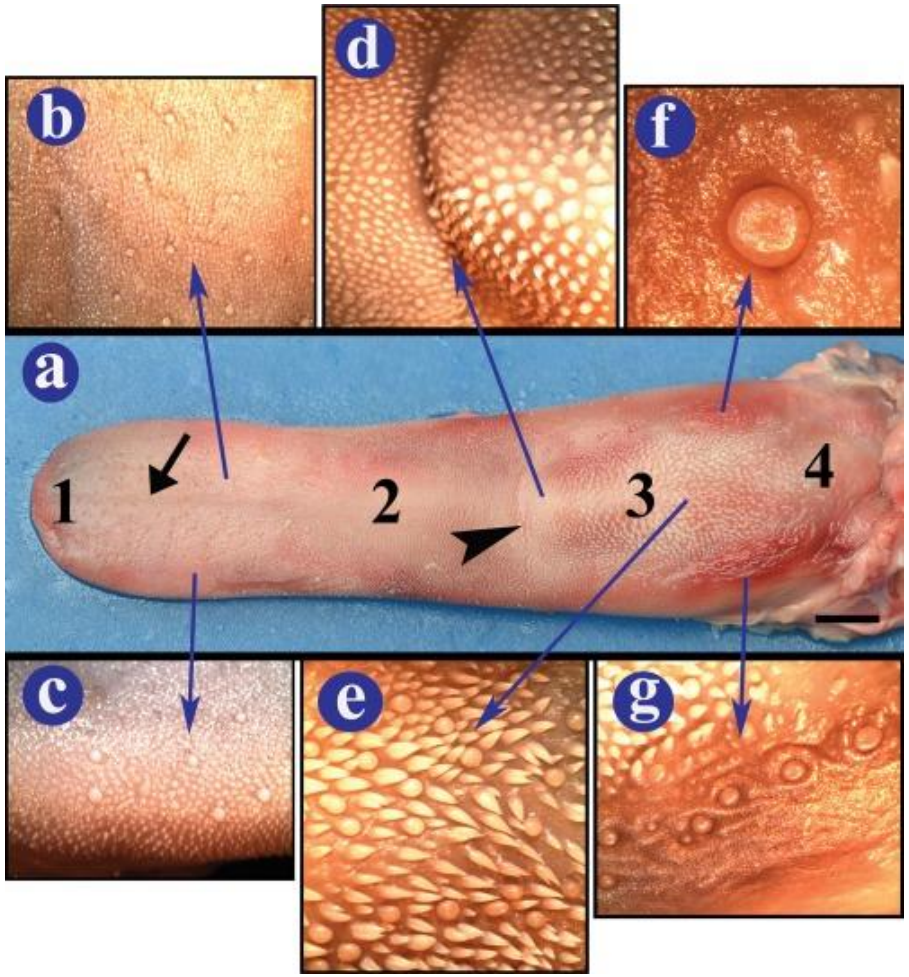
a. Fungiform papillae (Papilla fungiformis)

b. Foliate papillae (Papillae foliate)

c. Vallate papillae (Papillae vallate seu circumvallatea)

- gustatory function





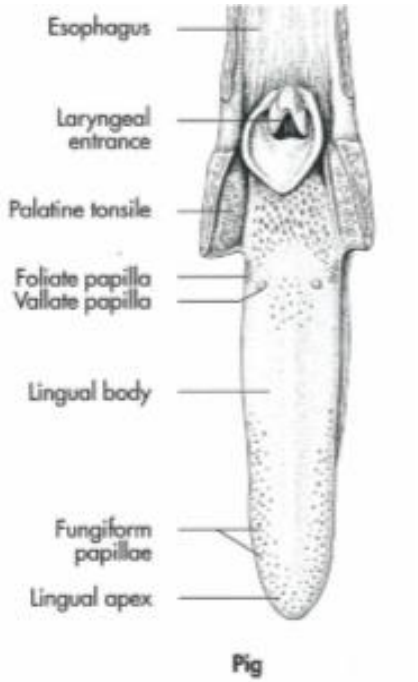
Anatomical view of the dorsal surface of the tongue (a). 1: apex, 2: body, 3: torus, 4: radix, arrow: Median sulcus, arrowhead: lingual fossa, (b–c) filiform and fungiform papillae of the lingual body, (d–e) conical and fungiform papillae of the lingual torus, (f–g) circumvallate papillae. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]

MUCOUS MEMBRANE OF TONGUE

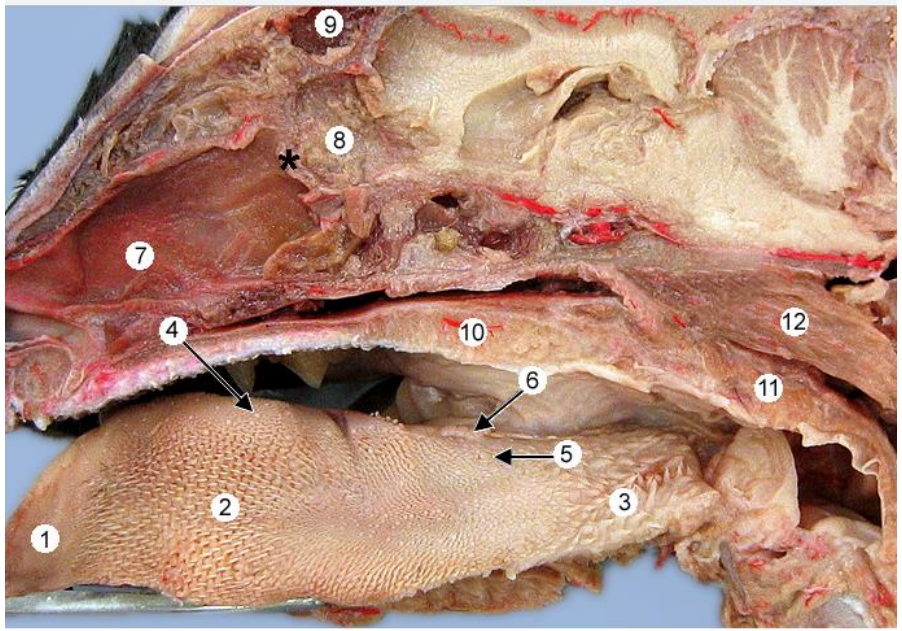
(TUNICA MUCOSA LINGUAE)

FILIFORM PAPILLAE (PAPILLA FILIFORMIS):

- **thread – like**
- **heavily cornified in the cat and ox**
- **cover the dorsum linguae**
- **cover the root of the tongue in carnivores and pig**



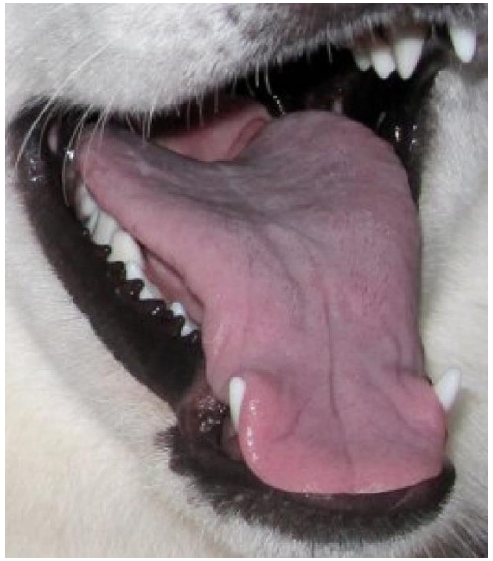
Pig

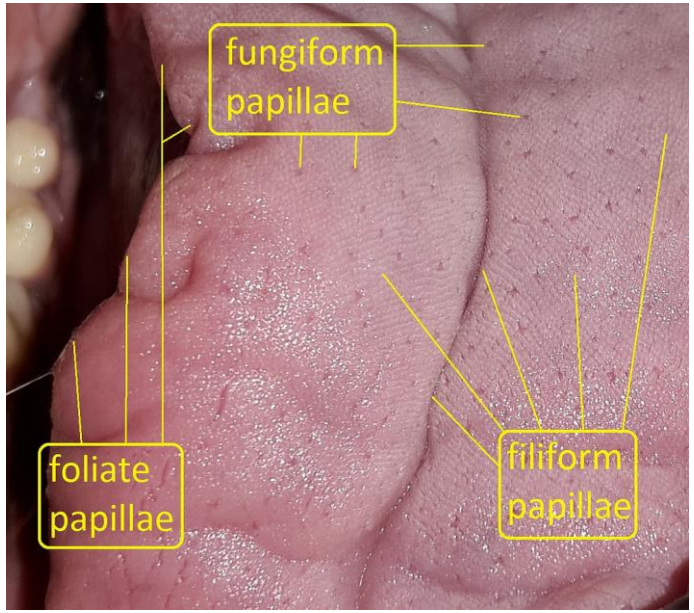


Bisected cat head with the tongue rotated to show its dorsal surface. Tongue papillae that lack taste buds include: numerous small **filiform** papillae (1), large **keratinized spikes** (2) (that are peculiar to the cat), and large **conical** papillae (3) found at the root of the tongue. Tongue papillae that have taste buds include: rounded **fungiform** papillae (4) scattered on the tongue surface, typically four **vallate** papillae (5) found near the root of the tongue, and **folliate** papillae (6) along the lateral margin of this cat tongue.

Also notice: nasal septum (7), olfactory bulb (8) within the cribform plate (asterisk), frontal sinus (9).

http://vanat.cvm.umn.edu/carnLabs/Lab22/Img22-6.html





papillae of dog's tongue by Dog's tongue

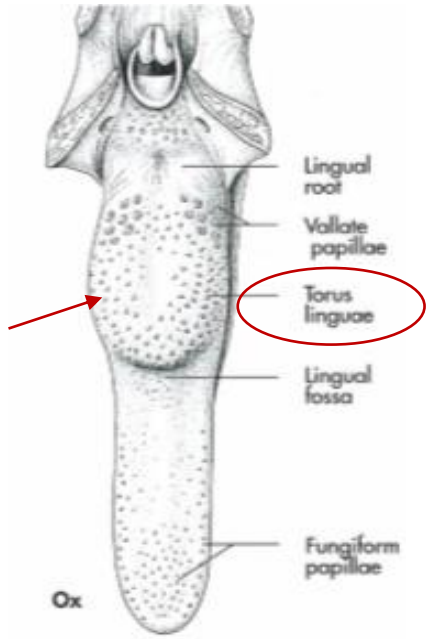
https://www.flickr.com/photos/138691495@N06/24592377623

MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

CONICAL PAPILLAE (PAPILLA CONICAE):

- **scattered among the filiform papillae of the ox, goat, sheep especially on the torus linguae**



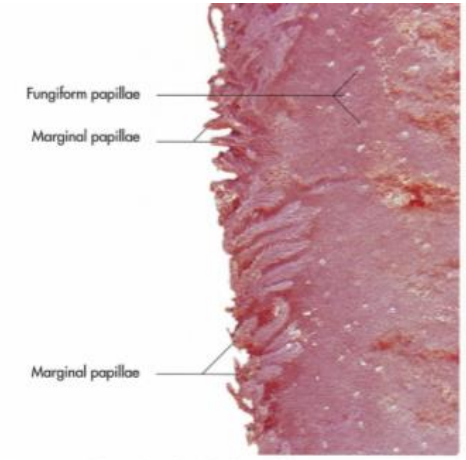
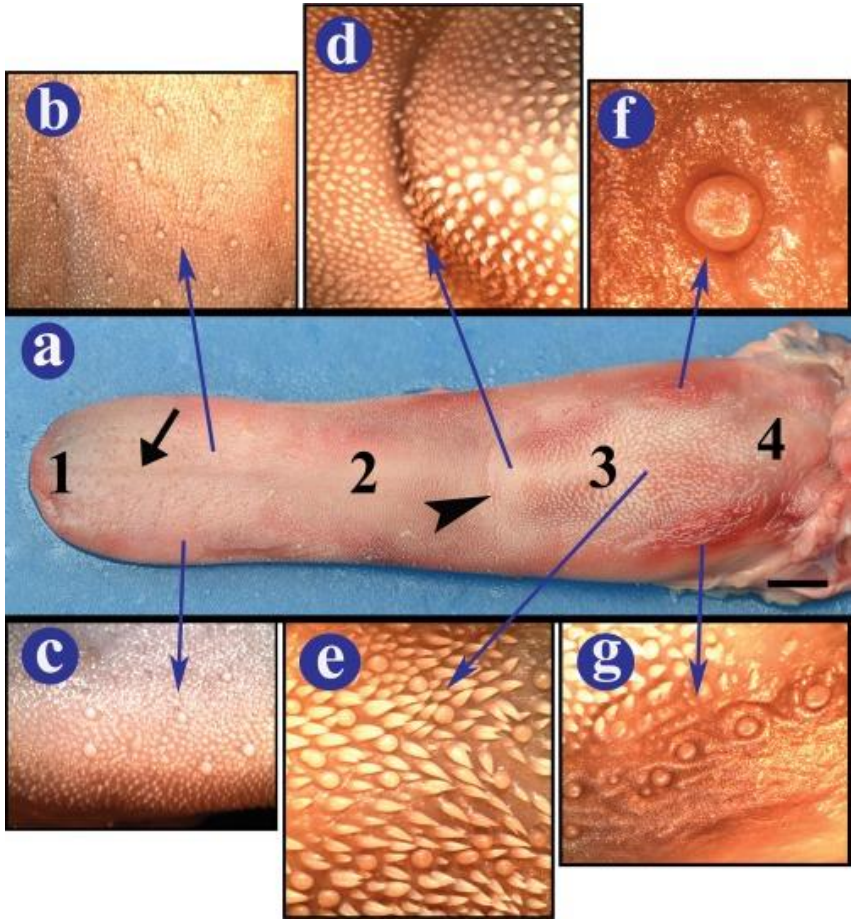


Fig 7-8. Papillae on the dorsal surface of the tongue in a piglet.

Fig 7-9. Conical papillae of an ox as an example for mechanical papillae.



Anatomical view of the dorsal surface of the tongue (a). 1: apex, 2: body, 3: torus, 4: radix, arrow: Median sulcus, arrowhead: lingual fossa, (b–c) filiform and fungiform papillae of the lingual body, (d–e) conical and fungiform papillae of the lingual torus, (f–g) circumvallate papillae. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]

MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

LENTIFORM PAPILLAE (PAPILLA LENTIFORMIS):

- **lens - shaped**
- **scattered among the filiform papillae of the ox, goat, sheep especially on the torus linguae**

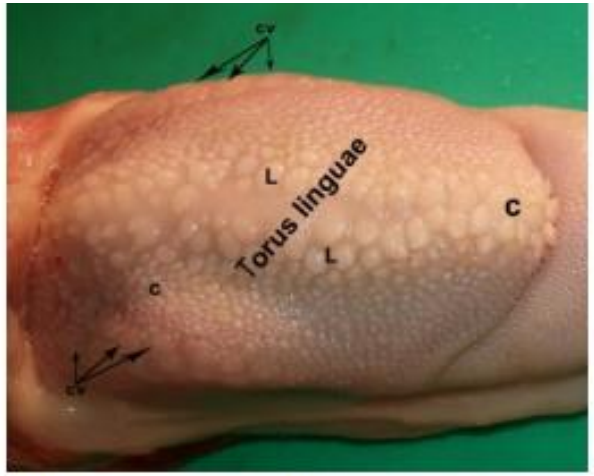
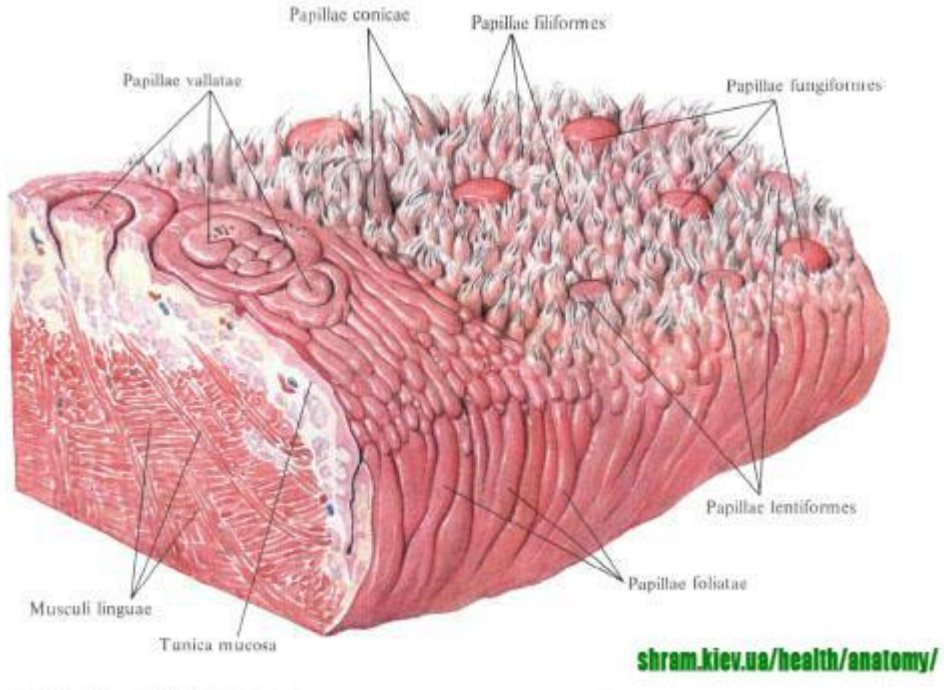
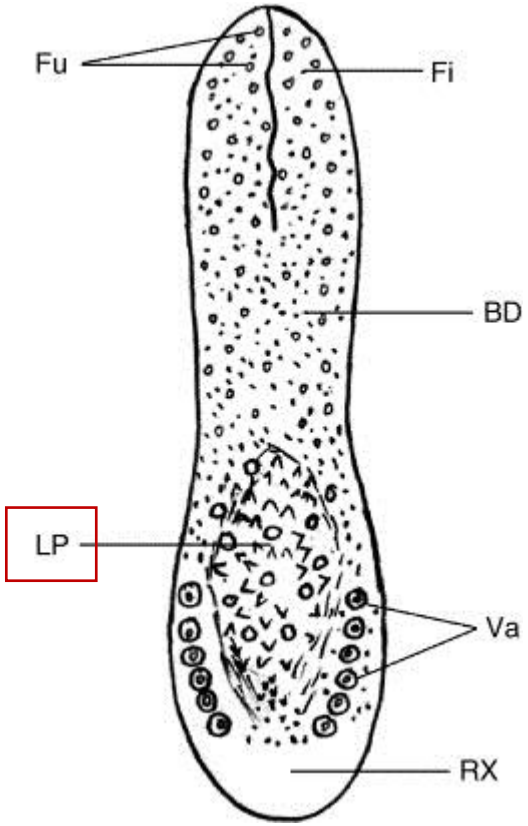


Fig.3: Photograph of dorsal surface of the tongue in the goat, show: Torus linguae CV-vallate papillae, L-lenticular papillae , C-conical papillae.

http://www.journalijar.com/uploads/704_IJAR-3512.pdf



https://cobusvermeulen.wordpress.com/2016/05/08/budding-tastes/



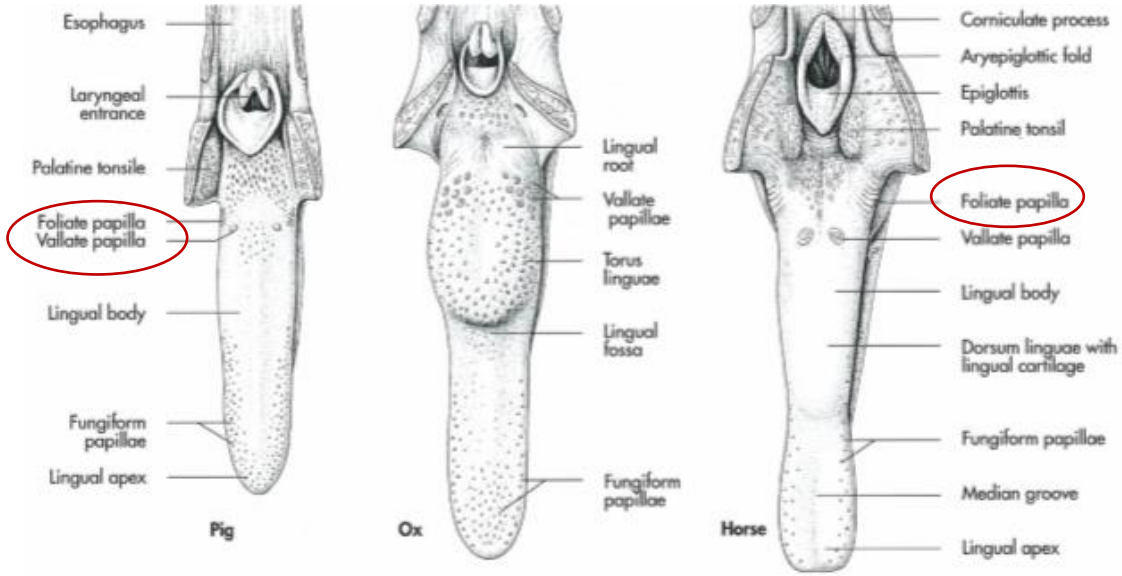
https://www.sciencedirect.com/science/article/abs/pii/S0940960206000641

MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

FOLIATE PAPILLAE (PAPILLA FOLIATAE):

- **on the border of the tongue**
- **rostral to the palatoglossal arch**
- **bear taste buds**
- **absent in Ru**



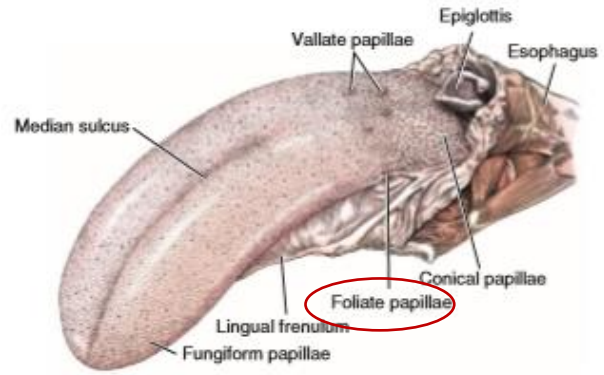


FIGURE 7-9 The tongue, dorsal aspect: large black dots represent fungiform papillae; finer dots represent filiform papillae.

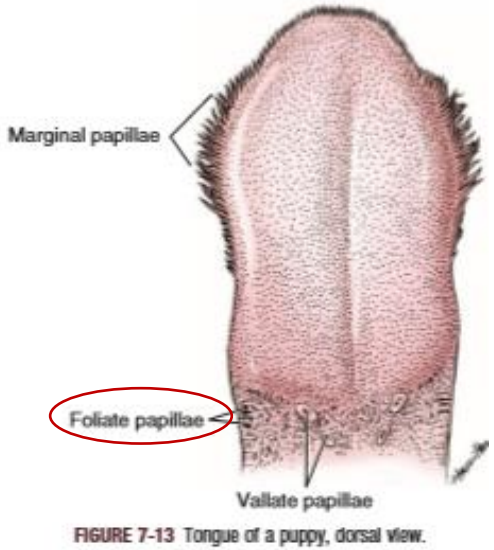
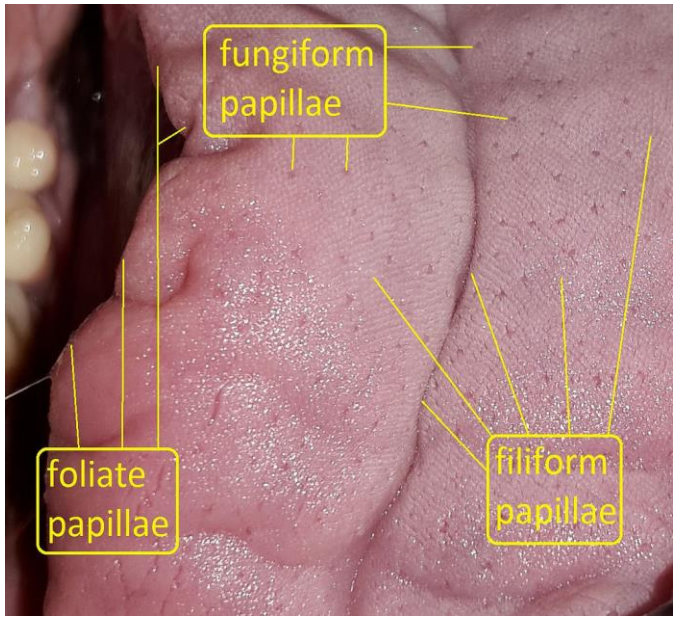


FIGURE 7-13 Tongue of a puppy, dorsal view.



papillae of dog's tongue by Dog's tongue

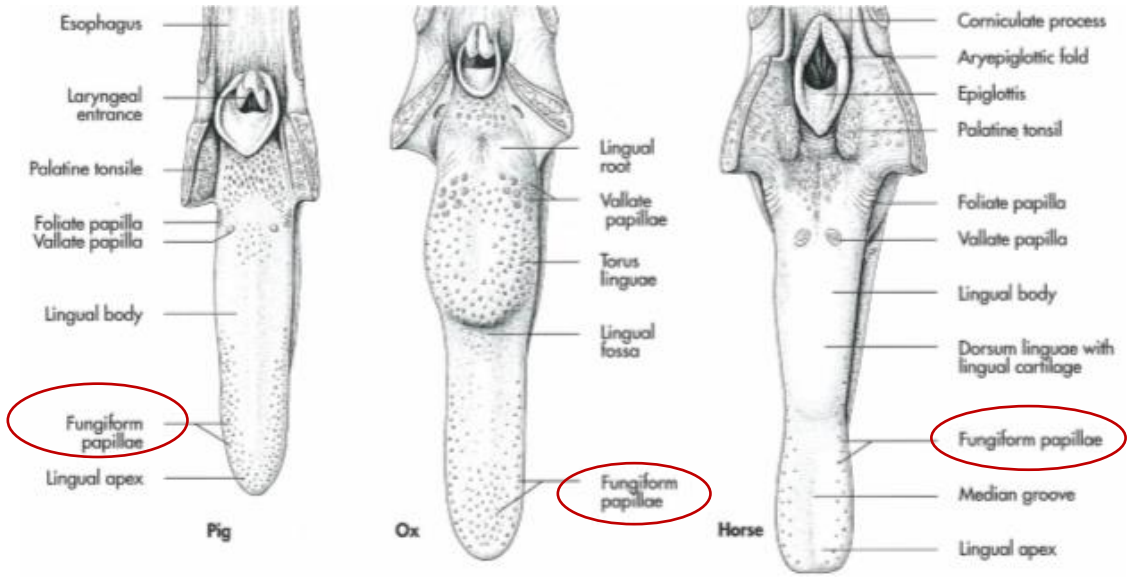
https://www.flickr.com/photos/138691495@N06/24592377623

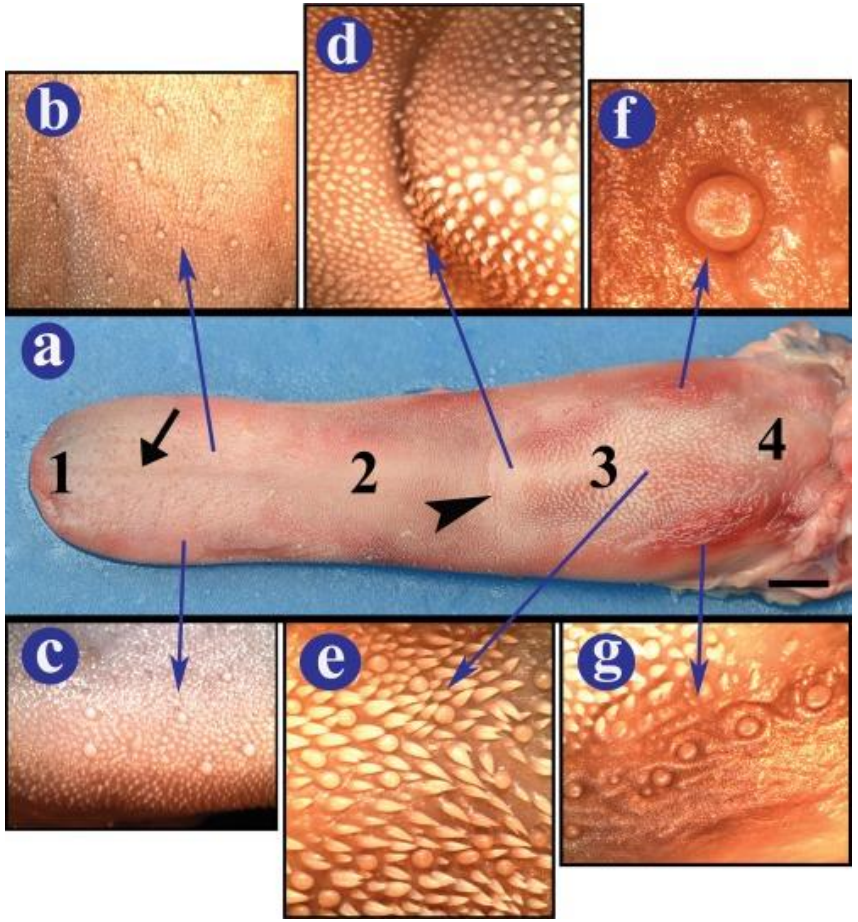
MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

FUNGIFORM PAPILLAE (PAPILLA FUNGIFORMIS):

- **mushroom – shaped**
- **bear taste - buds**
- **on the dorsum linguae**
- **on the lateral and ventral surface of the tongue**





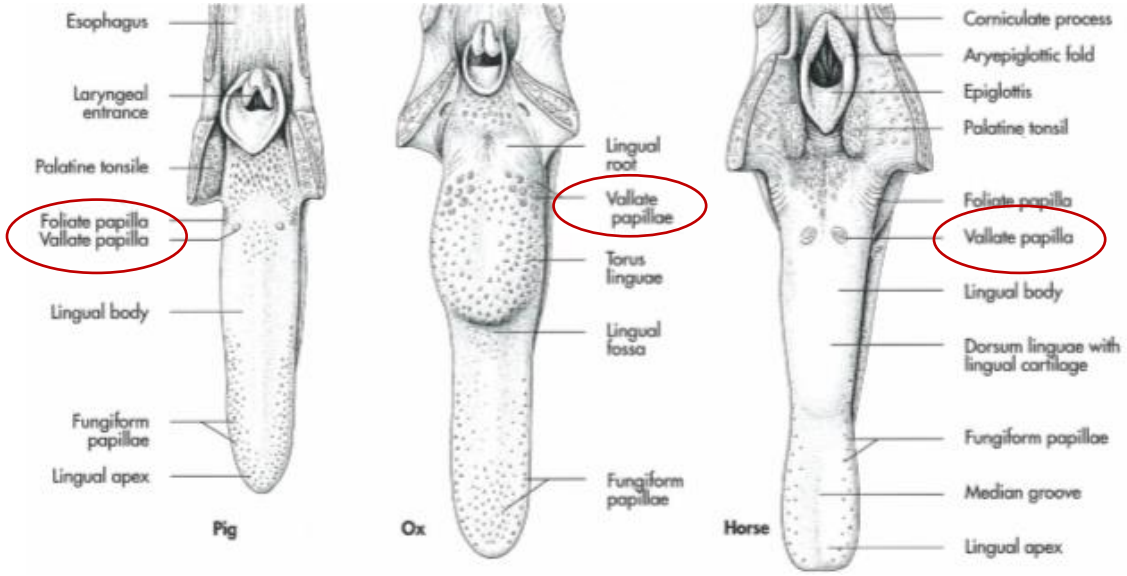
Anatomical view of the dorsal surface of the tongue (a). 1: apex, 2: body, 3: torus, 4: radix, arrow: Median sulcus, arrowhead: lingual fossa, (b–c) filiform and fungiform papillae of the lingual body, (d–e) conical and fungiform papillae of the lingual torus, (f–g) circumvallate papillae. Bar: 1 cm. [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]

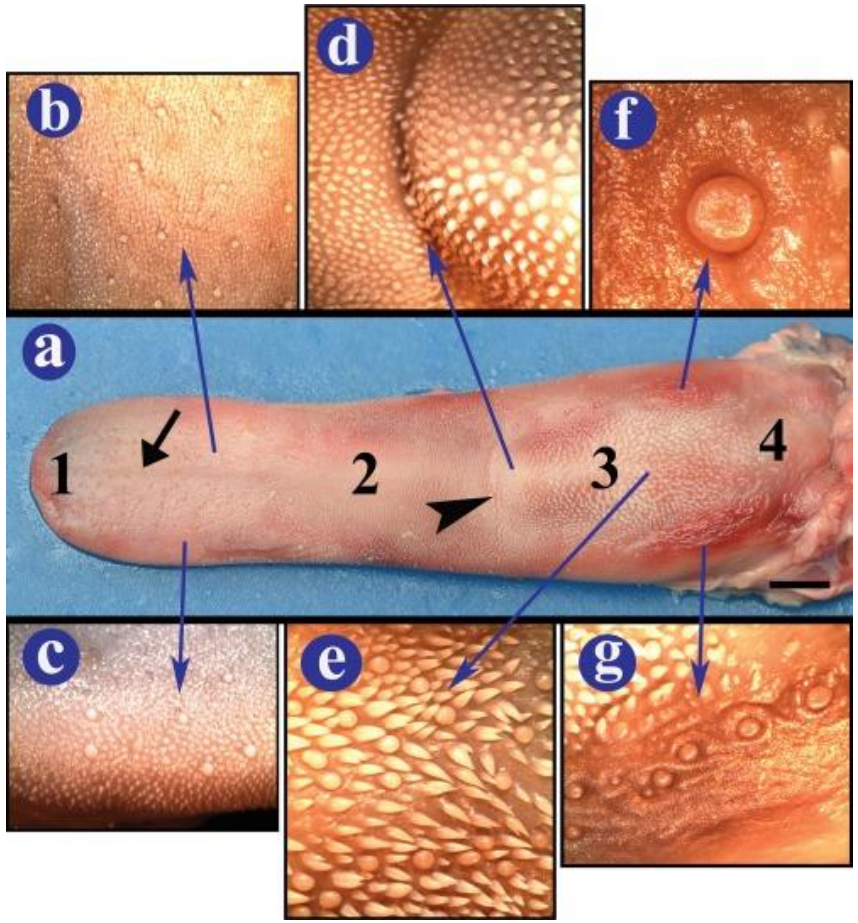
MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

VALLATE PAPILLAE (PAPILLA VALLATAE):

- **flat papilla**
- **surrounded by a circular groove**
- **bear taste buds**
- **on the dorsum linguae just rostral to the root of the tongue**





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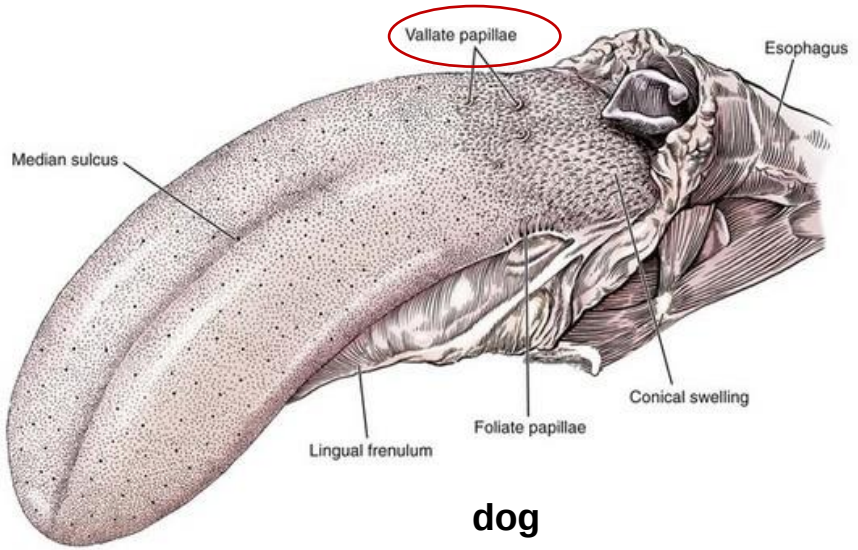
MUCOUS MEMBRANE OF TONGUE

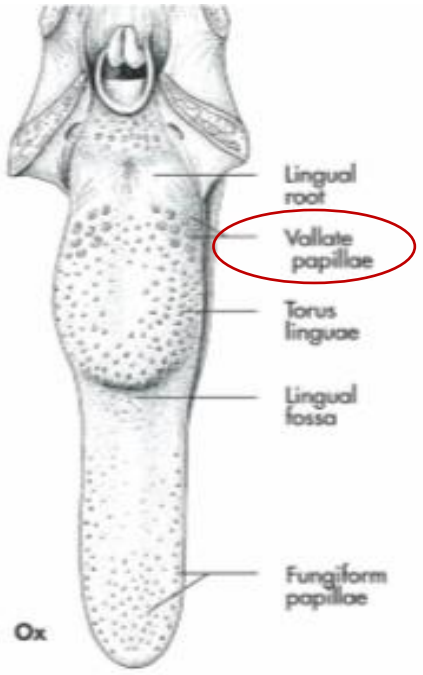
(TUNICA MUCOSA LINGUAE)

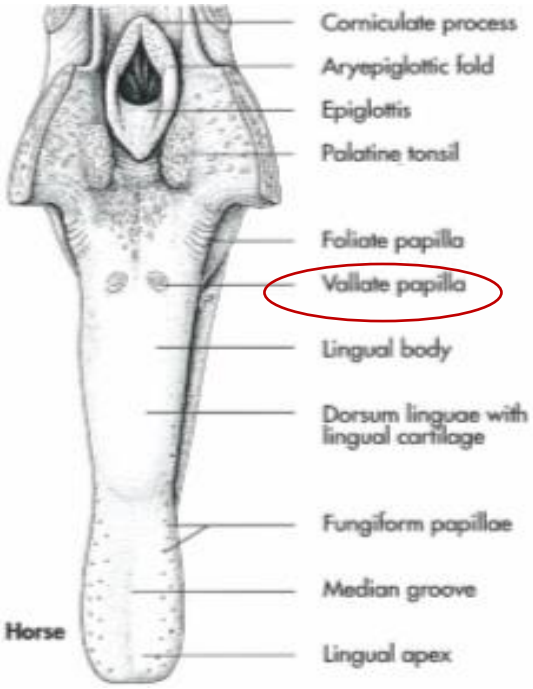
VALLATE PAPILLAE (PAPILLA VALLATAE):

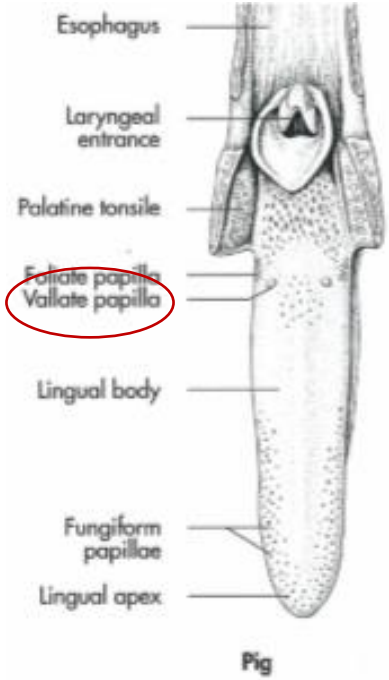
1. **the pig and horses – only one pair**
2. **the carnivores have 2 – 3 papillae on each side**
3. **the ox has 8 – 17 papillae**



dog





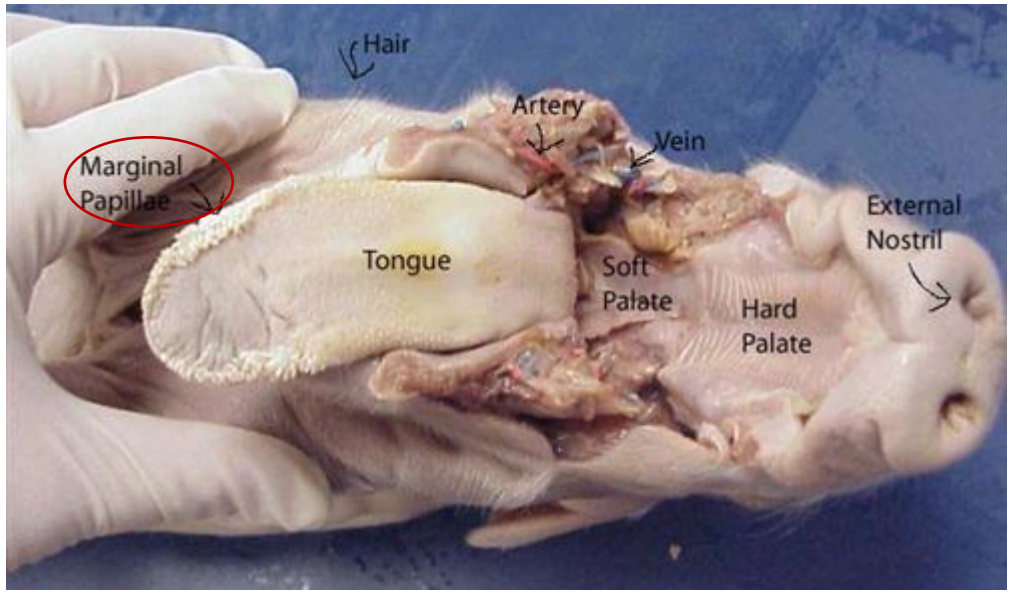


MUCOUS MEMBRANE OF TONGUE

(TUNICA MUCOSA LINGUAE)

MARGINAL PAPILLA (PAPILLA MARGINALIS):

- **present in newborn Car. and Su.**



https://quizlet.com/292807197/pig-anatomy-flash-cards/

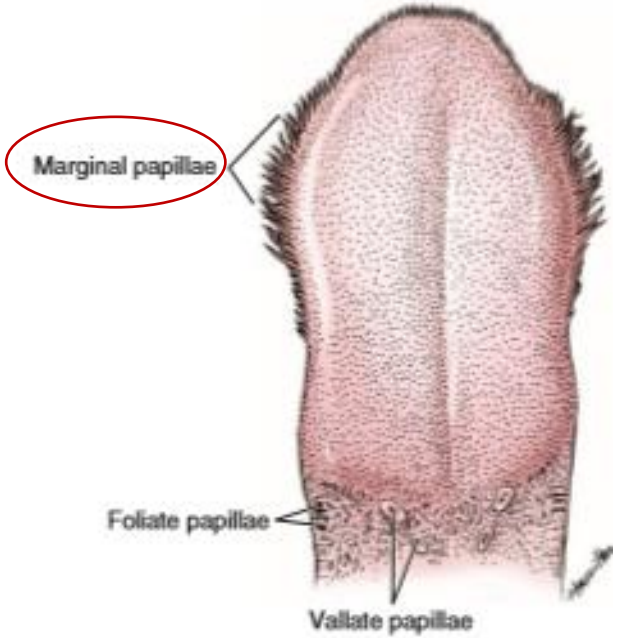


FIGURE 7-13 Tongue of a puppy, dorsal view.

MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

divided into:

I. INTRINSIC LINGUAL MUSCLE PROPER (M. LINGUALIS PROPRIUS)

II. EXTRINSIC MUSCLES

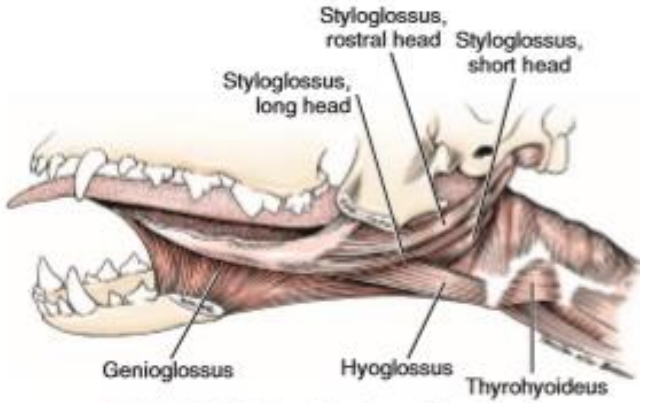


FIGURE 7-15 Muscles of the tongue, lateral aspect.

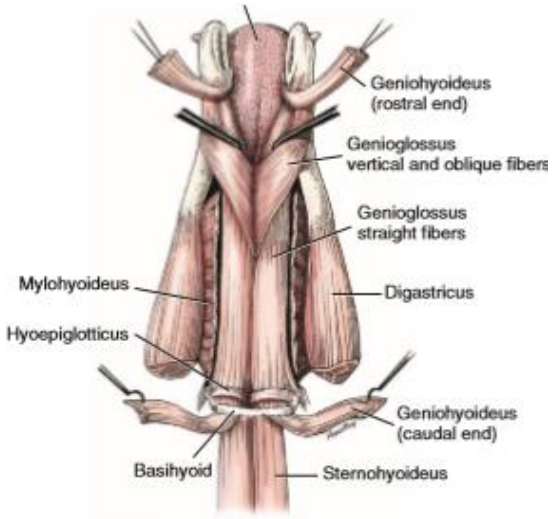


FIGURE 7-16 Muscles of the intermandibular space, ventral aspect.

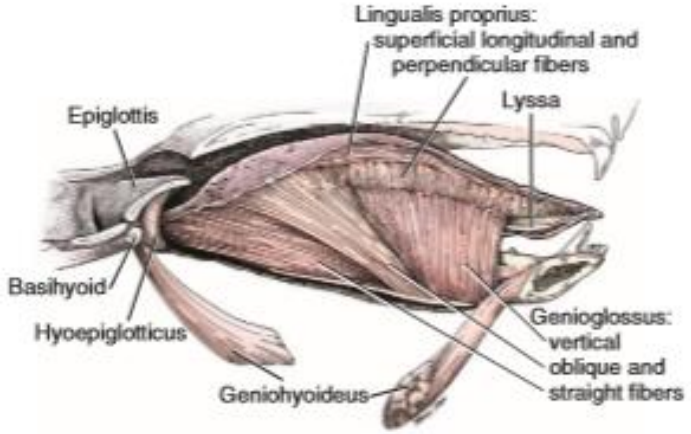
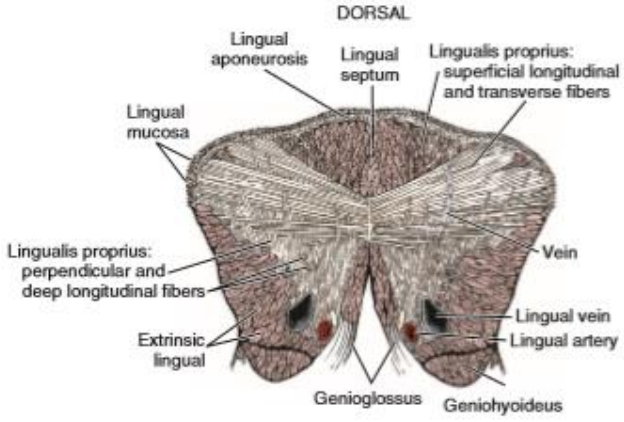


FIGURE 7-17 Median section through the tongue.



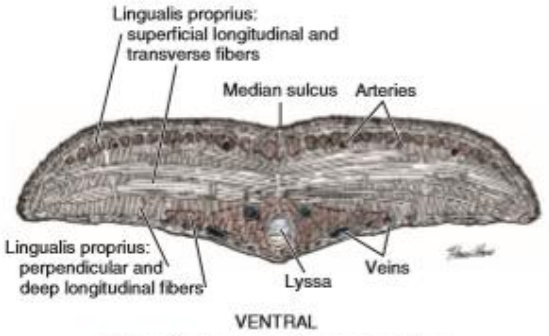


FIGURE 7-19 Transverse section near apex of tongue.

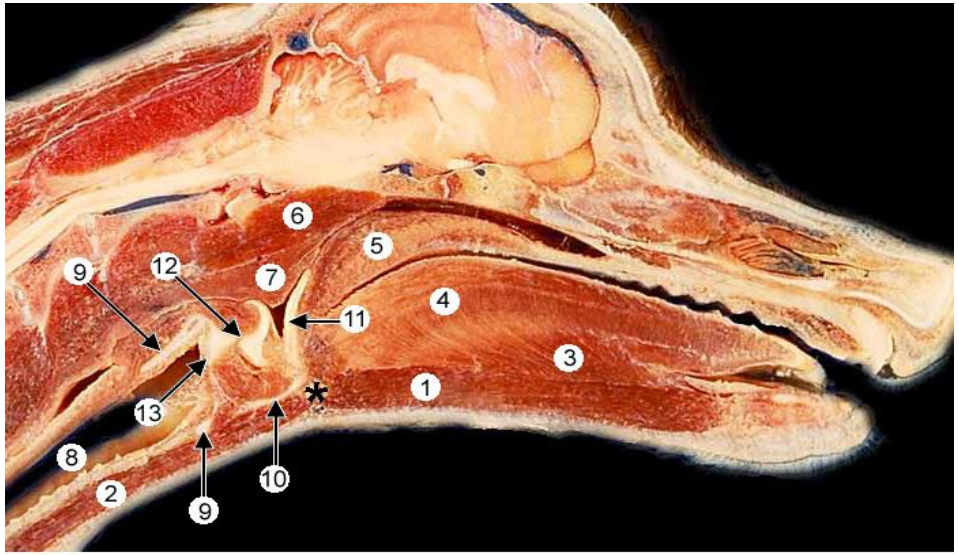
MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

INTRINSIC LINGUAL MUSCLE PROPER (M. LINGUALIS PROPRIUS):

- **forms the bulk of the tongue**
- **consists of muscle fibers, which not atteched to the skeleton**
- **muscle fibers run in:**

1. **longitudinal**
2. **perpendicular**
3. **transverse directions**



Sagittal section through a canine head showing the larynx, tongue and two muscles that anchor the hyoid apparatus. The basihyoid bone (asterisk) is anchored rostrally by the **geniohyoidues m.** (1) and caudally by the **sternohyoideus m.** (2). The **genioglossus m.** (3) and intrinsic tongue musculature (4) are evident ventral to the soft palate (5). Caudal to the palate the longus capitis m. (6) and a pharyngeal m. (hyopharyngeus) (7) can be seen.

Notice the trachea (8) and laryngeal cartilages: **cricoid cartilage** (9), **thyroid cartilage** (10), **epiglottic cartilage** (11), and the right **arytenoid cartilage** (12), also its vocal process (13).

http://vanat.cvm.umn.edu/carnLabs/Lab23/Img23-11.html

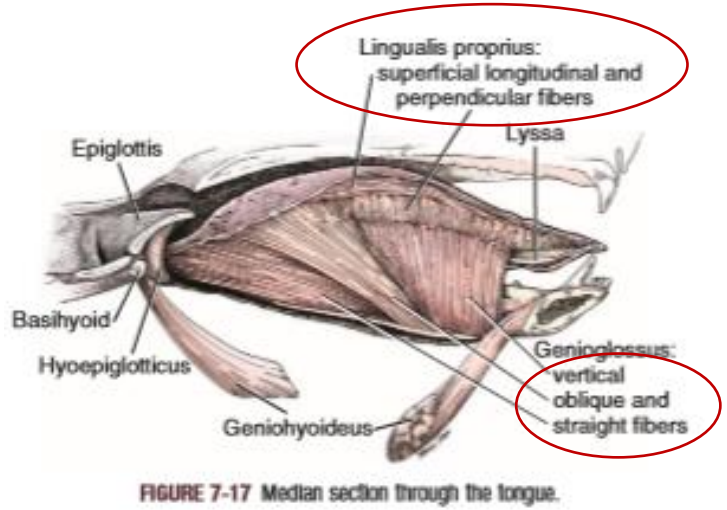
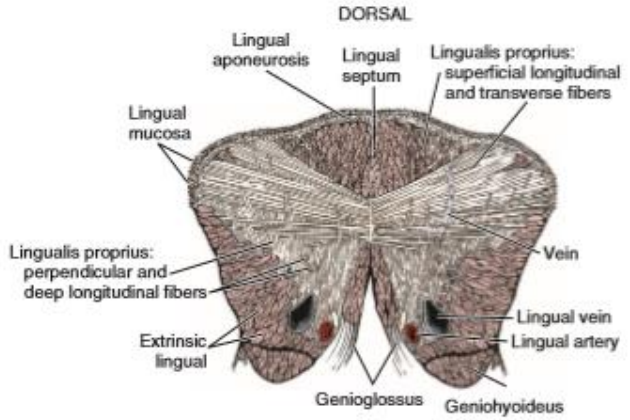


FIGURE 7-17 Median section through the tongue.



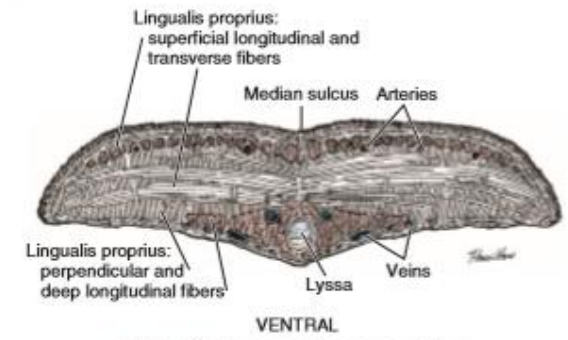


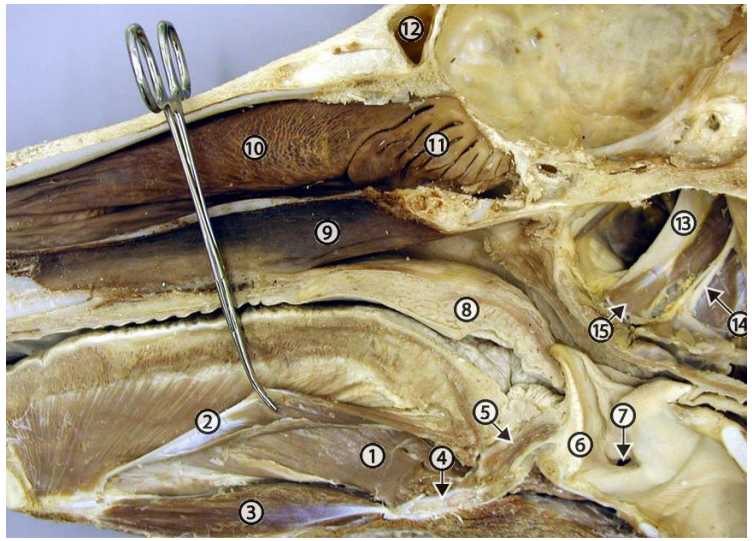
FIGURE 7-19 Transverse section near apex of tongue.

MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

EXTRINSIC MUSCLES:

- **originte from the skeleton**
- **enter the tongue behind and below**



Exposure of the hyoglossus muscle (1) by partial reflection of the geniglossus m. (2). 3, geniohyoideus m.; 4, lingual process of the basihyoid bone; 5, hyoepiglottis m.; 6, epiglottis; 7, entrance to the laryngeal ventricle; 8, soft palate; 9, ventral concha (turbinate); 10, dorsal concha; 11 ethmoidal conchas; 12, frontal sinus; 13, stylohyoid bone; 14, hypoglossal n.; 15, stylopharyngeus muscle.

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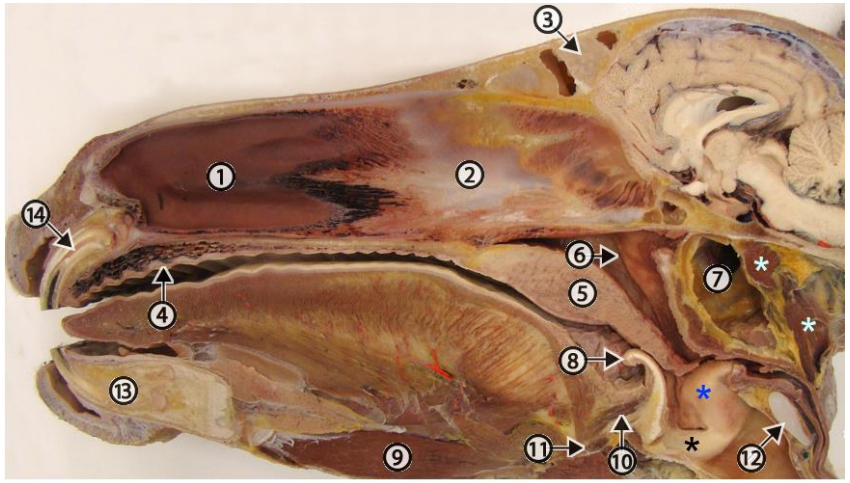
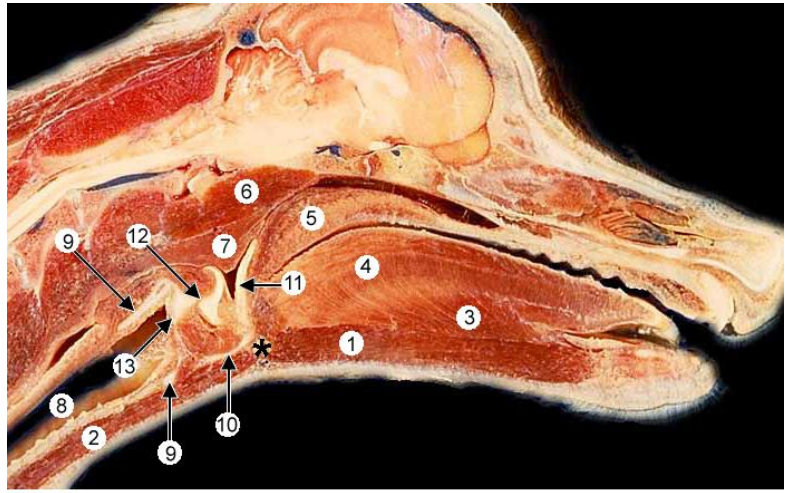


Midline view of split equine head. 1, nasal septum covered with mucosa; 2, cartilage of the nasal septum; 3, midline bony septum between frontal sinuses; 4, hard palate; 5, soft palate; 6, orifice of auditory tube (entrance to guttural pouch); 7, interior of guttural pouch; light blue asterisk, longus capitis m., blue asterisk, arytenoid cartilage covered with mucosa; black asterisk, vocal fold; 8, epiglottis; 9, geniohyoideus m., 10, hyoepiglottis m.; 11, basihyoid bone; 12, cricoid cartilage; 13, mandibular symphysis; 14, pulp cavity.

NOTE: In this image the tip of the epiglottis is abnormally positioned ventral to the soft palate. The normal position is dorsal to the soft palate.

http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-1.html



Sagittal section through a canine head showing the larynx, tongue and two muscles that anchor the hyoid apparatus. The basihyoid bone (asterisk) is anchored rostrally by the **geniohyoidues m.** (1) and caudally by the **sternohyoideus m.** (2). The **genioglossus m.** (3) and intrinsic tongue musculature (4) are evident ventral to the soft palate (5). Caudal to the palate the longus capitis m. (6) and a pharyngeal m. (hyopharyngeus) (7) can be seen.

Notice the trachea (8) and laryngeal cartilages: **cricoid cartilage** (9), **thyroid cartilage** (10), **epiglottic cartilage** (11), and the right **arytenoid cartilage** (12), also its vocal process (13).

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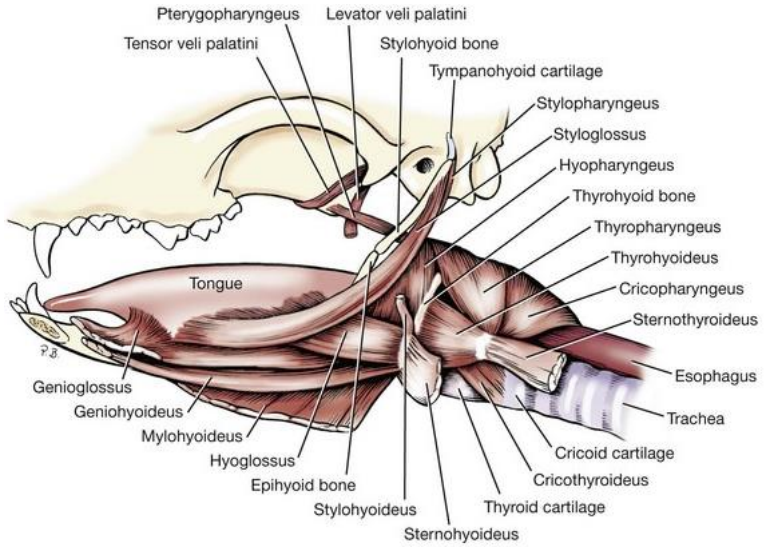

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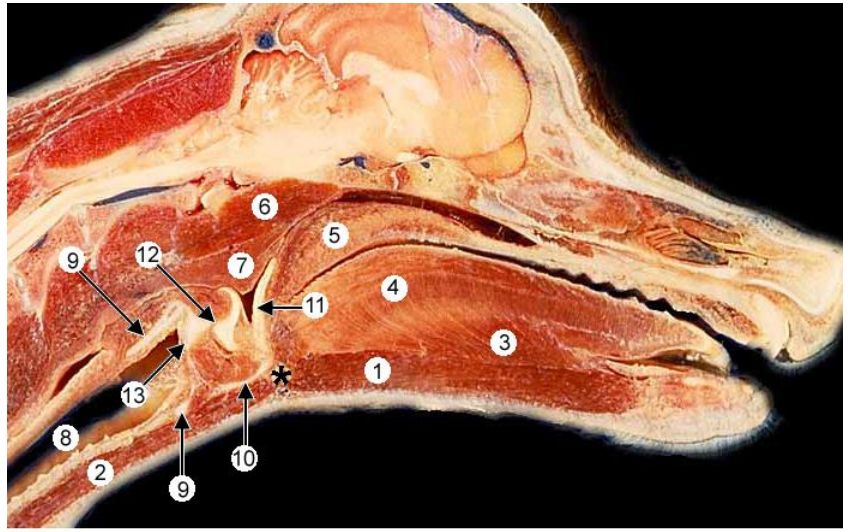
MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

INTRINSIC LINGUAL MUSCLE PROPER (M. LINGUALIS PROPRIUS):

1. **Fibrae longitudinales superficialies**
2. **Fibrae longitudinales profundae – occur in Eg**
3. **Fibrae transversae**
4. **Fibrae perpendiculares**



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Notice the trachea (8) and laryngeal cartilages: **cricoid cartilage** (9), **thyroid cartilage** (10), **epiglottic cartilage** (11), and the right **arytenoid cartilage** (12), also its vocal process (13).

http://vanat.cvm.umn.edu/carnLabs/Lab23/Img23-11.html

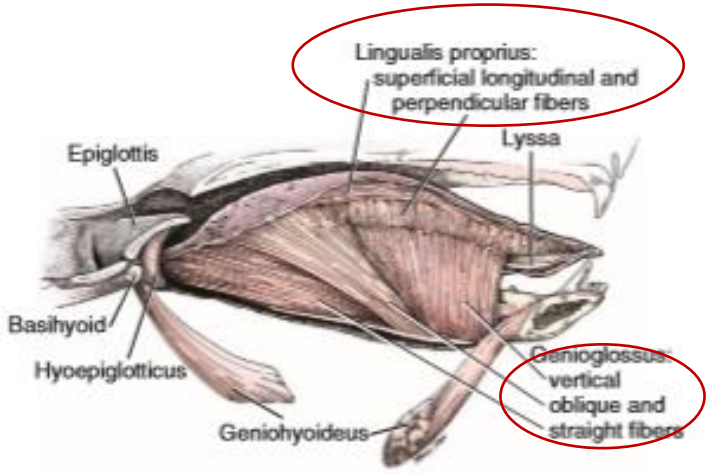
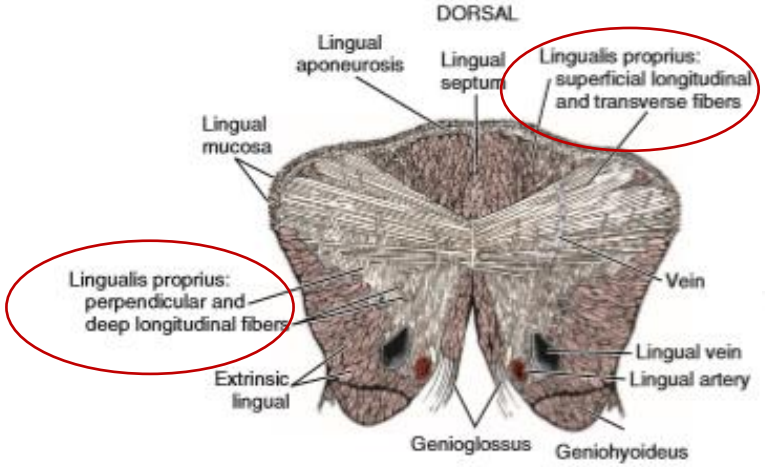


FIGURE 7-17 Median section through the tongue.



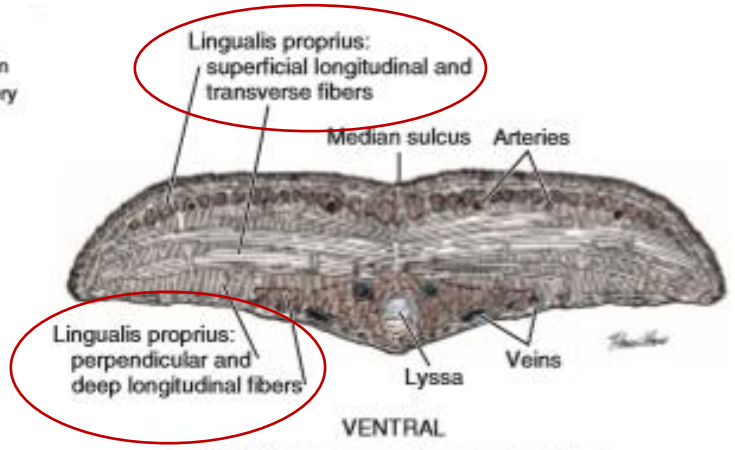


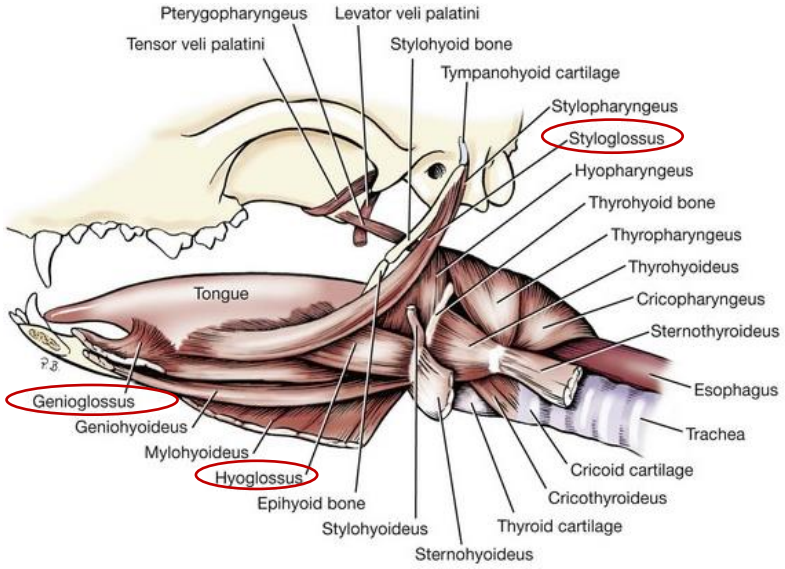
FIGURE 7-19 Transverse section near apex of tongue.

MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

EXTRINSIC MUSCLES:

1. **M. GENIOGLOSSUS**
2. **M. STYLOGLOSSUS**
3. **M. HYOGLOSSUS**



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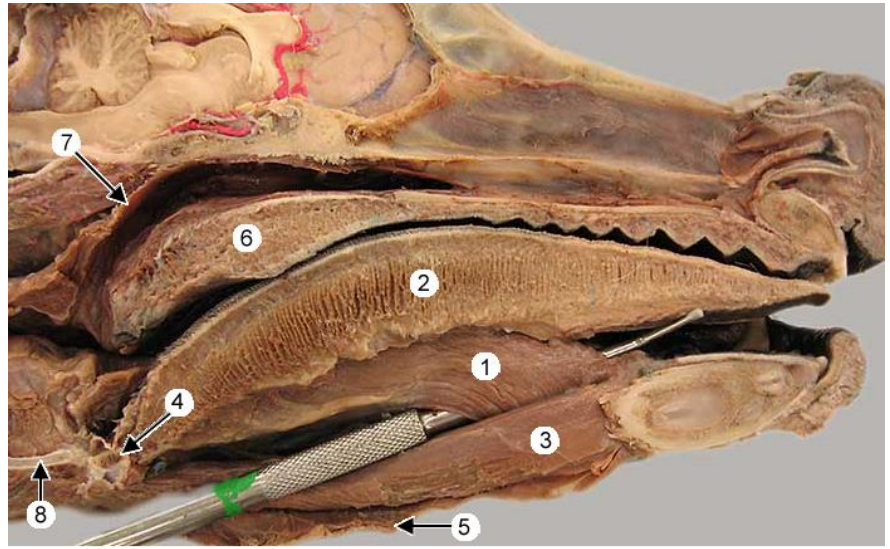
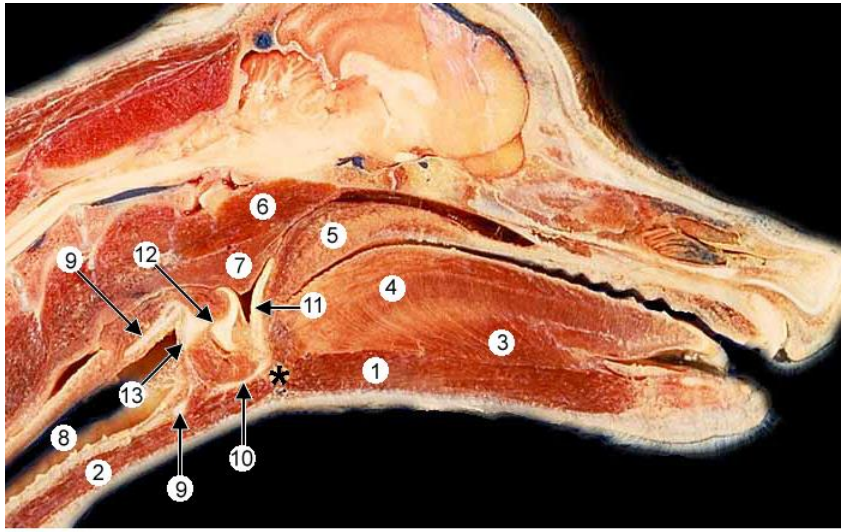


Medial view of the left side of a bisected head. A probe passes deep to the **genioglossus m.** (1). Fascicles of intrinsic tongue musculature (2) can be seen running in different directions. The **geniohyoideus m.** (3) attaches to the jaw; its caudal attachment to the **basihyoid bone** (4) is severed. The thin edge of the mylohyoideus m. (5) is evident.

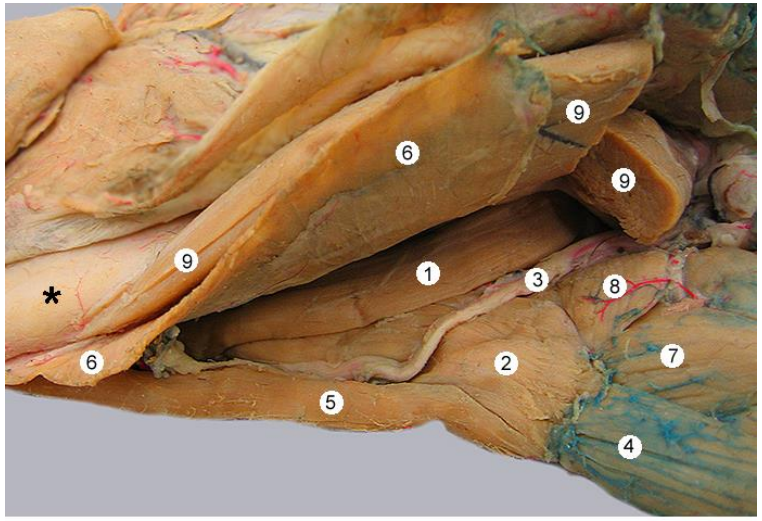
Identify the soft palate (6), pharyngeal muscles (7), and the cut thyroid cartilage (8).

http://vanat.cvm.umn.edu/carnLabs/Lab23/Img23-11.html



Sagittal section through a canine head showing the larynx, tongue and two muscles that anchor the hyoid apparatus. The basihyoid bone (asterisk) is anchored rostrally by the **geniohyoidues m.** (1) and caudally by the **sternohyoideus m.** (2). The **genioglossus m.** (3) and intrinsic tongue musculature (4) are evident ventral to the soft palate (5). Caudal to the palate the longus capitis m. (6) and a pharyngeal m. (hyopharyngeus) (7) can be seen.

Notice the trachea (8) and laryngeal cartilages: **cricoid cartilage** (9), **thyroid cartilage** (10), **epiglottic cartilage** (11), and the right **arytenoid cartilage** (12), also its vocal process (13).

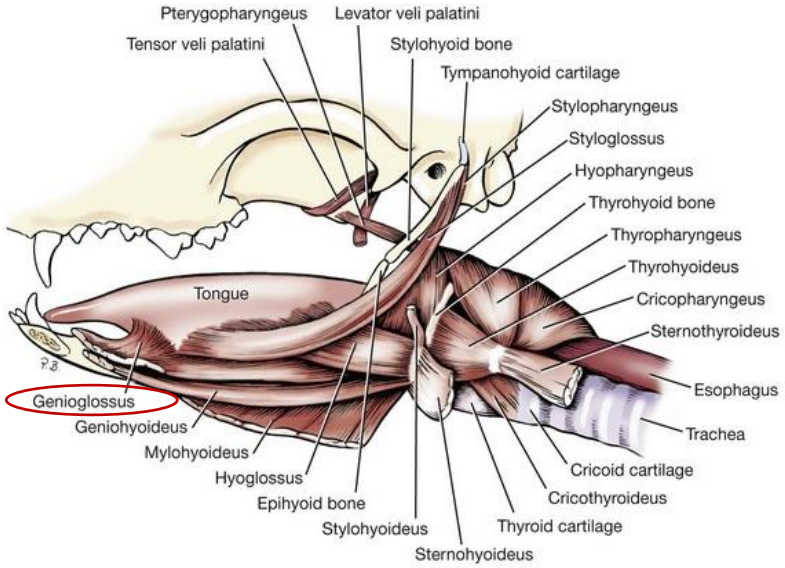


Two tongue muscles are shown from a ventrolateral view. The **styloglossus m.** (1) attaches to the stylohyoid bone. The **hyoglossus m.** (2) also attaches to hyoid bones. The **hypoglossal n.** (3) runs caudally along the styloglossus m. and crosses the hyoglossus m.

Also notice the **sternohyoideus** (4), **geniohyoideus** (5), **mylohyoideus** (6), thyrohyoideus (7), and hyopharyngeus (8) muscles. The mandible (asterisk) and **digastricus m.** (9) can be seen.

MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)



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EXTRINSIC MUSCLES:

M. GENIOGLOSSUS:

- **extends from the pars incisiva mandibulae to the hyoid bone**
- **enters the tongue ventrally**
- **draws the tongue rostrally and ventrally – produces a median groove on the dorsum**

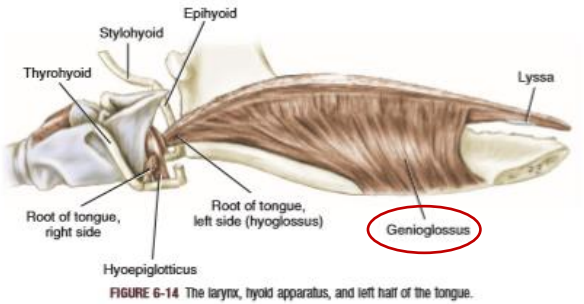


FIGURE 6-14 The larynx, hyoid apparatus, and left half of the tongue.

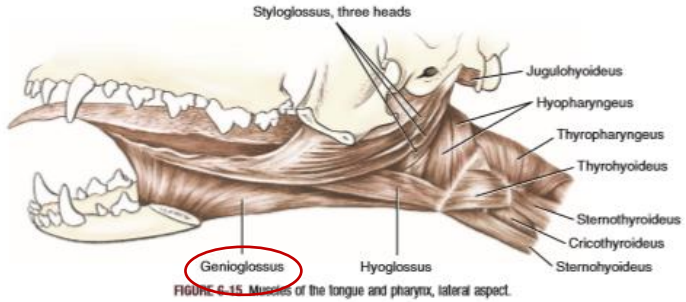
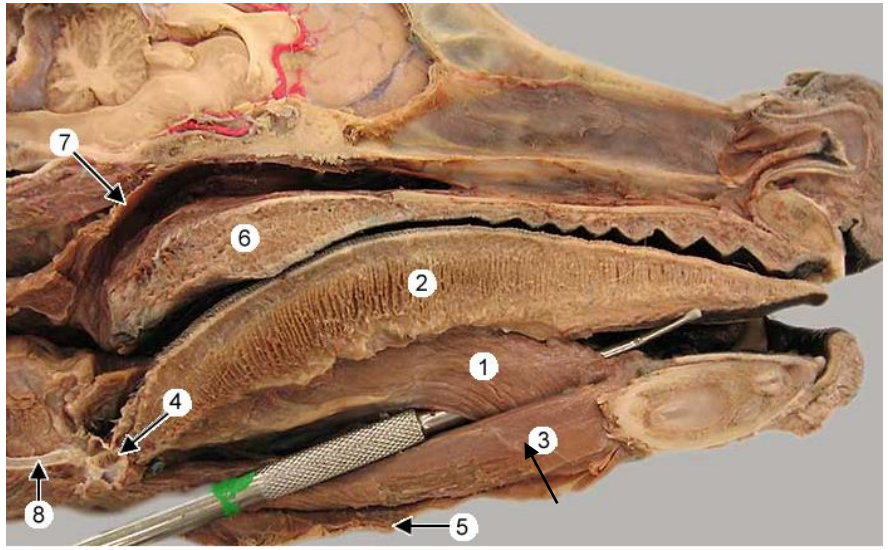


FIGURE 6-15 Muscles of the tongue and pharynx, lateral aspect.



Medial view of the left side of a bisected head. A probe passes deep to the **genioglossus m.** (1). Fascicles of intrinsic tongue musculature (2) can be seen running in different directions. The **geniohyoideus m.** (3) attaches to the jaw; its caudal attachment to the **basihyoid bone** (4) is severed. The thin edge of the mylohyoideus m. (5) is evident.

Identify the soft palate (6), pharyngeal muscles (7), and the cut thyroid cartilage (8).

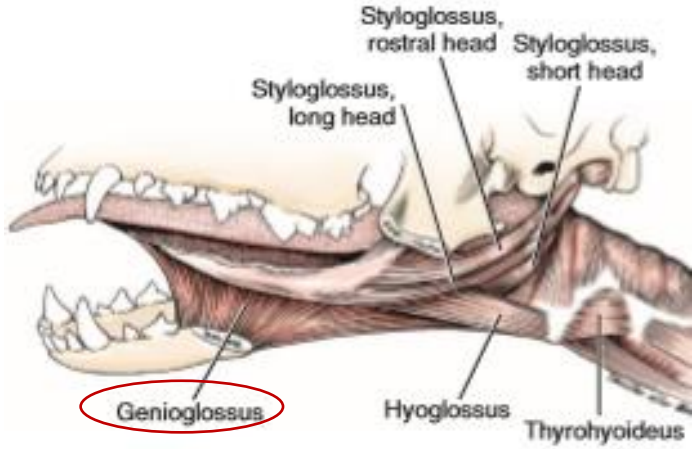


FIGURE 7-15 Muscles of the tongue, lateral aspect.

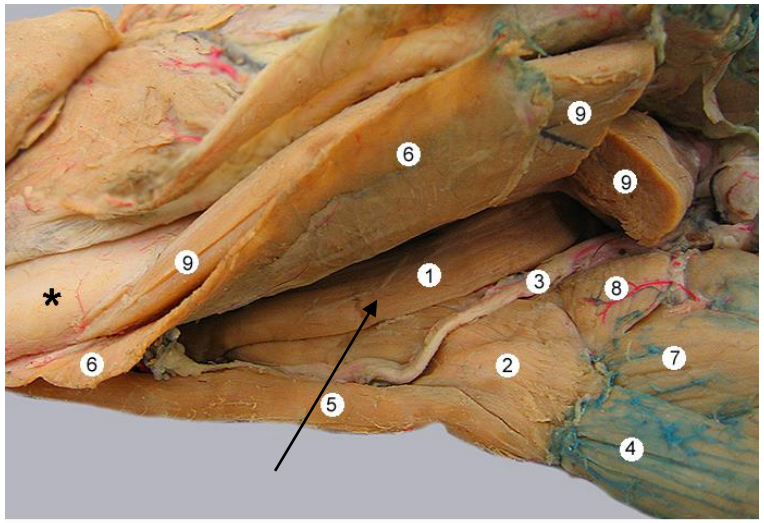
MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

EXTRINSIC MUSCLES:

M. STYLOGLOSSUS:

- **origin: ventral end of the stylohyoideum**
- **insertion: apex linguae**
- **retract the tongue**
- **turn the apex to one side**



Two tongue muscles are shown from a ventrolateral view. The **styloglossus m.** (1) attaches to the stylohyoid bone. The **hyoglossus m.** (2) also attaches to hyoid bones. The **hypoglossal n.** (3) runs caudally along the styloglossus m. and crosses the hyoglossus m.

Also notice the **sternohyoideus** (4), **geniohyoideus** (5), **mylohyoideus** (6), thyrohyoideus (7), and hyopharyngeus (8) muscles. The mandible (asterisk) and **digastricus m.** (9) can be seen.

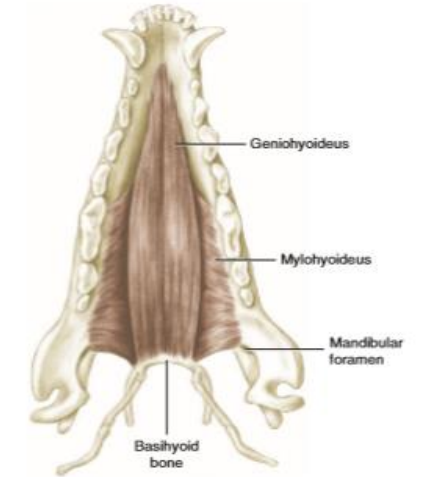


FIGURE 6–22 Muscles of mandible and basihyoid bone, dorsal aspect.

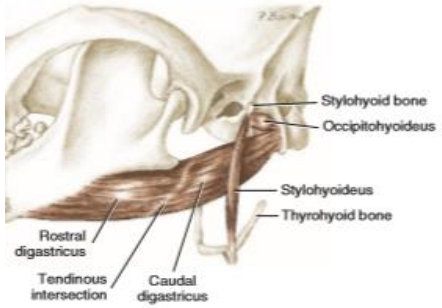
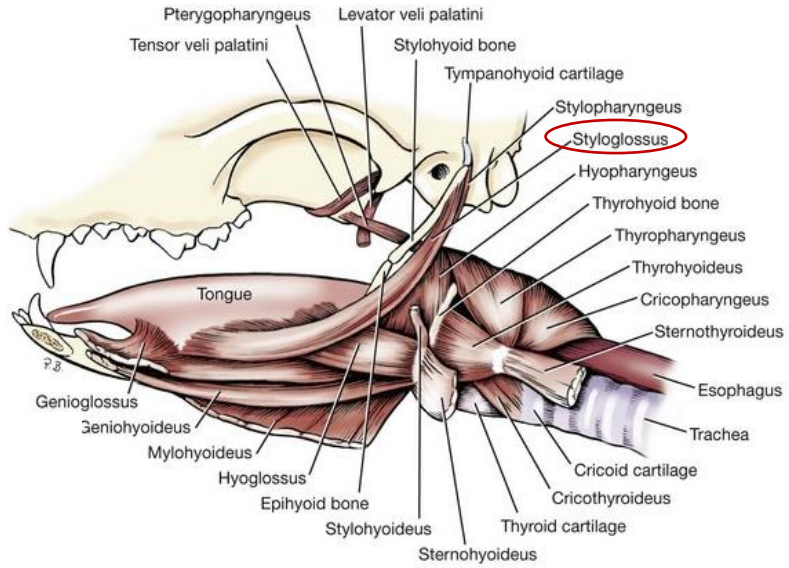


FIGURE 6–23 Superficial hyoid muscles and the digastricus, lateral aspect.



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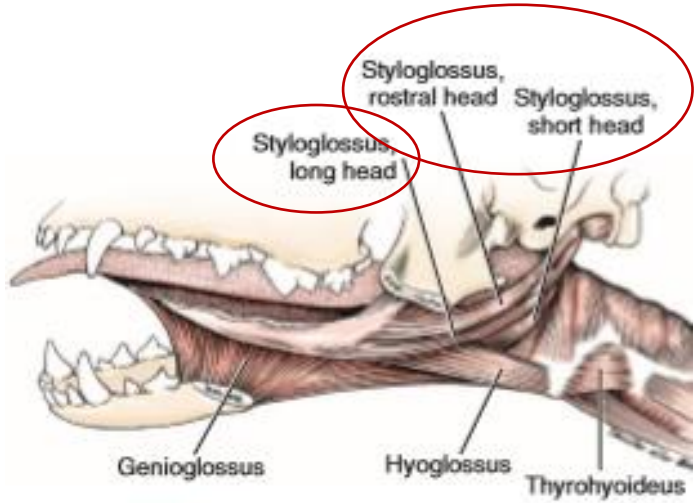


FIGURE 7-15 Muscles of the tongue, lateral aspect.

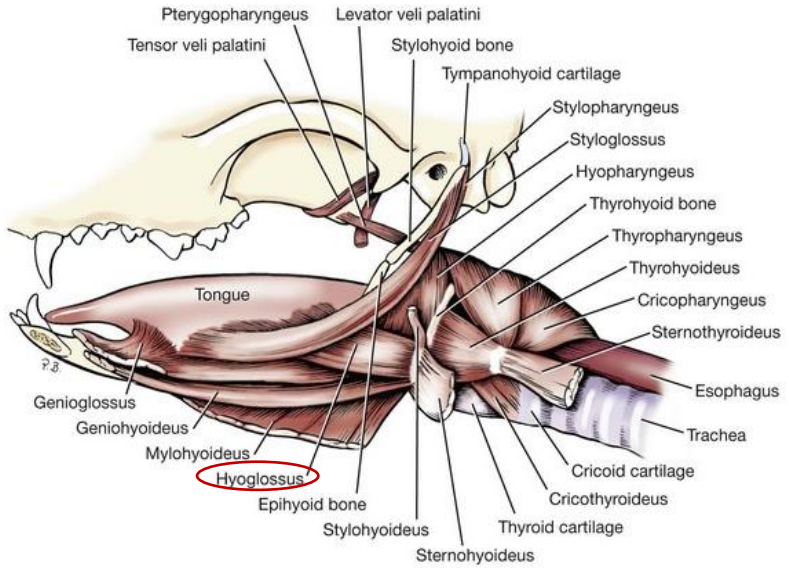
MUSCLES OF THE TONGUE

(MUSCULI LINGUAE)

EXTRINSIC MUSCLES:

M. HYOGLOSSUS:

- **origin: hyoid bone**
- **enters the tongue between m. genioglossus medially and m. styloglossus laterally**
- **retracts and depresses the tongue**



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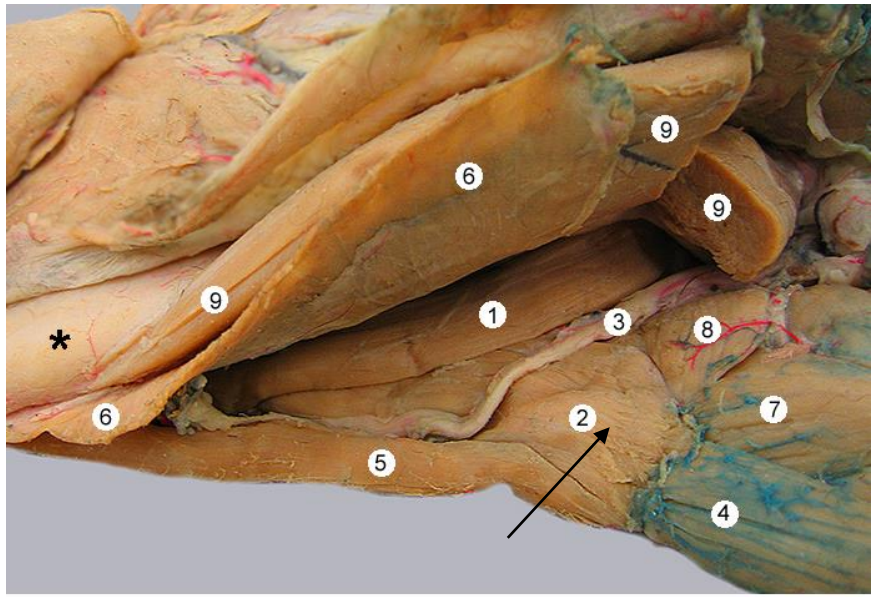


Two tongue muscles are shown from a ventrolateral view. The **styloglossus m.** (1) attaches to the stylohyoid bone. The **hyoglossus m.** (2) also attaches to hyoid bones. The **hypoglossal n.** (3) runs caudally along the styloglossus m. and crosses the hyoglossus m.

Also notice the **sternohyoideus** (4), **geniohyoideus** (5), **mylohyoideus** (6), thyrohyoideus (7), and hyopharyngeus (8) muscles. The mandible (asterisk) and **digastricus m.** (9) can be seen.

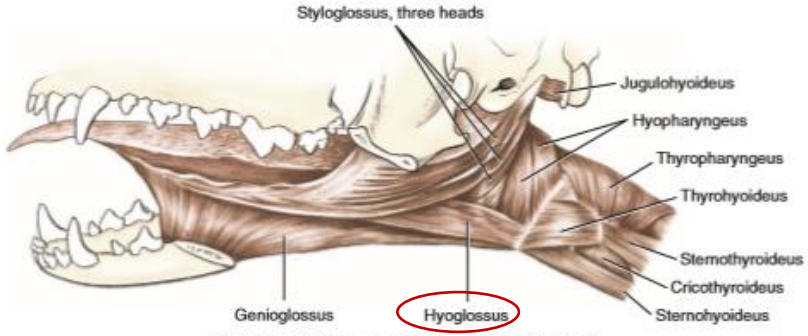


FIGURE 6-15 Muscles of the tongue and pharynx, lateral aspect.

HYOID MUSCLES

- close functional releationship to the muscles of the tongue

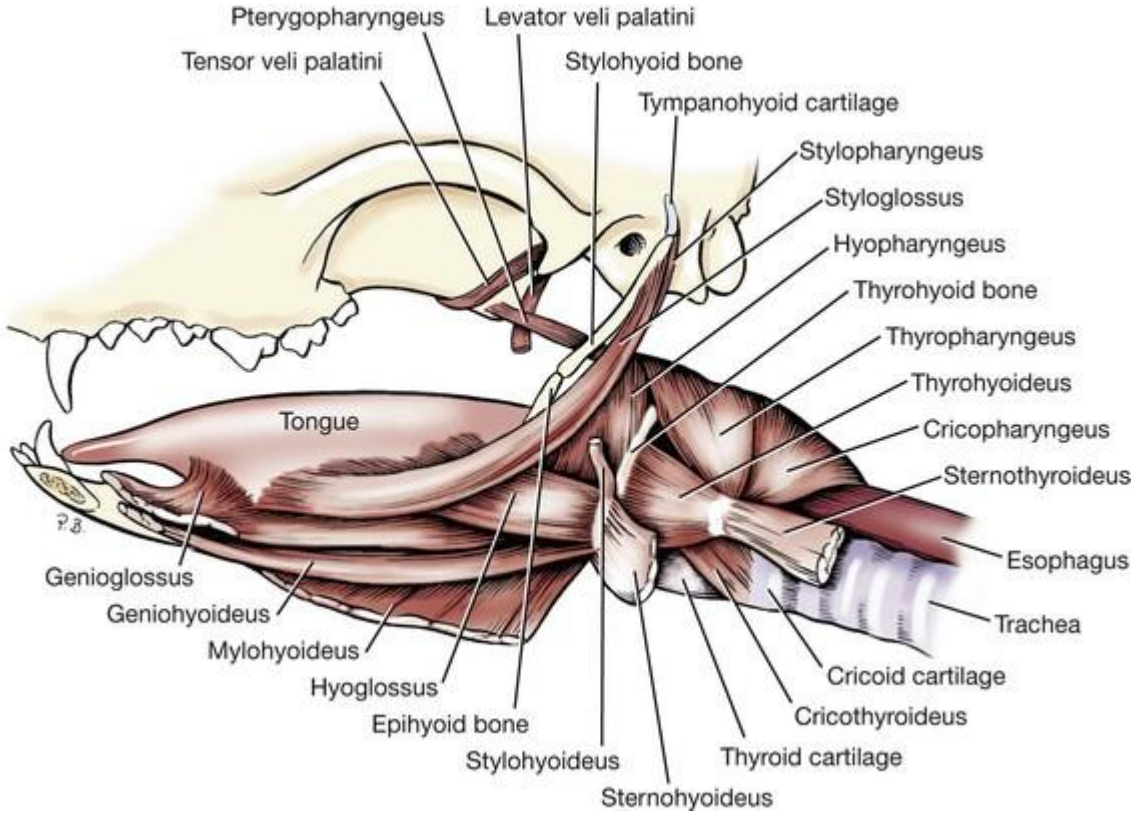
1. **DORSAL GROUP**

2. **VENTRAL GROUP**

HYOID MUSCLES

DORSAL GROUP:

1. **M. mylohyoideus**
2. **M. geniohyoideus**
3. **M. stylohyoideus**
4. **M. occipitohyoideus**
5. **M. ceratohyoideus**
6. **M. hyoideus transversus**



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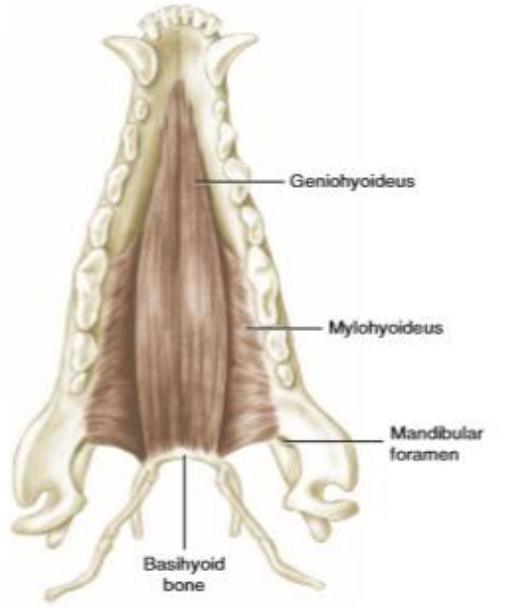


FIGURE 6-22 Muscles of mandible and basihyoid bone, dorsal aspect.

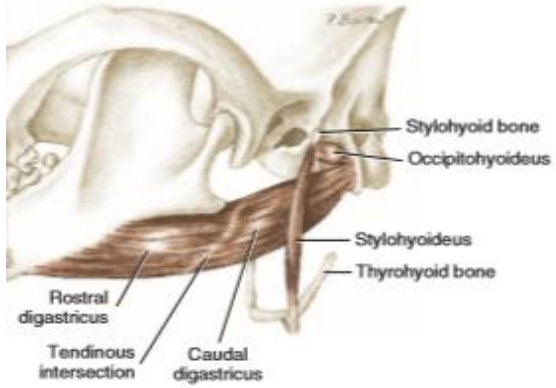


FIGURE 6-23 Superficial hyoid muscles and the digastricus, lateral aspect.

HYOID MUSCLES

DORSAL GROUP:

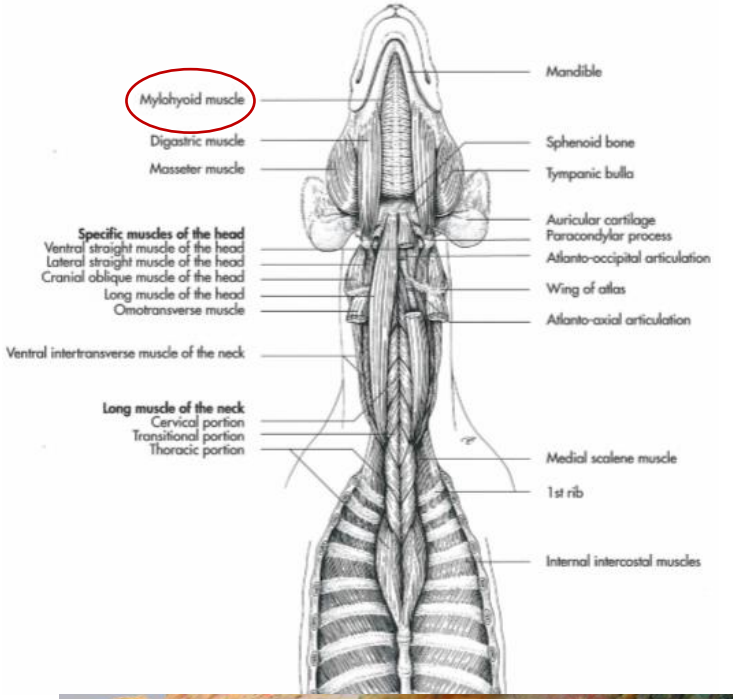
M. mylohyoideus:

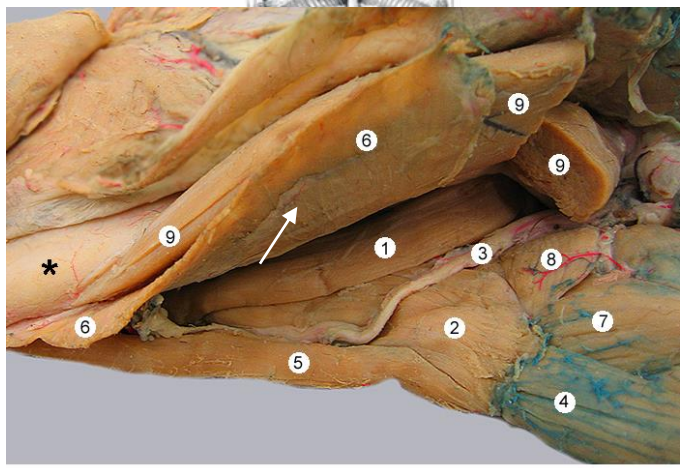
- **flat muscle**
- **fibers run transversely**
- **origin – linea mylohyoidea**
- **insertion – raphe mylohyoidea**

  - in Ca, Su caudal fibers on the basihyoid

  - in Eq, Bo on the lingual process of hyoid bone
- **action - support the tongue**

  - elevate the tongue





Two tongue muscles are shown from a ventrolateral view. The **styloglossus m.** (1) attaches to the stylohyoid bone. The **hyoglossus m.** (2) also attaches to hyoid bones. The **hypoglossal n.** (3) runs caudally along the styloglossus m. and crosses the hyoglossus m.

Also notice the **sternohyoideus** (4), **geniohyoideus** (5), **mylohyoideus** (6), thyrohyoideus (7), and hyopharyngeus (8) muscles. The mandible (asterisk) and **digastricus m.** (9) can be seen.

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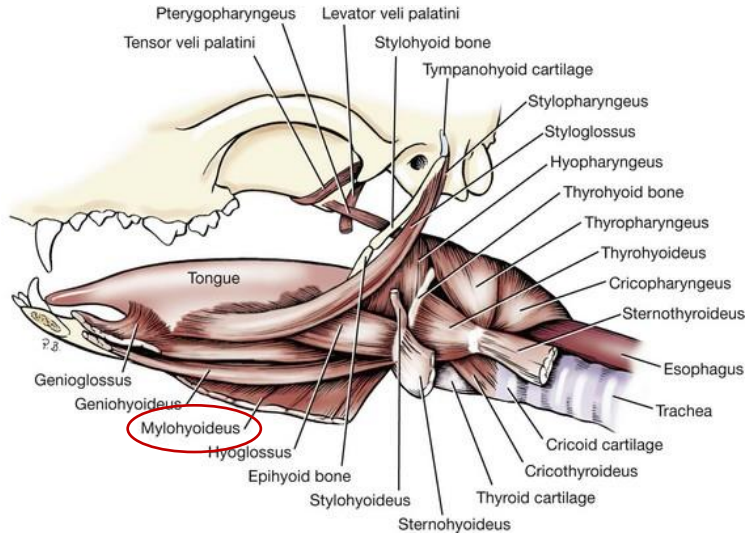
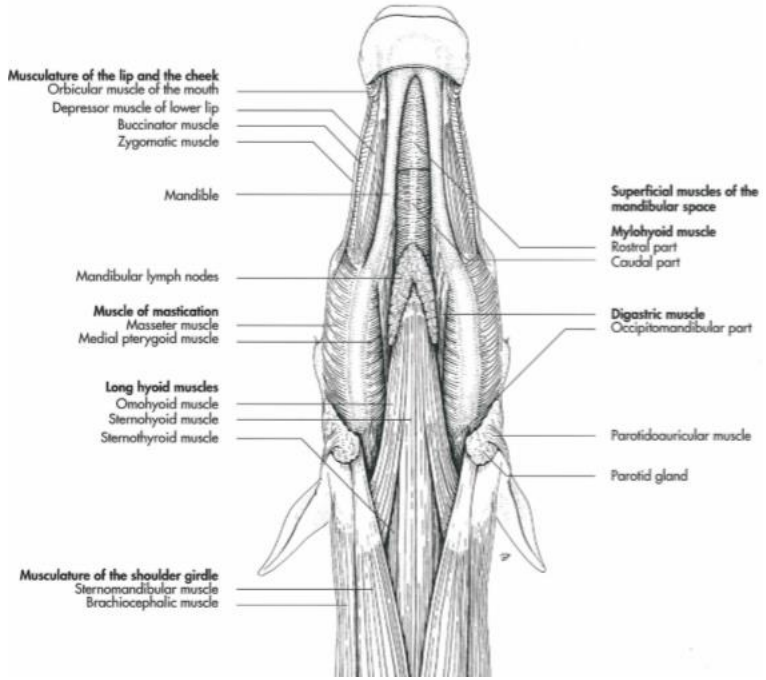




HYOID MUSCLES

DORSAL GROUP:

M. geniohyoideus:

- **long, fusiform**
- **in the intermandibular space**
- **covered by m. mylohyoideus**
- **origin - incisive part of mandible**
- **insertion – basihyoid, lingual process of hyoid in Eq, Bo**
- **action - moves the hyoid bone**

  - moves the tongue rostrally

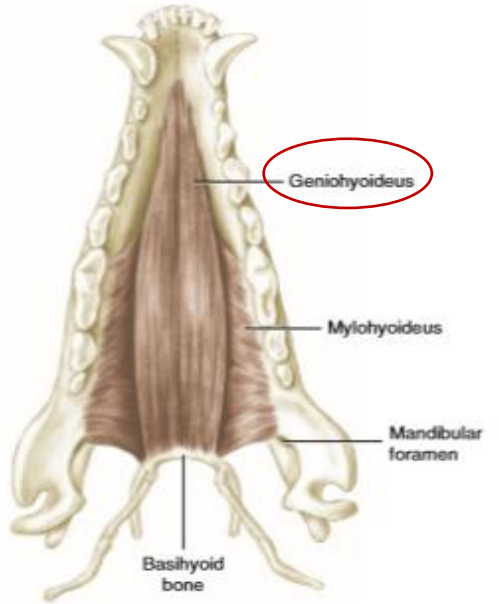
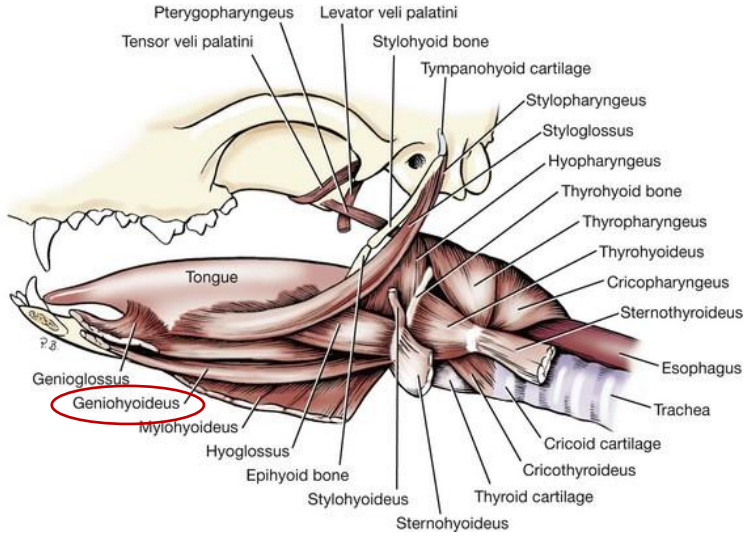
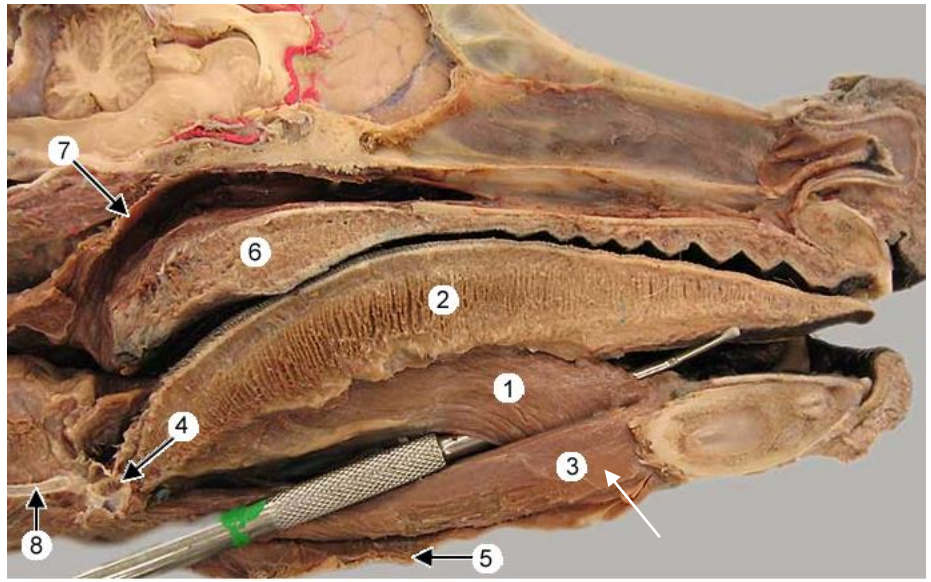


FIGURE 6-22 Muscles of mandible and basihyoid bone, dorsal aspect.





Medial view of the left side of a bisected head. A probe passes deep to the **genioglossus m.** (1). Fascicles of intrinsic tongue musculature (2) can be seen running in different directions. The **geniohyoideus m.** (3) attaches to the jaw; its caudal attachment to the **basihyoid bone** (4) is severed. The thin edge of the mylohyoideus m. (5) is evident.

http://vanat.cvm.umn.edu/carnLabs/Lab23/Img23-12.html

HYOID MUSCLES

DORSAL GROUP:

M. stylohyoideus:

- **origin – from the dorsal end of the stylohyoid**
- **insertion – thyrohyoid**
- **action - moves the hyoid bone and larynx caudally and dorsally**

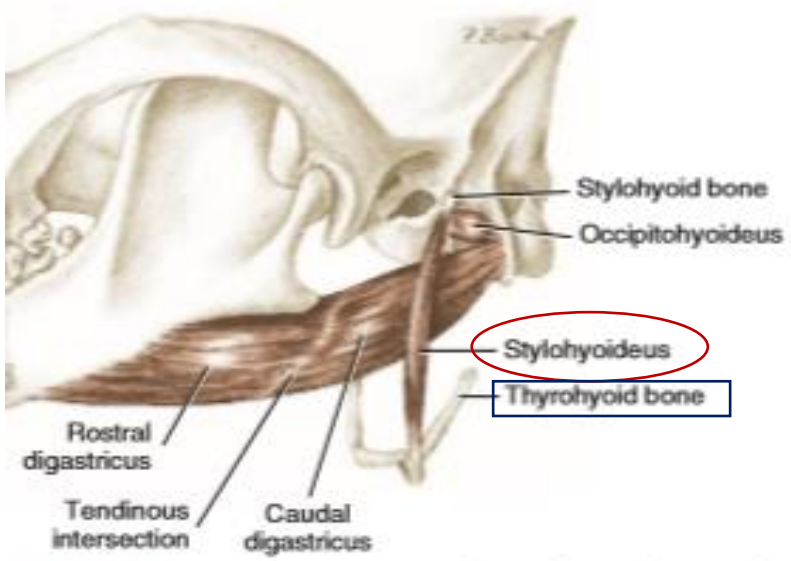
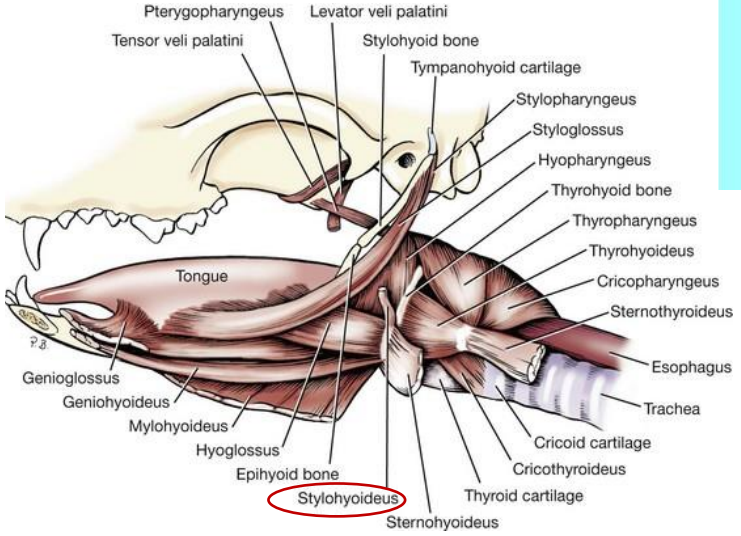
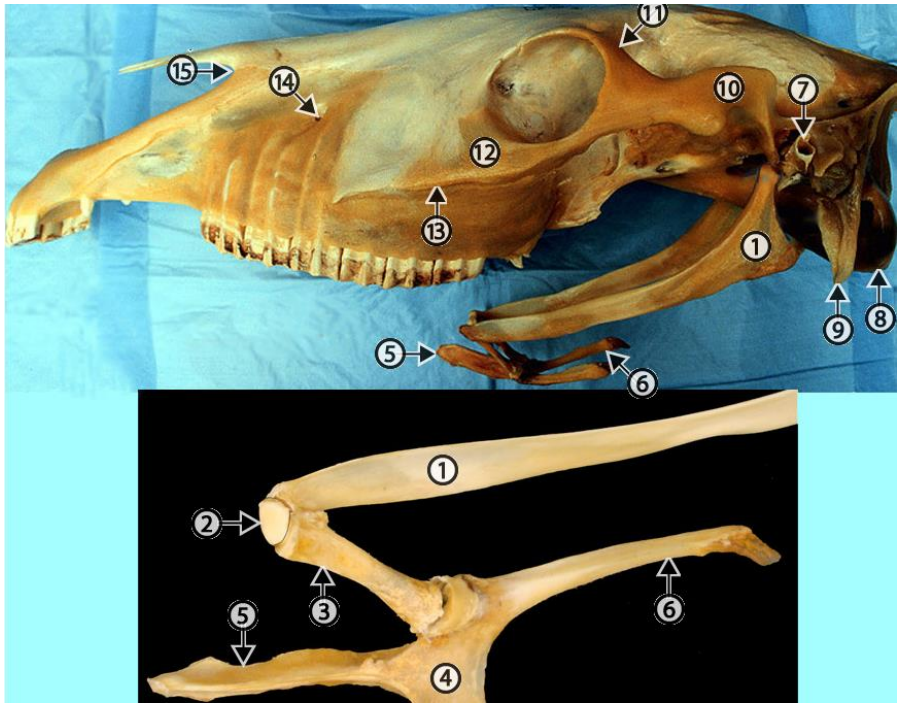


FIGURE 6-23 Superficial hyoid muscles and the digastricus, lateral aspect.





Lateral and dorsolateral views of equine hyoid bones. 1, stylohyoid bone; 2, epihyoid bone; 3, ceratohyoid bone; 4, basihyoid bone; 5, lingual process of basihyoid bone; 6, thyrohyoid bone; 7, external acoustic meatus; 8, occipital condyle; 9, paracondylar process; 10, zygomatic process of the temporal bone; 11, zygomatic process of the frontal bone; 12, zygomatic bone; 13, facial crest; 14, infraorbital foramen; 15, nasoincisive notch.

http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-8.html

HYOID MUSCLES

DORSAL GROUP:

M. occipitohyoideus:

- **origin – paracondylar process**
- **insertion – dorsal end of the stylohyoid**
- **action – helps to move the ventral end of the stylohyoid**

  - moves the tongue and the larynx caudoventrally

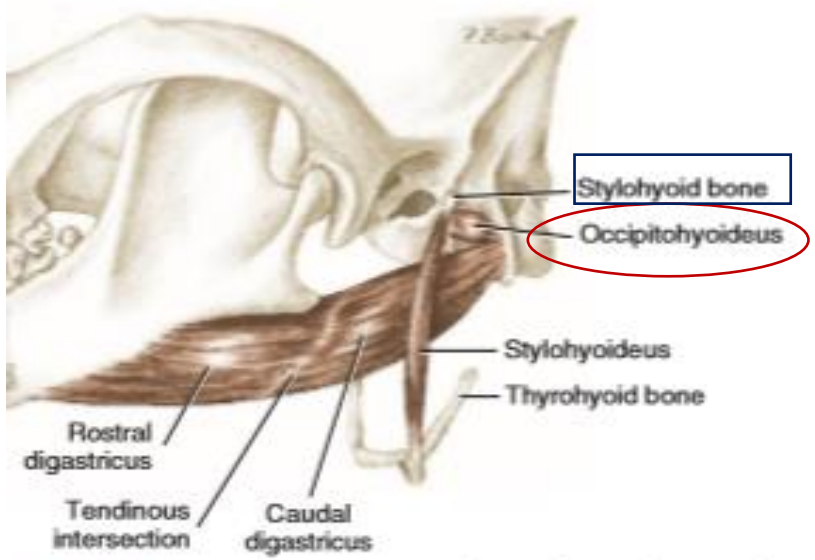
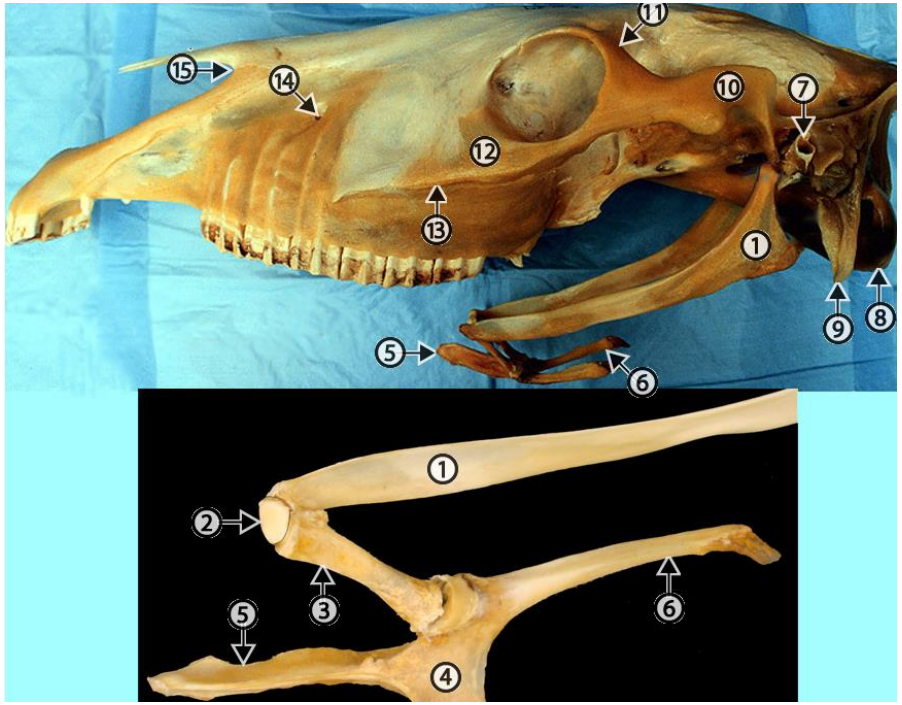


FIGURE 6-23 Superficial hyoid muscles and the digastricus, lateral aspect.



Lateral and dorsolateral views of equine hyoid bones. 1, stylohyoid bone; 2, epihyoid bone; 3, ceratohyoid bone; 4, basihyoid bone; 5, lingual process of basihyoid bone; 6, thyrohyoid bone; 7, external acoustic meatus; 8, occipital condyle; 9, paracondylar process; 10, zygomatic process of the temporal bone; 11, zygomatic process of the frontal bone; 12, zygomatic bone; 13, facial crest; 14, infraorbital foramen; 15, nasoincisive notch.

http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-8.html

HYOID MUSCLES

DORSAL GROUP:

M. ceratohyoideus:

- under the hypoglossus muscle

- **origin – rostral part of the thyrohyoid**
- **insertion – caudal border of the thyrohyoid**
- **action – moves the larynx rostrally**

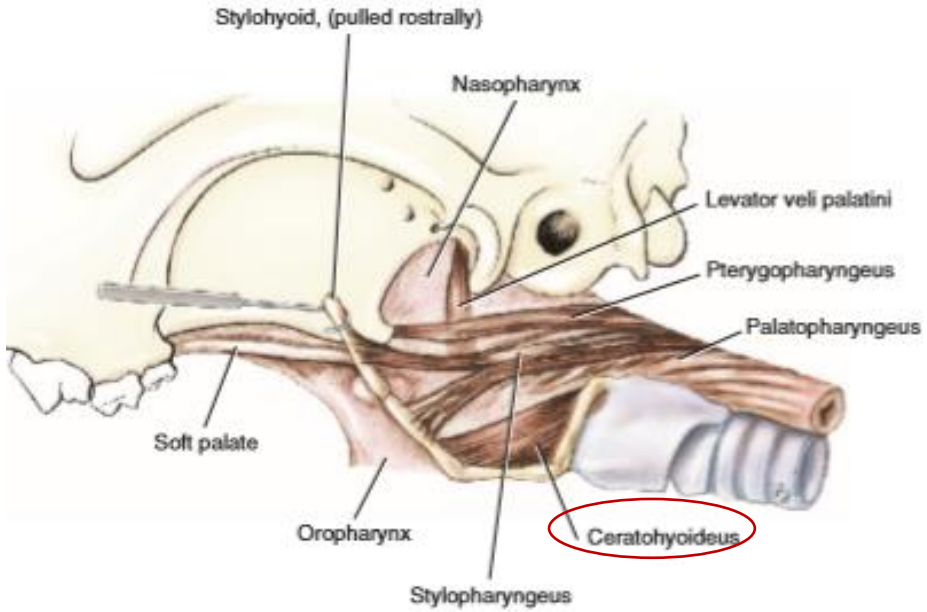
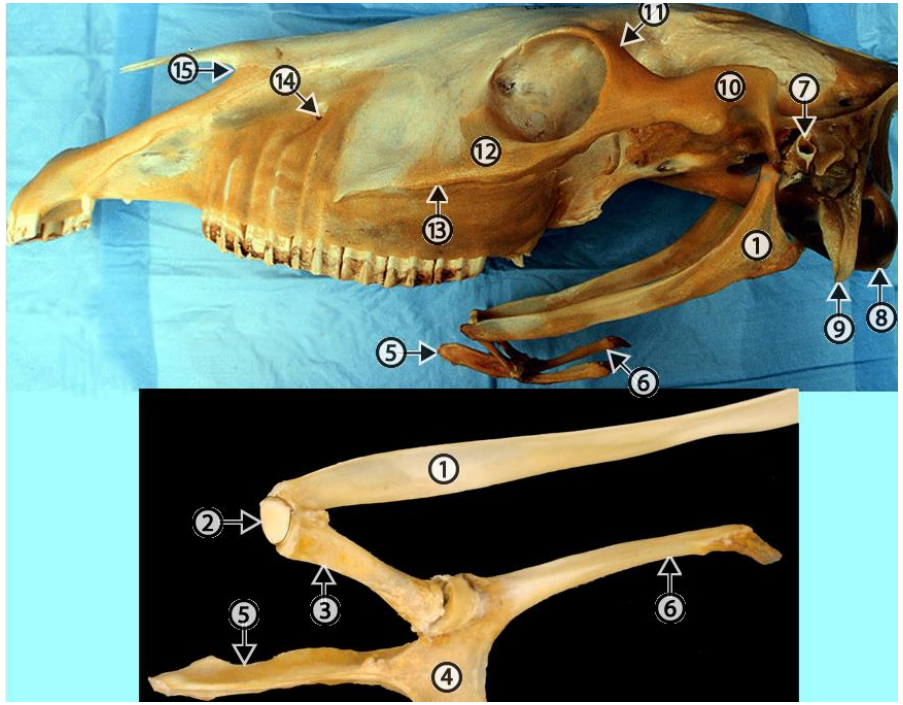


FIGURE 6-17 Muscles of the pharynx and palate, deep dissection, lateral aspect.



Lateral and dorsolateral views of equine hyoid bones. 1, stylohyoid bone; 2, epihyoid bone; 3, ceratohyoid bone; 4, basihyoid bone; 5, lingual process of basihyoid bone; 6, thyrohyoid bone; 7, external acoustic meatus; 8, occipital condyle; 9, paracondylar process; 10, zygomatic process of the temporal bone; 11, zygomatic process of the frontal bone; 12, zygomatic bone; 13, facial crest; 14, infraorbital foramen; 15, nasoincisive notch.

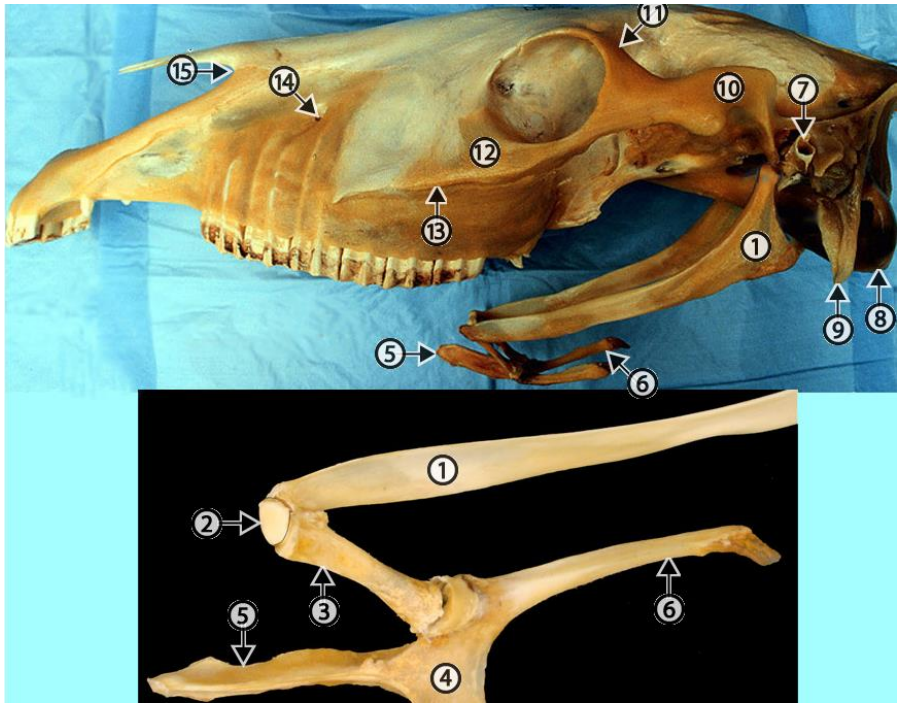
http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-8.html

HYOID MUSCLES

DORSAL GROUP:

M. hyoideus transversus:

- **connects the ceratohyoids**
- **absent in Ca and Su**



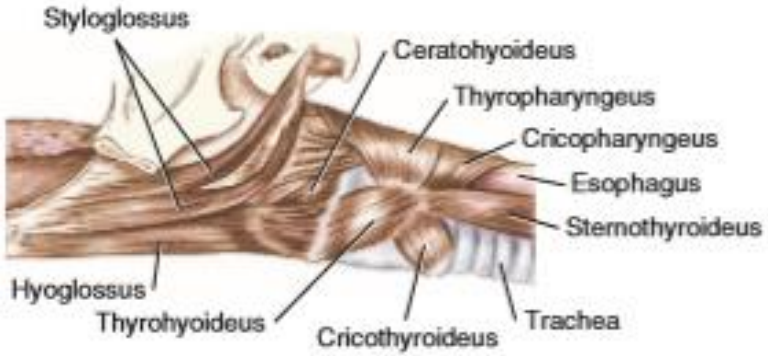
Lateral and dorsolateral views of equine hyoid bones. 1, stylohyoid bone; 2, epihyoid bone; 3, ceratohyoid bone; 4, basihyoid bone; 5, lingual process of basihyoid bone; 6, thyrohyoid bone; 7, external acoustic meatus; 8, occipital condyle; 9, paracondylar process; 10, zygomatic process of the temporal bone; 11, zygomatic process of the frontal bone; 12, zygomatic bone; 13, facial crest; 14, infraorbital foramen; 15, nasoincisive notch.

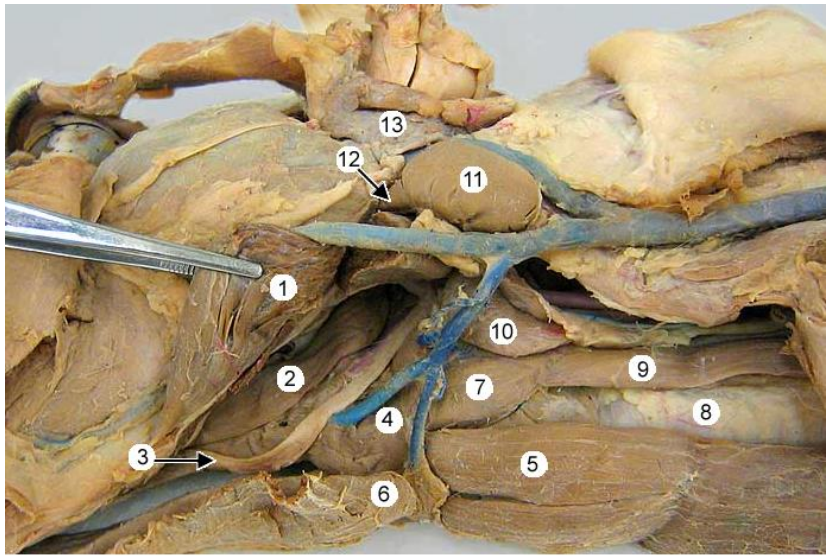
http://vanat.cvm.umn.edu/ungDissect/Lab20/Img20-8.html

HYOID MUSCLES

VENTRAL GROUP:

1. **M. sternohyoideus**
2. **M. sternothyroideus**
3. **M. thyrohyoideus**
4. **M. omohyoideus**





Ventral view of the left half of the head and neck. The **digastricus m.** (1) is reflected to expose the **styloglossus m.** (2), **hypoglossal n.** (3) and the **hyoglossus m.** (4). The latter attaches to hyoid bones, as does: sternohyoideus m. (5), geniohyoideus m. (6) and thyrohyoideus m. (7). Identify the trachea (8), sternothyroideus m. (9), medial retropharyngeal lymph node (10), mandibular salivary gland (11), monostomatic sublingual salivary gland (12), and the parotid salivary gland (13).

http://vanat.cvm.umn.edu/carnLabs/Lab23/Img23-13.html

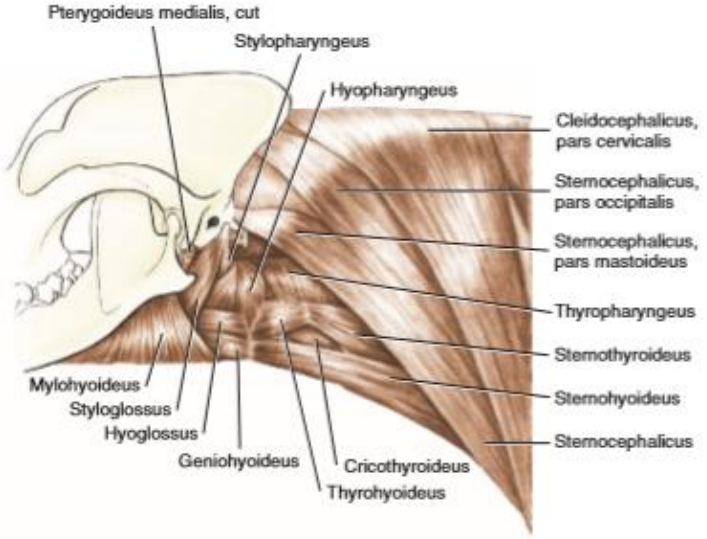
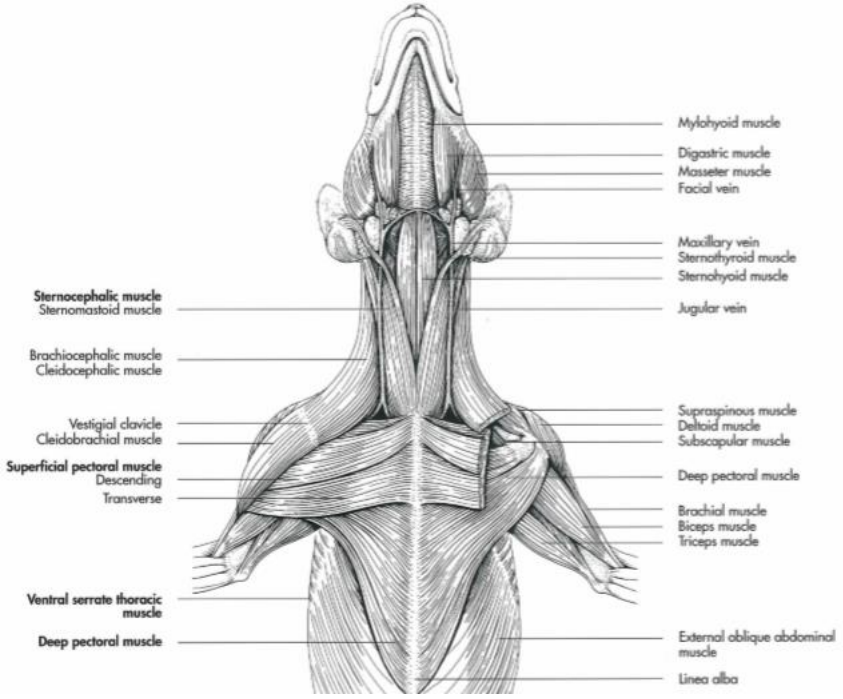
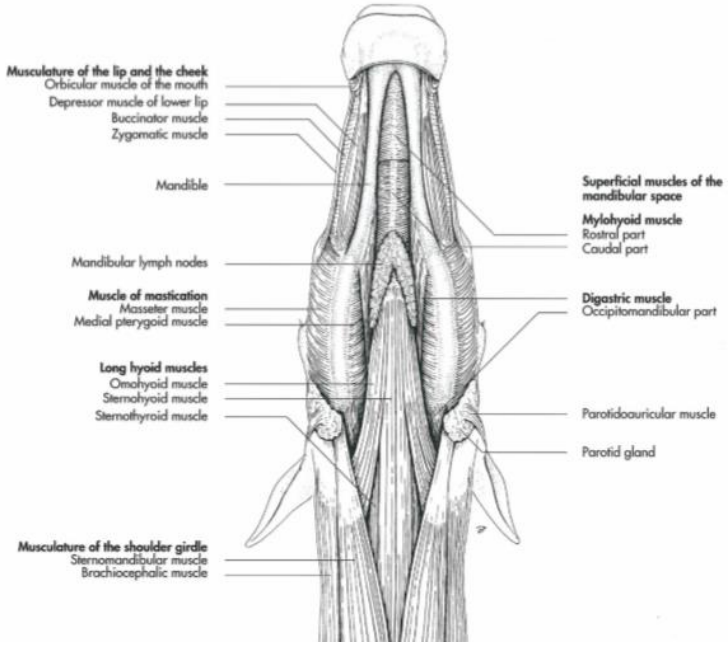


FIGURE 6-21 The hyoid muscles and muscles of the neck, lateral aspect. (Stylohyoideus and digastricus removed.)





HYOID MUSCLES

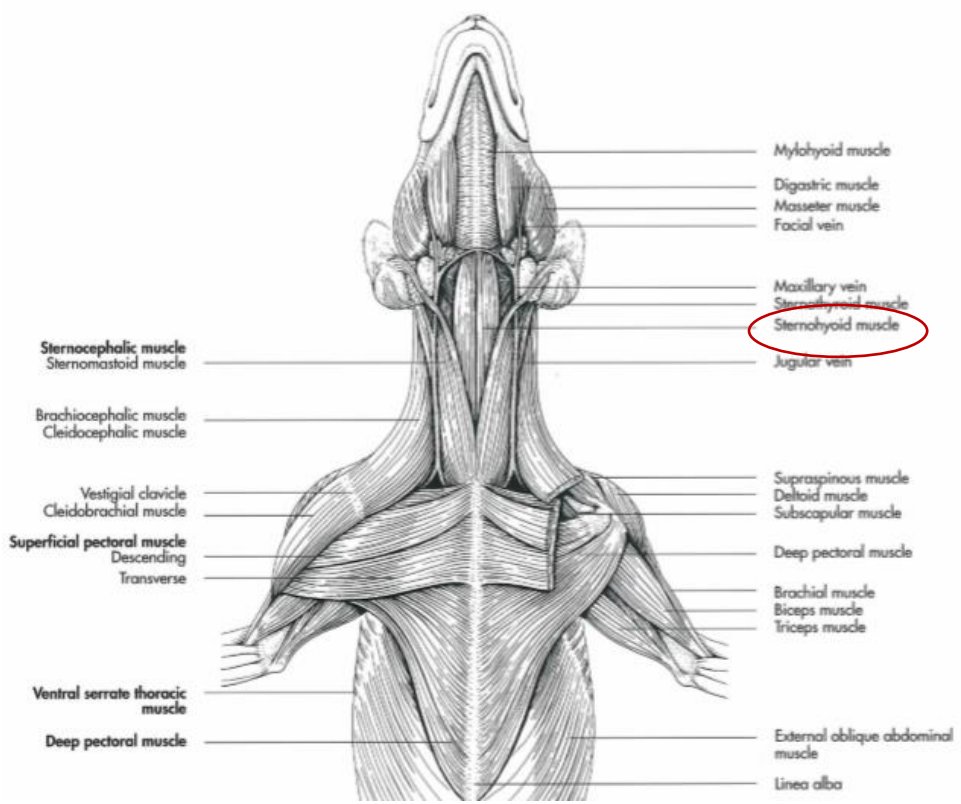
VENTRAL GROUP:

M. sternohyoideus:

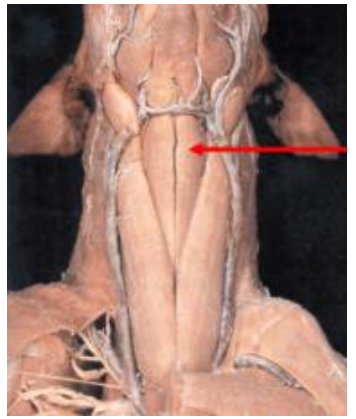
- **origin – manubrium sterni**
- **insertion – basihyoid**
- **action – pulls the hyoid bone caudally**

  - pulls the radix linguae caudally

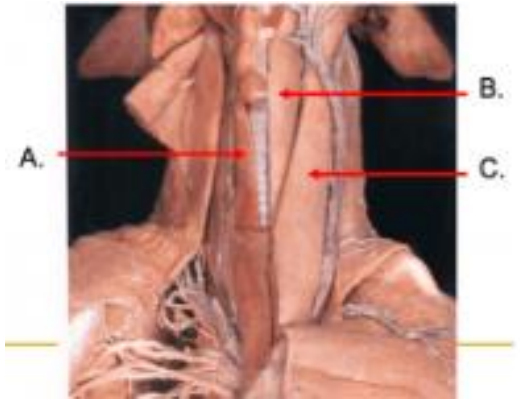
  - pulls the larynx caudally



m. sternocephalicus



m. sternohyoideus



A. Sternothyroideus muscle

B. Sternohyoideus muscle

C. Sternocephalicus muscle

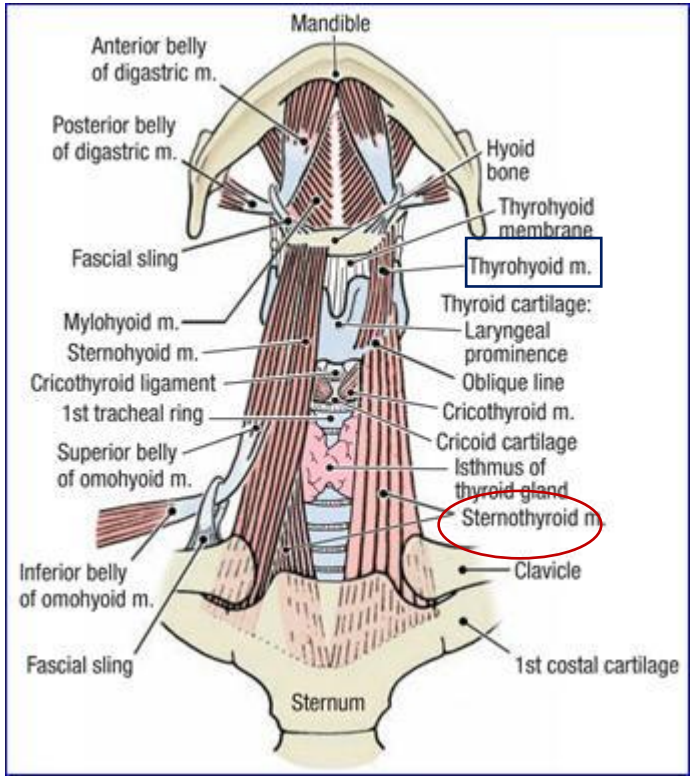
https://www.cram.com/flashcards/extrinsic-muscles-osu-cvm-2018-5125290

HYOID MUSCLES

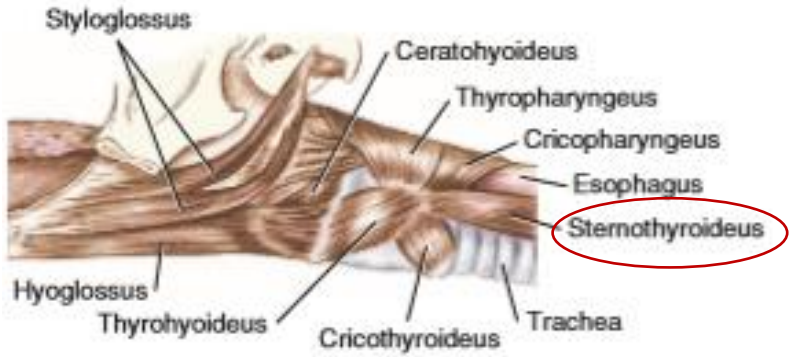
VENTRAL GROUP:

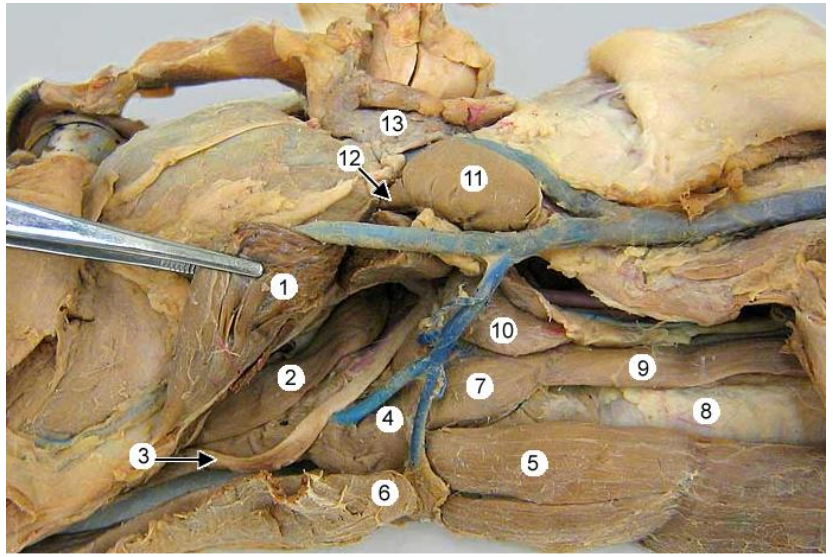
M. sternothyroideus:

- **origin – manubrium sterni**
- **insertion – lateral surface of the lamina thyroidea**
- **action - drows the larynx caudally**
- **rostrally continued by the thyrohyoid muscle**
- **action – hyoid bone, tongue pulled caudally**

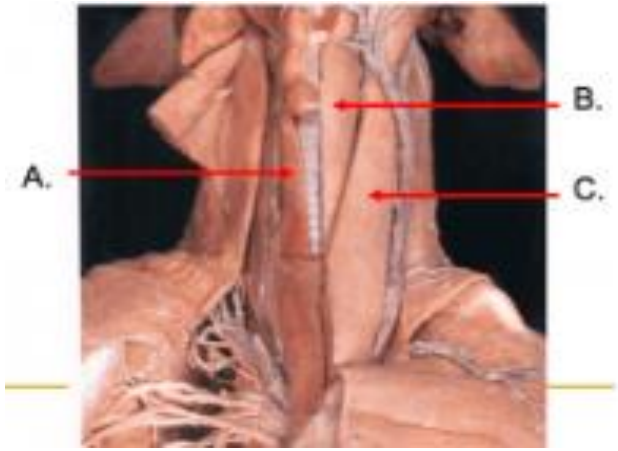


https://web.duke.edu/anatomy/Lab21/Lab21.html





Ventral view of the left half of the head and neck. The **digastricus m.** (1) is reflected to expose the **styloglossus m.** (2), **hypoglossal n.** (3) and the **hyoglossus m.** (4). The latter attaches to hyoid bones, as does: sternohyoideus m. (5), geniohyoideus m. (6) and thyrohyoideus m. (7). Identify the trachea (8), sternothyroideus m. (9), medial retropharyngeal lymph node (10), mandibular salivary gland (11), monostomatic sublingual salivary gland (12), and the parotid salivary gland (13).



A. Sternothyroideus muscle

B. Sternohyoideus muscle

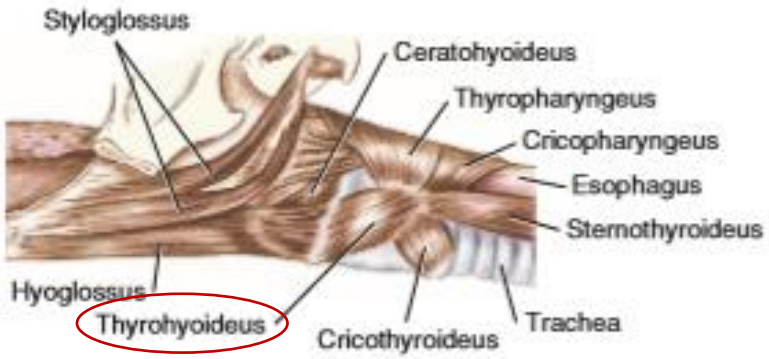
C. Sternocephalicus muscle

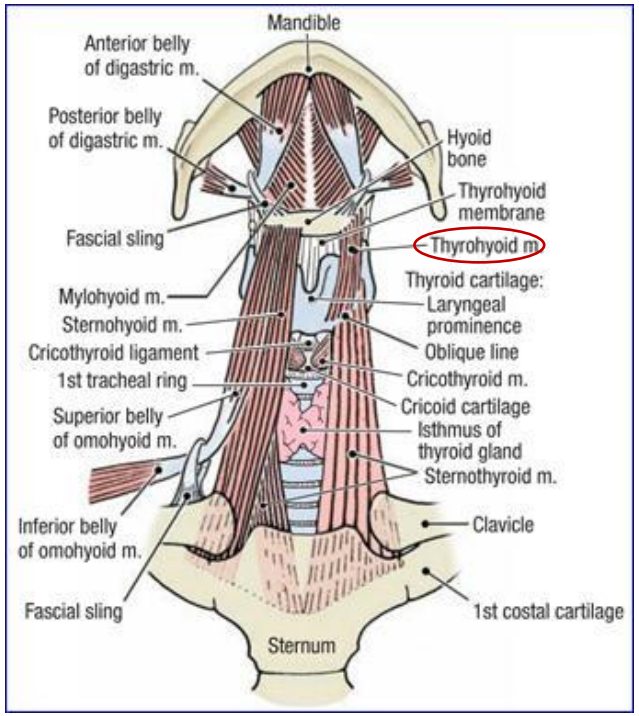
HYOID MUSCLES

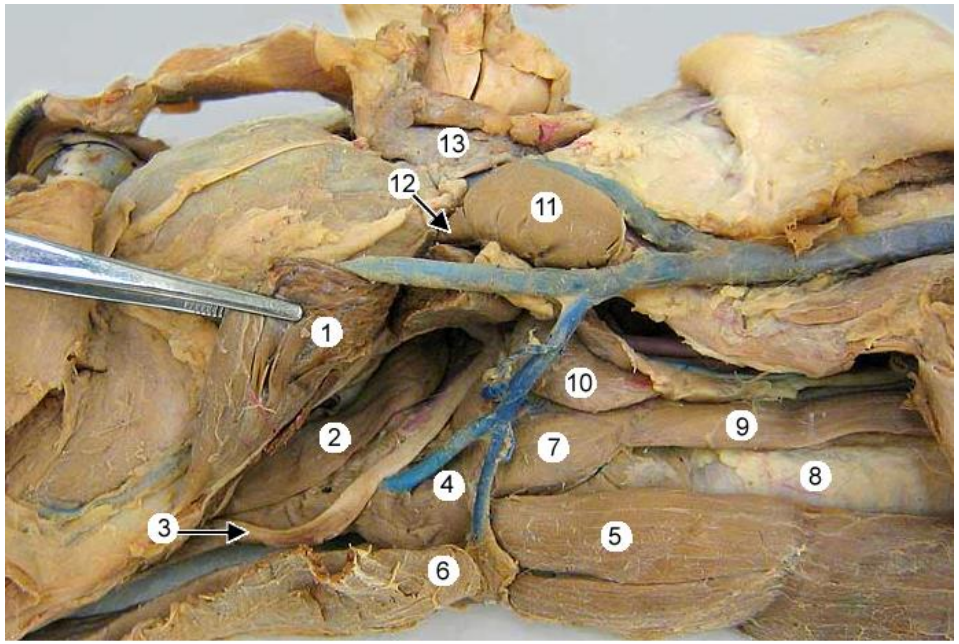
VENTRAL GROUP:

M. thyrohyoideus:

- **origin – lamina thyrohyoidea**
- **insertion – caudal border of the thyrohyoid**
- **action – hyoid bone and tongue pulled caudally**







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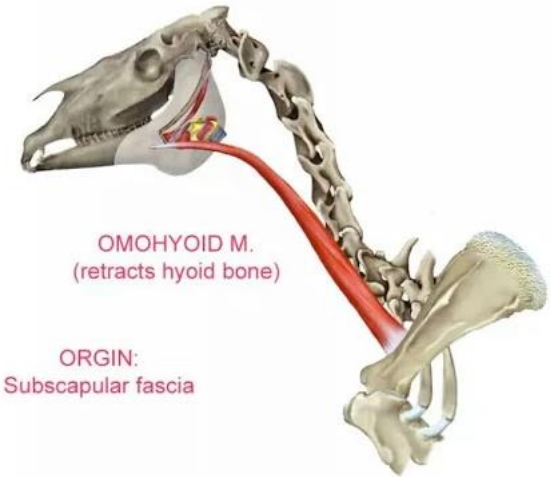
HYOID MUSCLES

VENTRAL GROUP:

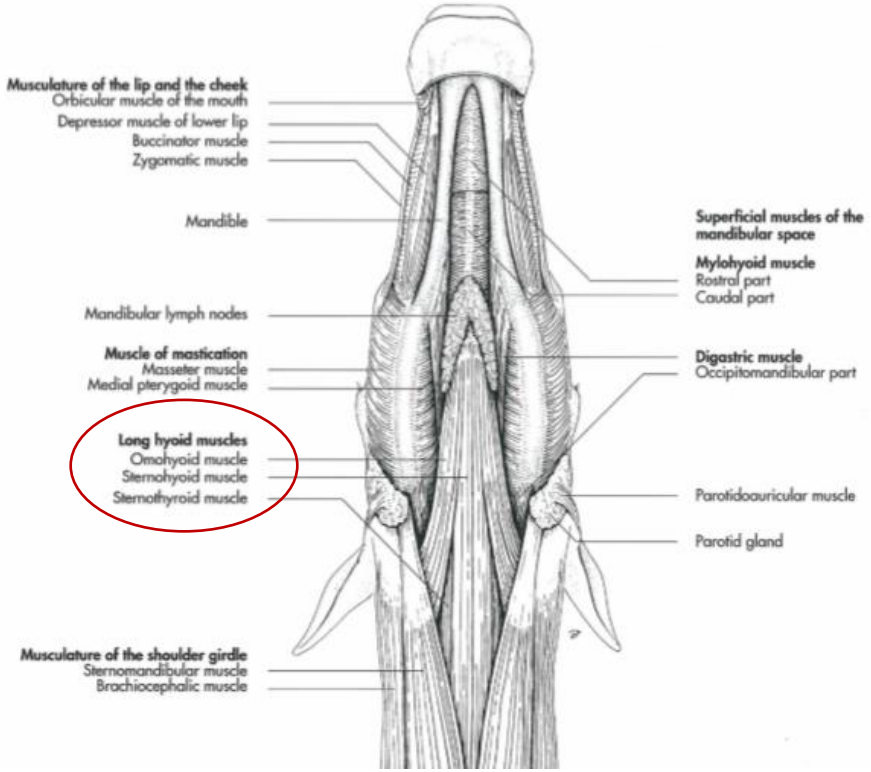
M. omohyoideus:

- absent in carnivors

- **origin – in Eq. - fascia subscapluaris, proc. transversus of C2-C4**
- **insertion – basihyoid**
- **action – drows the hyoid bone and larynx caudally**



https://plus.google.com/103231142462741343126/posts/DJJrtkqMmCJ

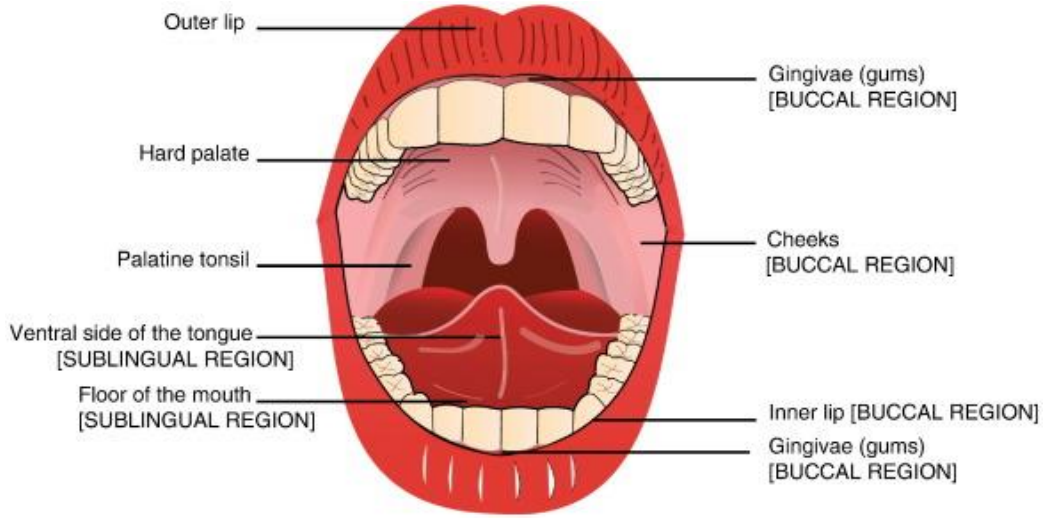


SUBLINGUAL FLOOR OF THE ORAL CAVITY

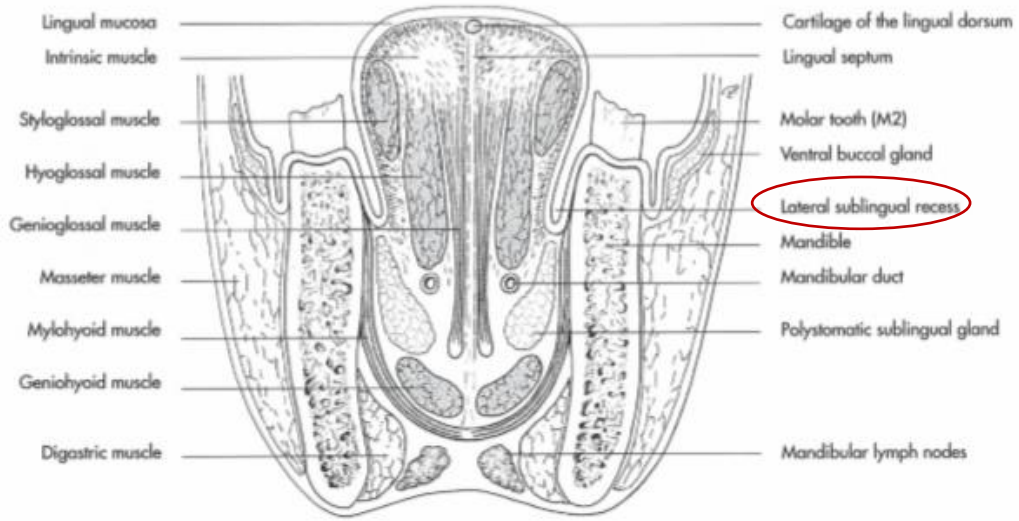
- **becomes visible when tha tongue is raised**

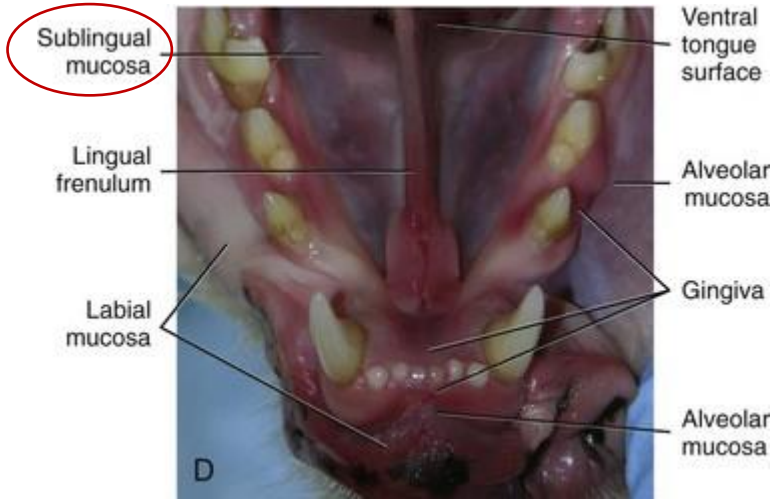
consists of:

1. **rostral part**
2. **prefrenular part**
3. **two lateral sublingual recesses**



https://www.sciencedirect.com/science/article/pii/S0168365914003861





https://veteriankey.com/dental-and-oral-diseases/

SUBLINGUAL FLOOR OF THE ORAL CAVITY

PREFRENULAR PART:

- lies inside the arch of the incisor teeth

- **supported ventrally by the incisive part of the mandible**

- **its mucous membrane forms the FRENULUM LINGUAE**

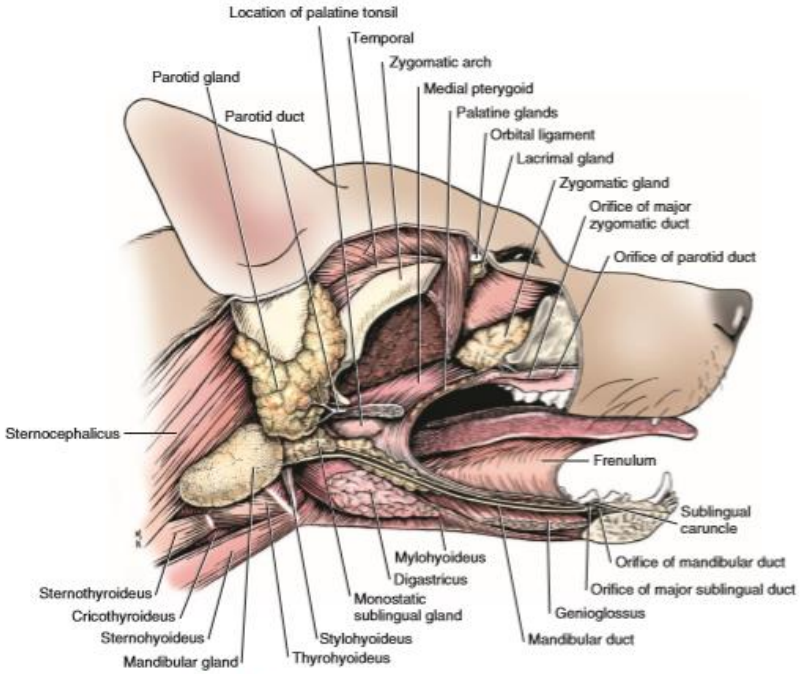
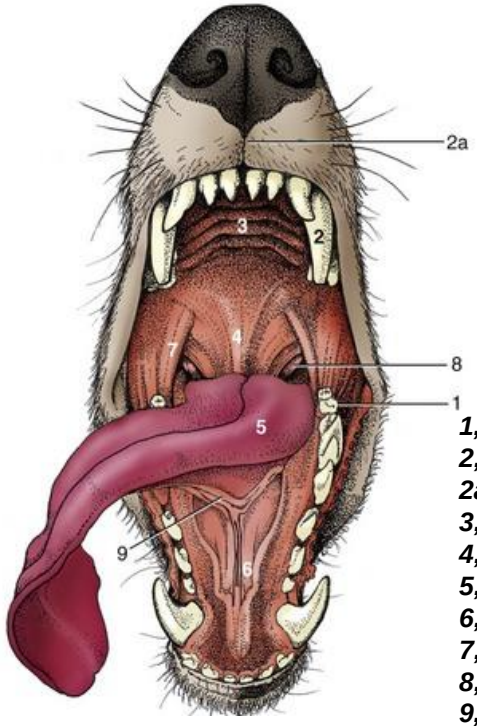


FIGURE 7-1 Salivary glands. (The right half of the mandible is removed.)



1, **vestibule**
2, **canine tooth**
2a, **philtrum**
3, **hard palate**
4, **soft palate**
5, **tongue**
6, **sublingual caruncle**
7, **palatoglossal arch**
8, **palatine tonsil**
9, **frenulum**

https://veteriankey.com/soft-tissues-of-the-oral-cavity/

SUBLINGUAL FLOOR OF THE ORAL CAVITY

PREFRENULAR PART:

CARUNCULA SUBLINGUALIS (sublingual caruncles):

- flattened projections

- on either side of the frenulum

- **rostrolateral to the frenulum**

- **ductus mandibularis and ductus sublingualis (except in Eq) open here**

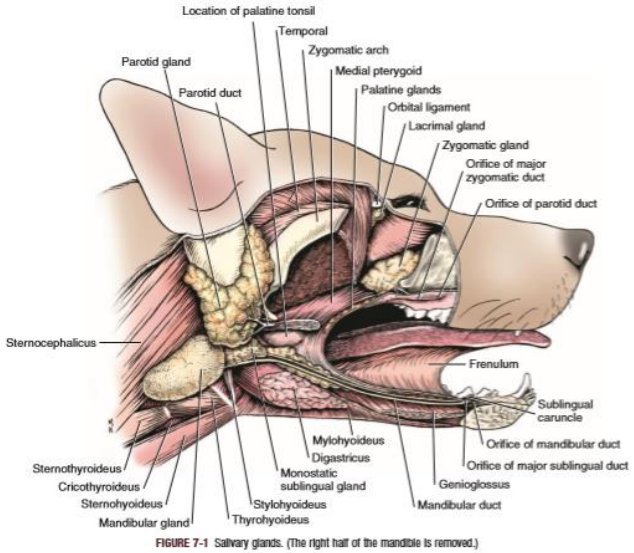
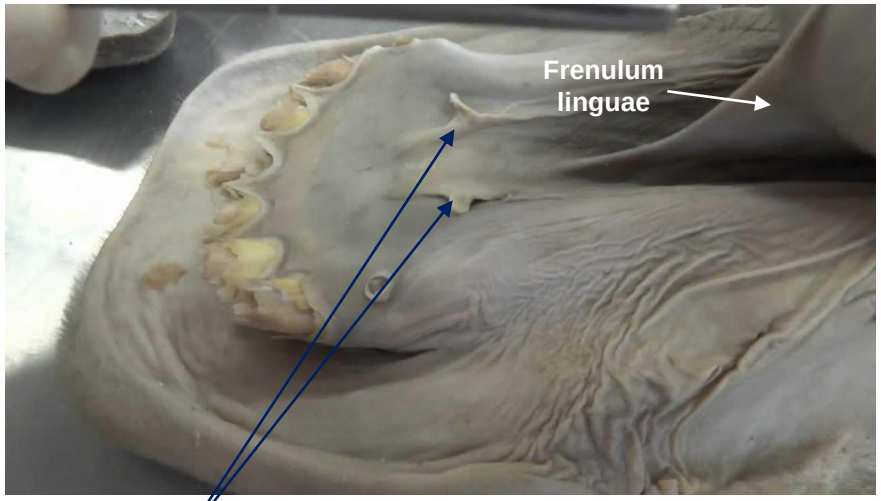
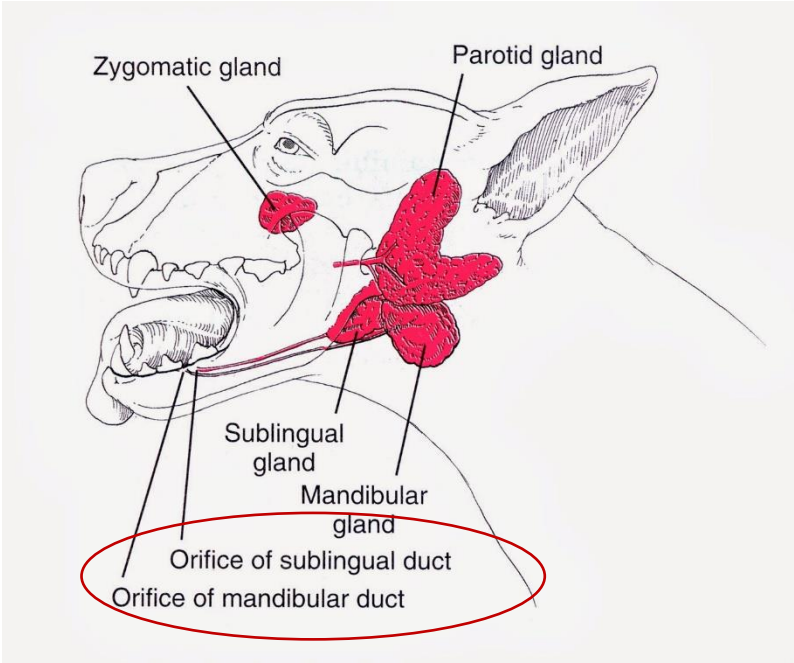


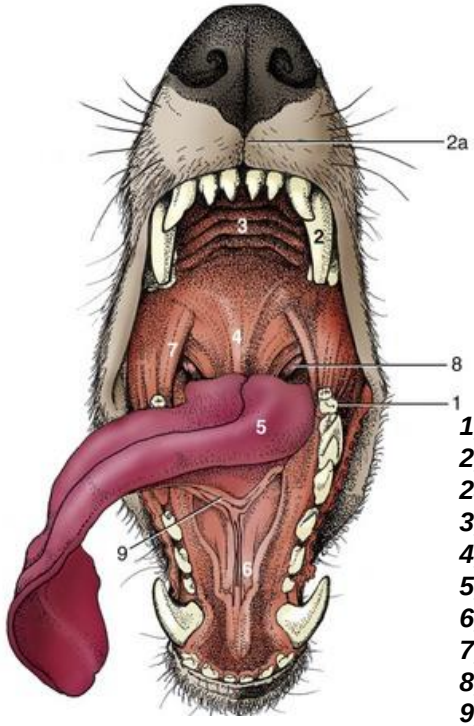
FIGURE 7-1 Salivary glands. (The right half of the mandible is removed.)



Caruncula sublingualis (Eq)
https://www.youtube.com/watch?v=Z4C42w3jTqg



http://kidskunst.info/40/15068-sublingual-caruncle-dog.htm



***1*, vestibule**
***2*, canine tooth**
***2a*, philtrum**
***3*, hard palate**
***4*, soft palate**
***5*, tongue**
***6*, sublingual caruncle**
***7*, palatoglossal arch**
***8*, palatine tonsil**
***9*,frenulum**

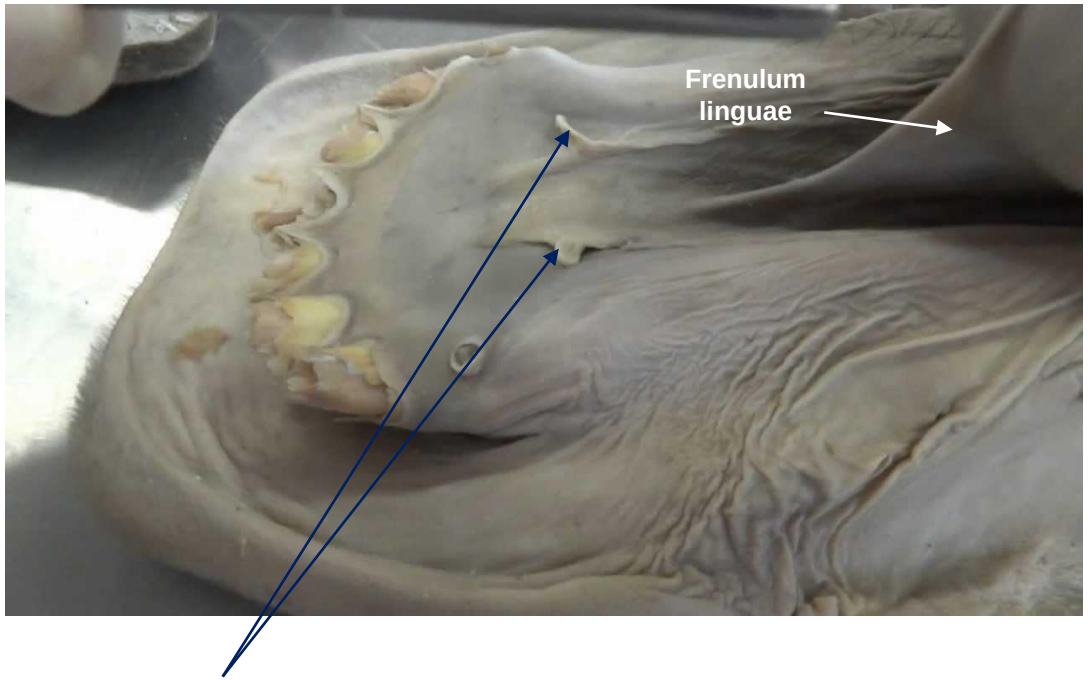
https://veteriankey.com/soft-tissues-of-the-oral-cavity/

SUBLINGUAL FLOOR OF THE ORAL CAVITY

PREFRENULAR PART:

SUBLINGUAL TONSIL:

- **small amount of lymphatic tissue**
- **in the vicinity of the sublingual caruncles**



Caruncula sublingualis (Eq)

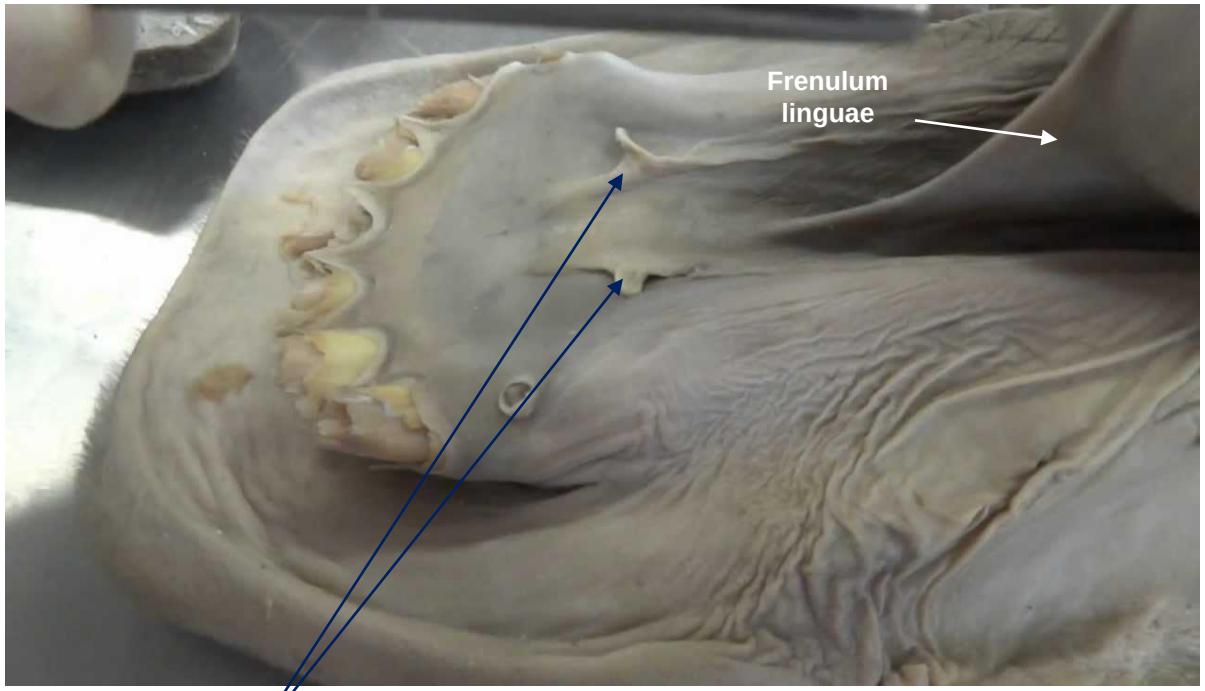
https://www.youtube.com/watch?v=Z4C42w3jTqg

SUBLINGUAL FLOOR OF THE ORAL CAVITY

PREFRENULAR PART:

PARACARUNCULAR GLANDS:

- **in Eq and goat**
- **near the sublingual caruncles**



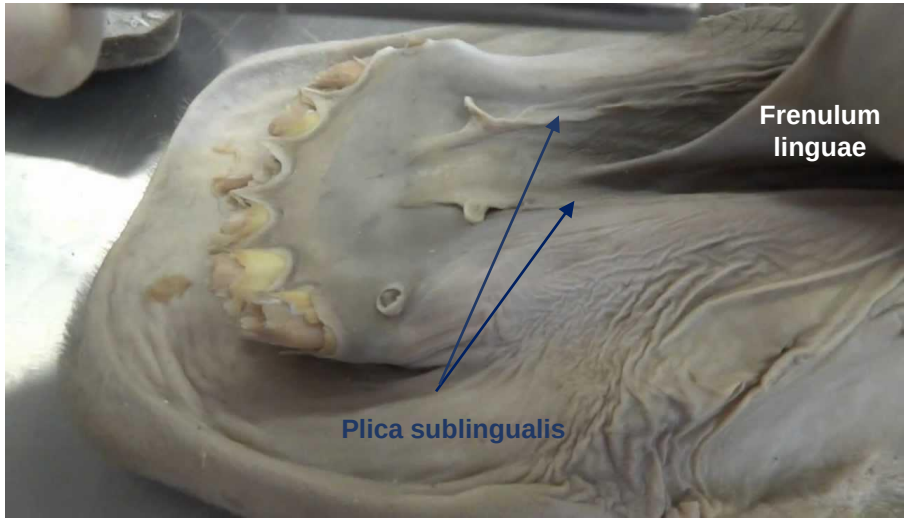
Caruncula sublingualis (Eq)

https://www.youtube.com/watch?v=Z4C42w3jTqg

SUBLINGUAL FLOOR OF THE ORAL CAVITY

PLICA SUBLINGUALIS:

- **fold of mucous membrane**
- **on the floor of the mouth**
- **lateral to the frenulum linguae**
- **ends at the caruncula sublingualis**
- **along its edge – openings of the excretory ducts of the polystomatic sublingual salivary gland**



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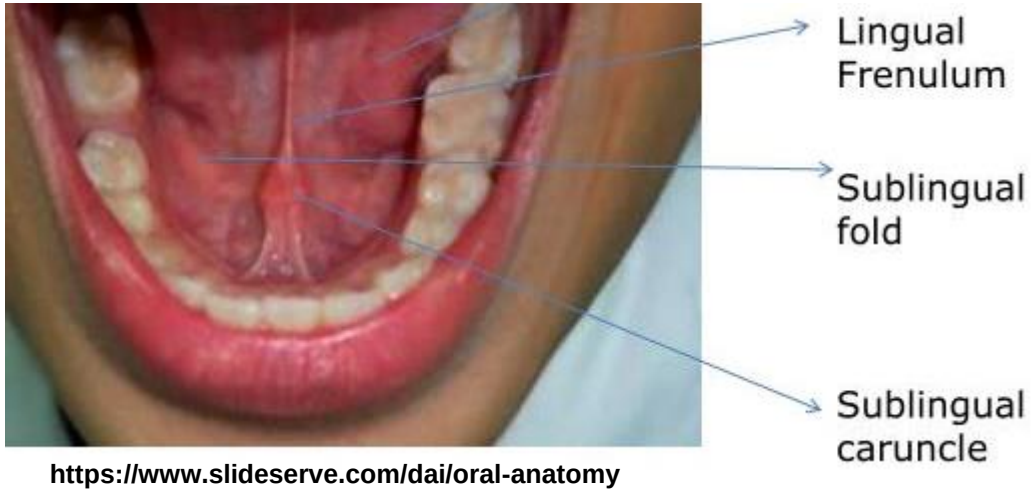


https://www.slideserve.com/dai/oral-anatomy

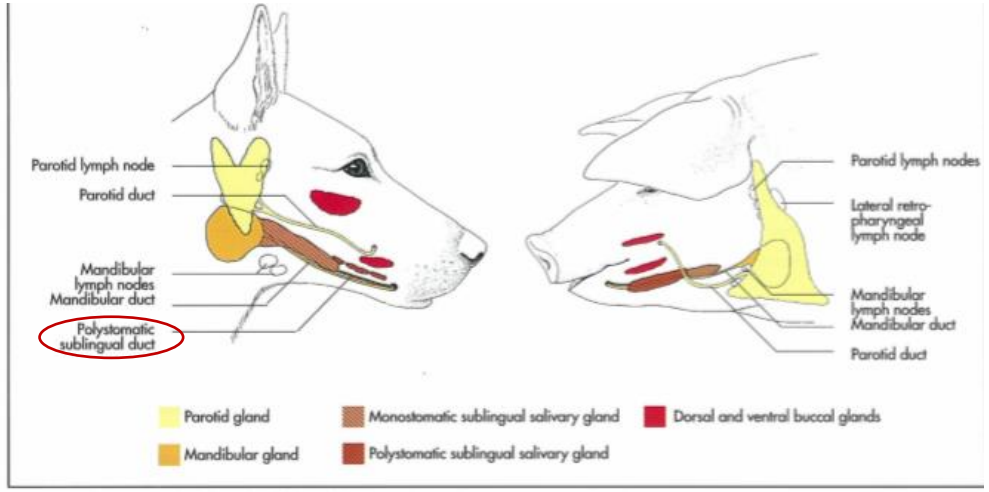


Fig 7-15. Salivary glands of the dog (left) and the pig (right), schematic (Dyce, Sack and Wensing, 1991).

SUBLINGUAL FLOOR OF THE ORAL CAVITY

LATERAL SUBLINGUAL RECESSES:

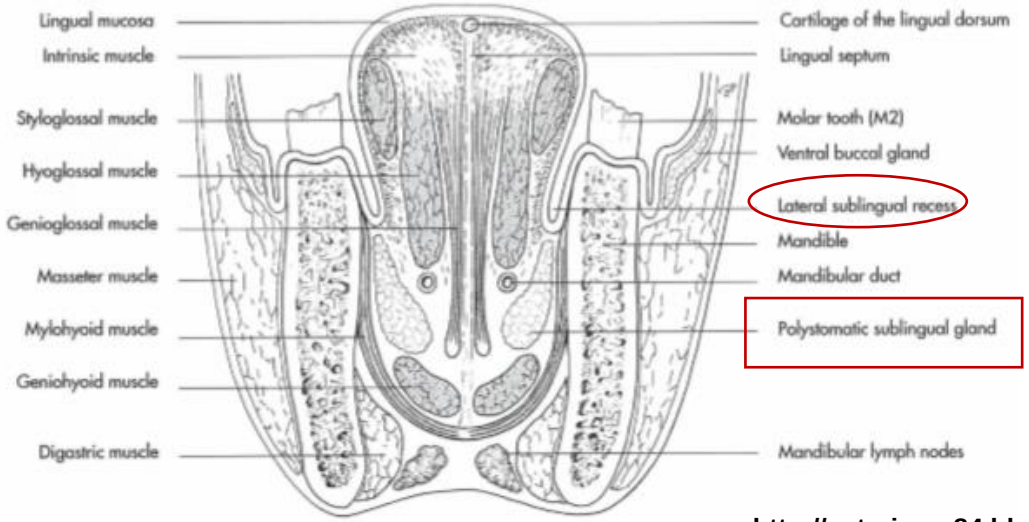
- **along the floor of each recess lies the polystomatic sublingual salivary gland inside the plica sublingualis**

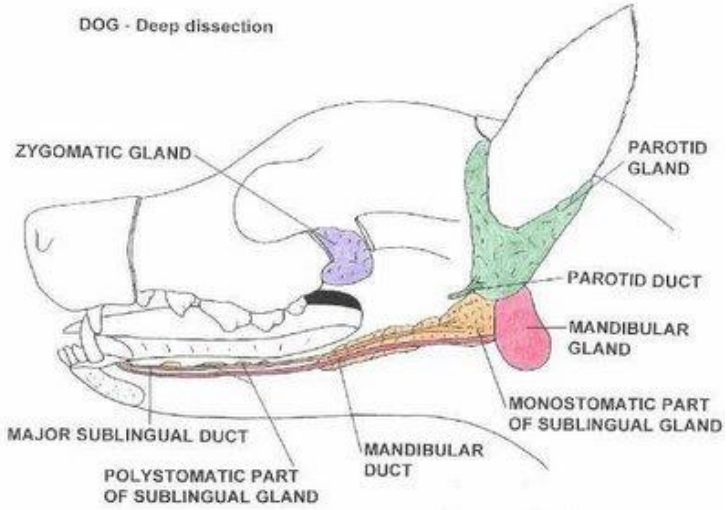
bounded laterally by:

- **the lower cheek teeth**
- **gums**

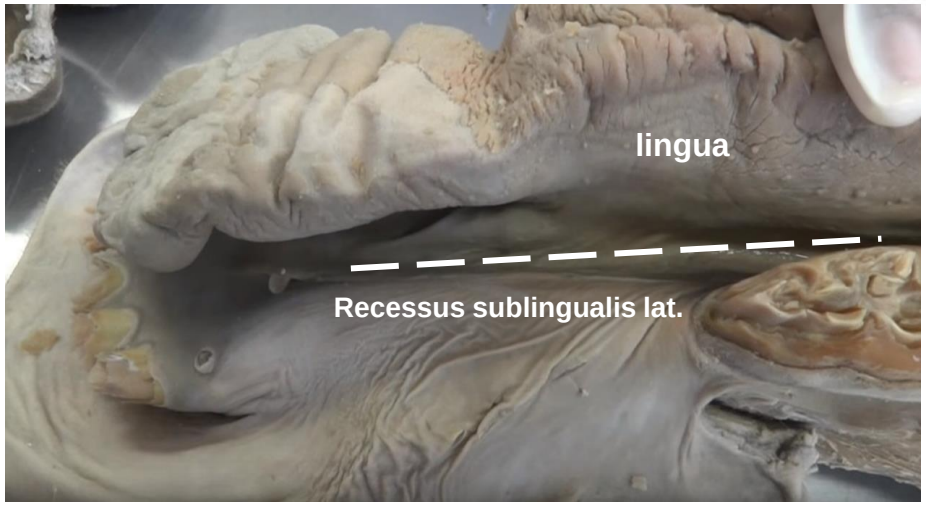
bounded medially by:

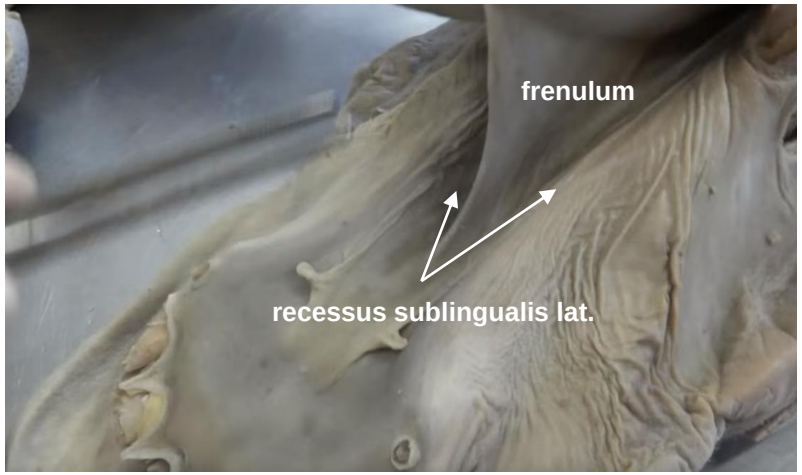
- the lateral surface of the tongue





http://veterinary84.blogspot.com/2006/02/parotid-salivary-gland-secretion-mixed.html





https://www.youtube.com/watch?v=Z4C42w3jTqg

SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

- **small glands of the oral cavity**
- **provide moisture**

I. SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES)

II. LARGE SALIVARY GLANDS (GLANDULAE SALIVARIAE MAJORES)

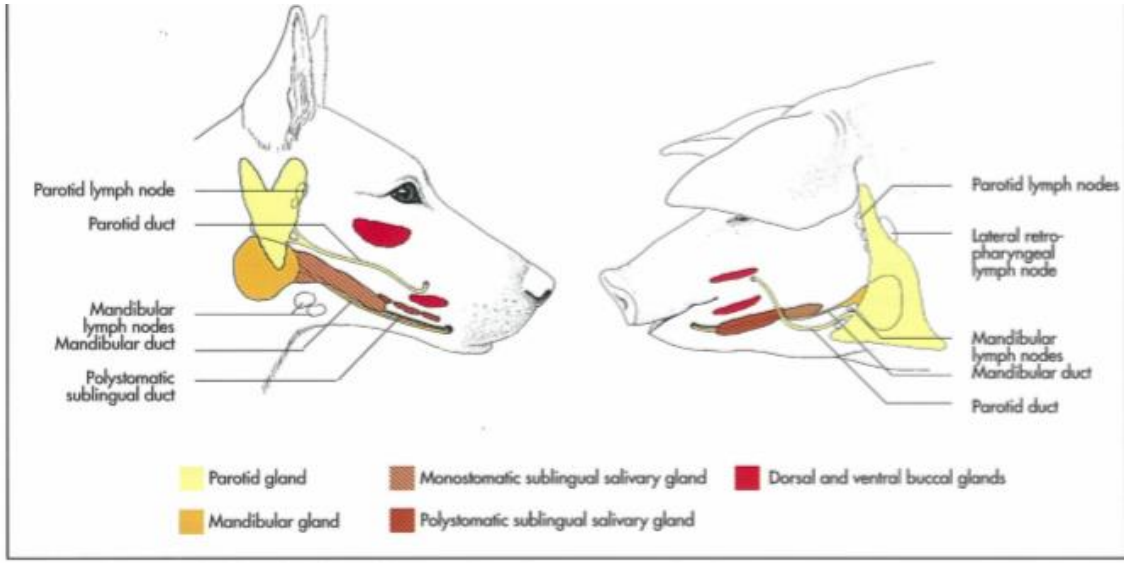


Fig 7-15. Salivary glands of the dog (left) and the pig (right), schematic (Dyce, Sack and Wensing, 1991).

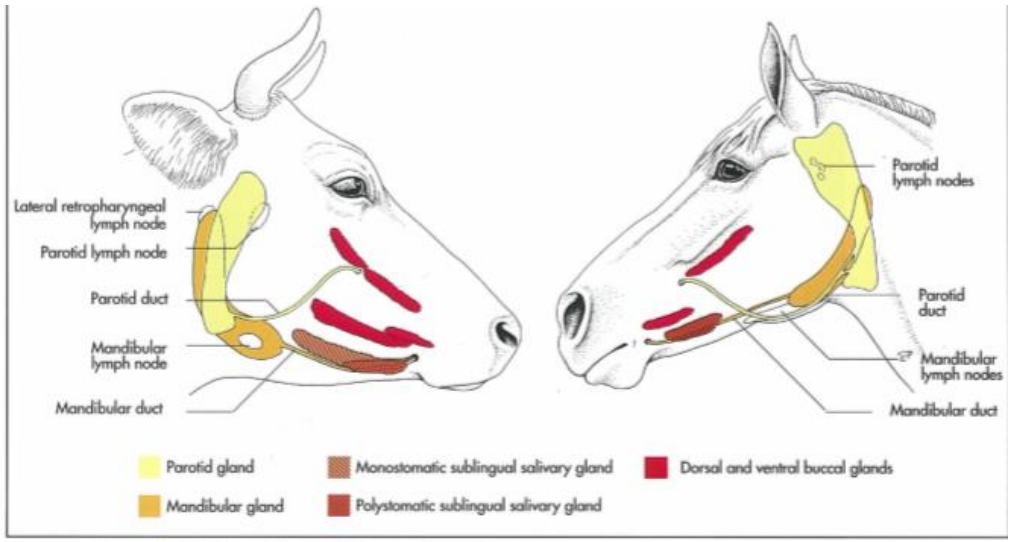


Fig 7-16. Salivary glands of the ox (left) and the horse (right), schematic (Dyce, Sack and Wensing, 1991).

SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

1. glandulae labiales – glands of the lips

2. glandulae buccales – glands of the cheeks

3. glandulae buccales dorsales:

- extends from the angle of the mouth to M. masseter

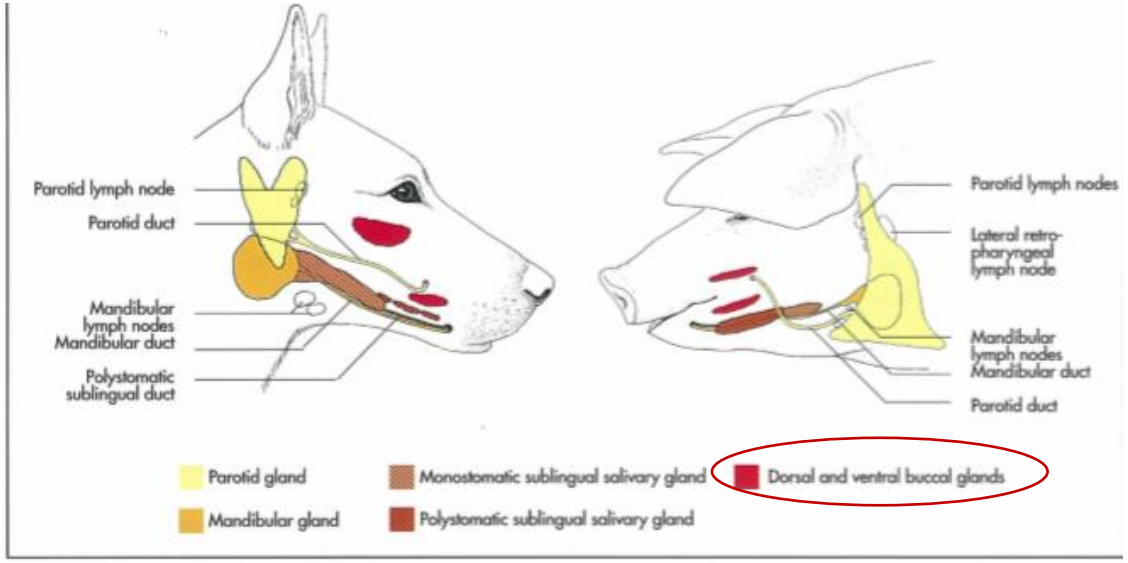


Fig 7-15. Salivary glands of the dog (left) and the pig (right), schematic (Dyce, Sack and Wensing, 1991).

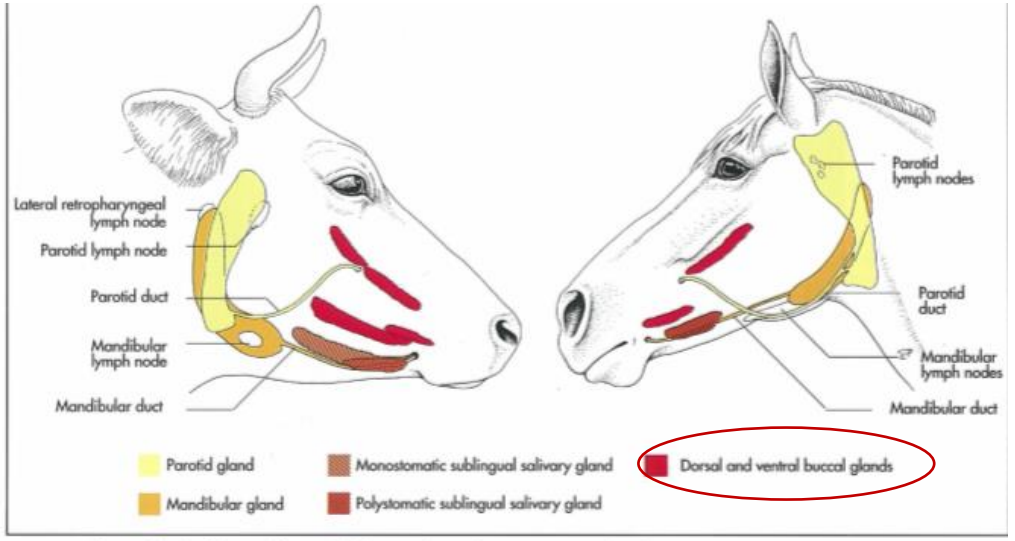


Fig 7-16. Salivary glands of the ox (left) and the horse (right), schematic (Dyce, Sack and Wensing, 1991).

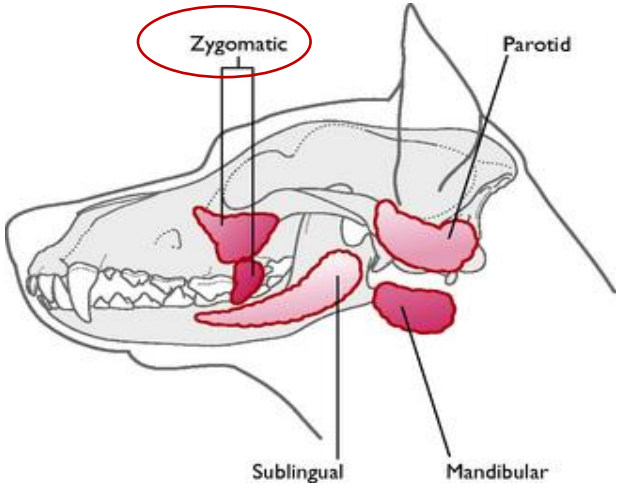
SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

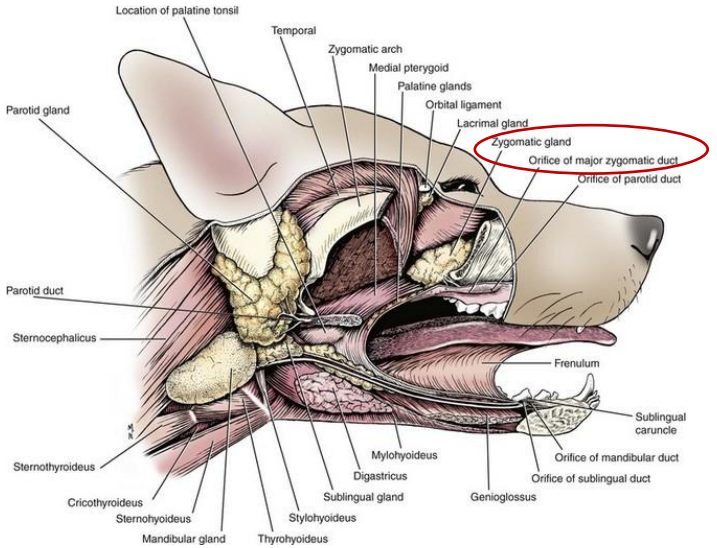
SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

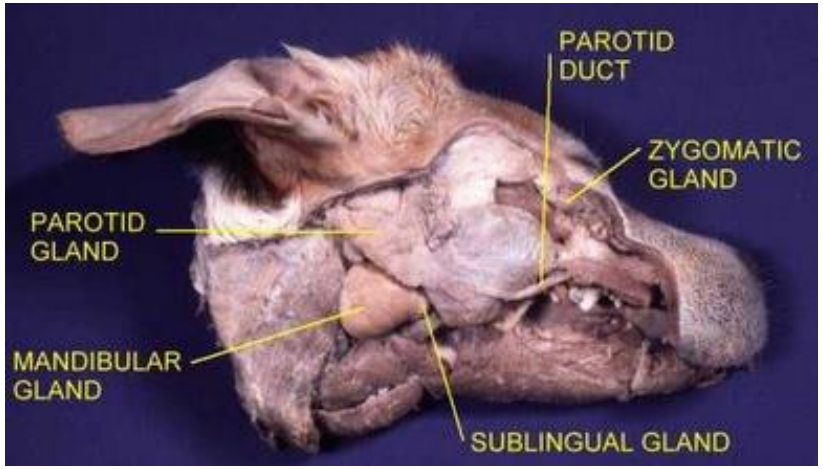
4. Glandula zygomatica:

- **in Car**
- **medial to the zygomatic arch**
- **ductus glandulae zygomaticae major opens on a papilla opposite the upper first molar**
- **ductus glandulae zygomaticae minores**



https://veteriankey.com/digestive-system/





http://bvetmed1.blogspot.com/2013/02/oral-cavity-lecture-131.html

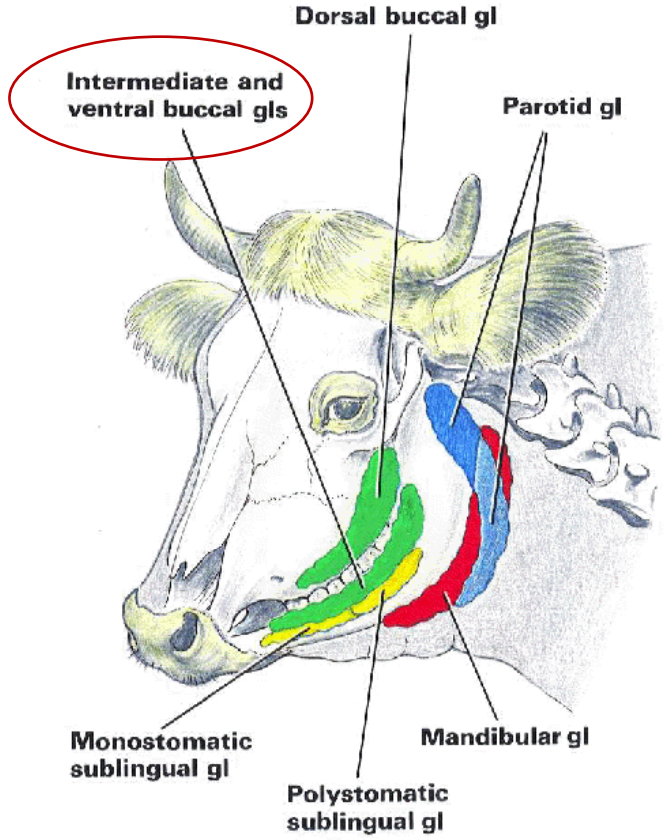
SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

5. Glandulae buccales intermediae:

- **in Ru**
- **along the dorsal border of the A. labialis inf.**
- **between the two layers of M. buccinator**



SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

6. Glandulae buccales ventrales:

- **extend from the angle of the mouth to M. masseter**
- **ventral to A. labialis inf.**
- **covered by M. buccinator**

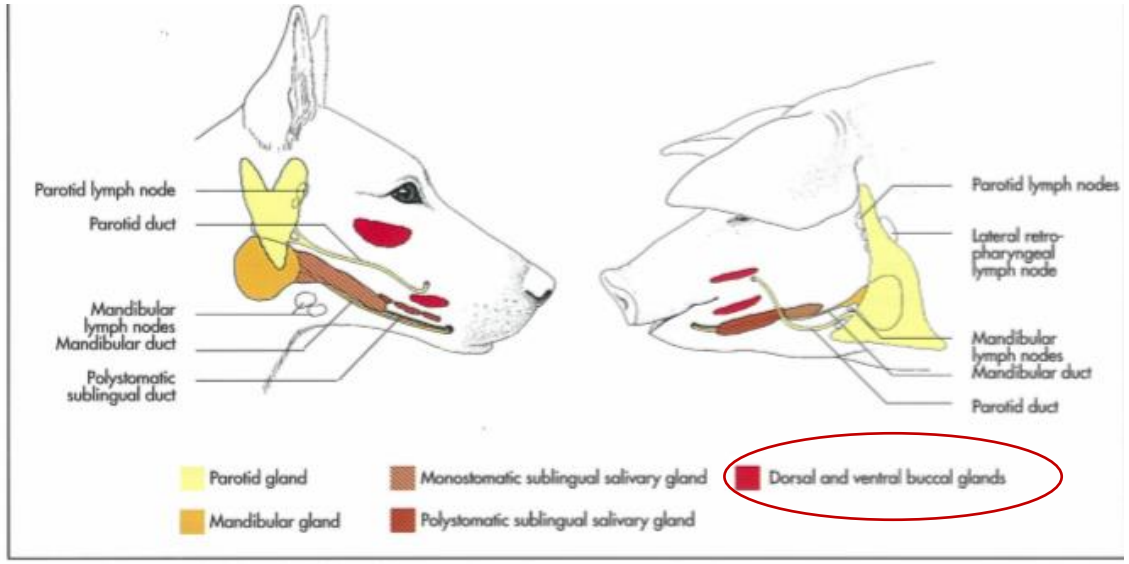


Fig 7-15. Salivary glands of the dog (left) and the pig (right), schematic (Dyce, Sack and Wensing, 1991).

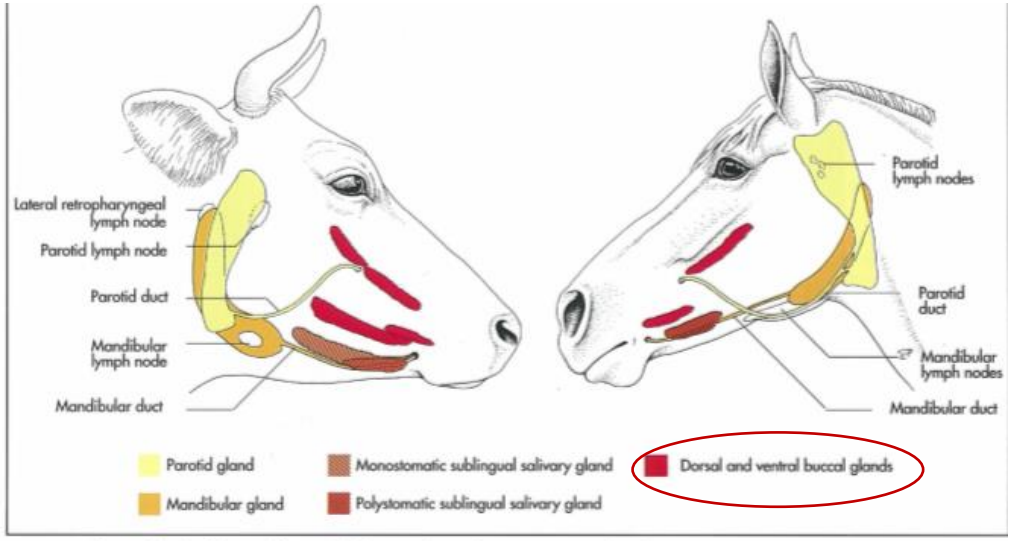


Fig 7-16. Salivary glands of the ox (left) and the horse (right), schematic (Dyce, Sack and Wensing, 1991).

SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

7. Glandulae molares:

- **molar glands**
- **caudal continuation of the glandulae buccales ventrales**
- **deep to M. masseter**

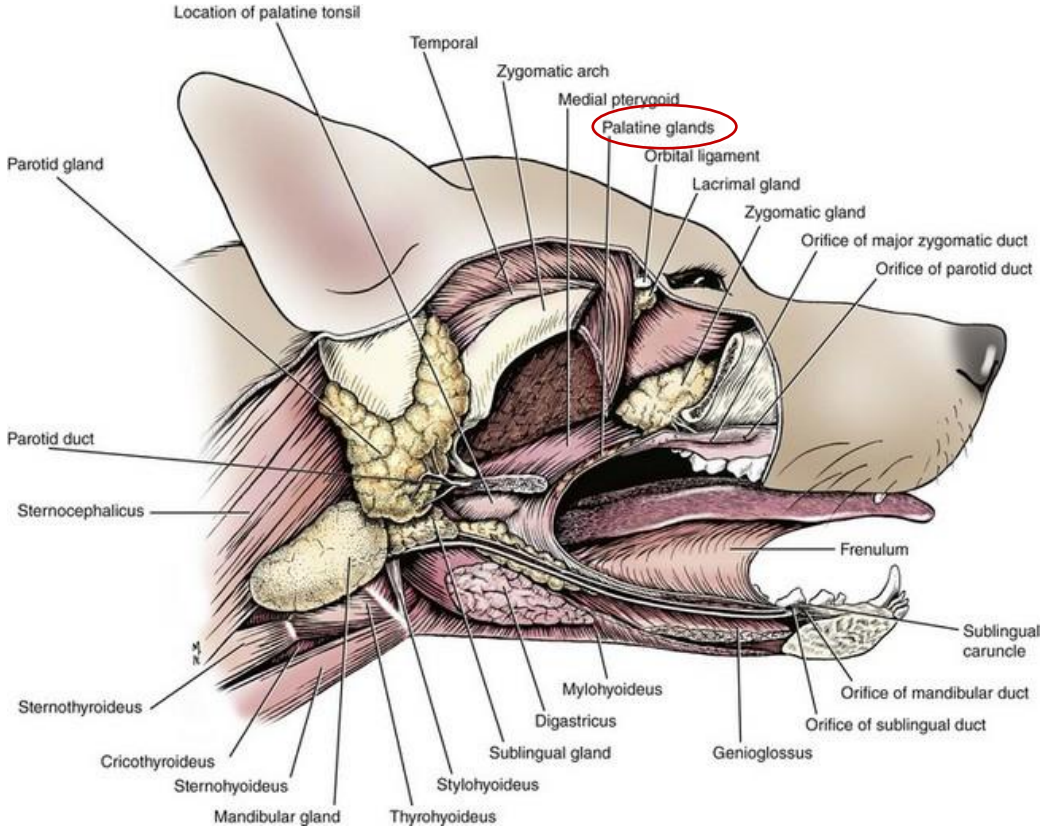
SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

8. Glandulae palatinae:

- **palatine glands**
- **on the oropharyngeal side of the soft palate**
- **in Car. on the nasopharyngeal side and hard palate**



SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

SMALL SALIVARY GLANDS (GLANDULAE SALIVARIAE MINORES):

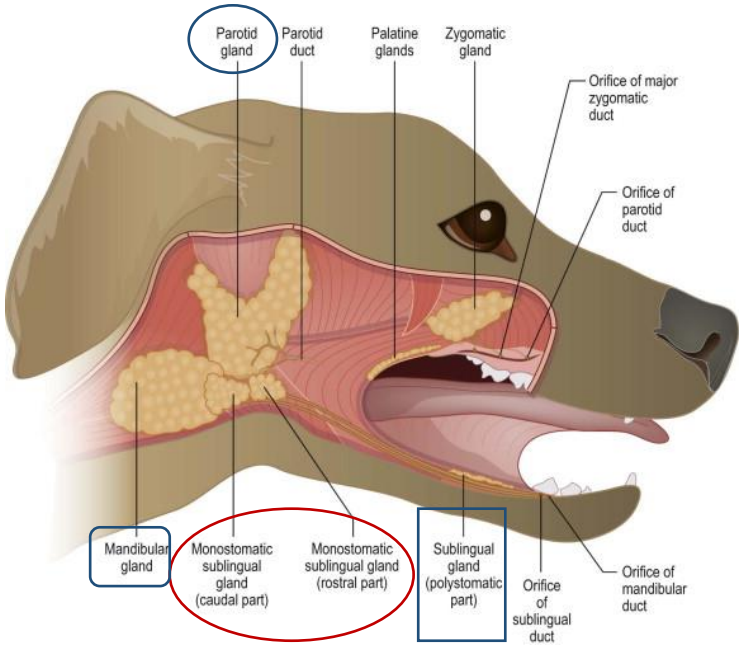
9. Glandulae linguales:

- **lingual glands**

- on root and margine of the tongue

SALIVARY GLANDS OF THE ORAL CAVITY

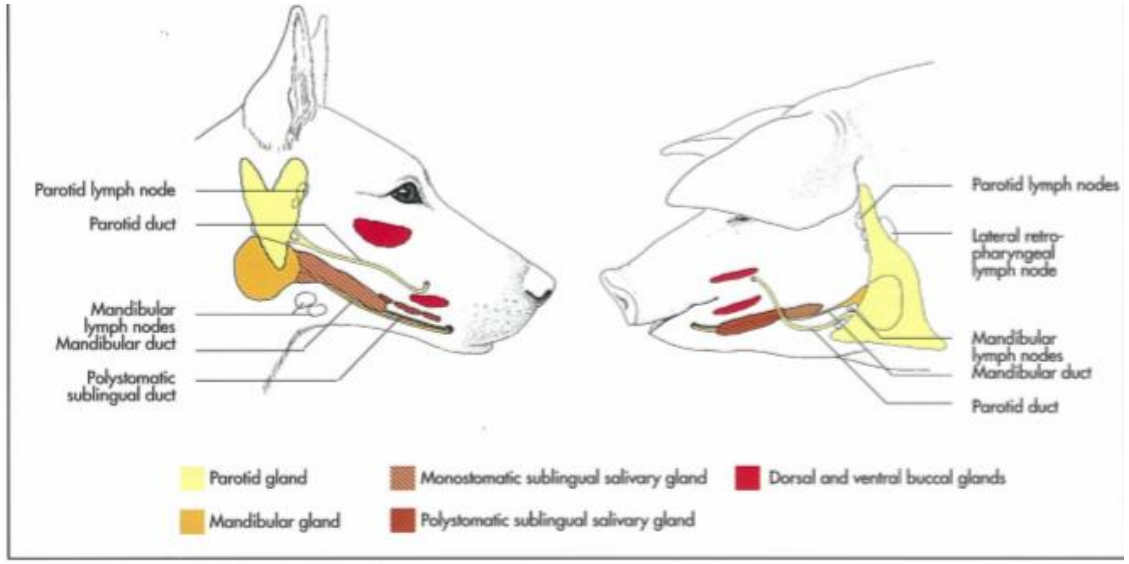
(GALNDULAE ORIS)



https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/infraorbital-artery

LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

1. **Glandula sublingualis monostomatica**
2. **Glandula sublingualis polystomatica**
3. **Glandula mandibularis**
4. **Glandula parotidea**



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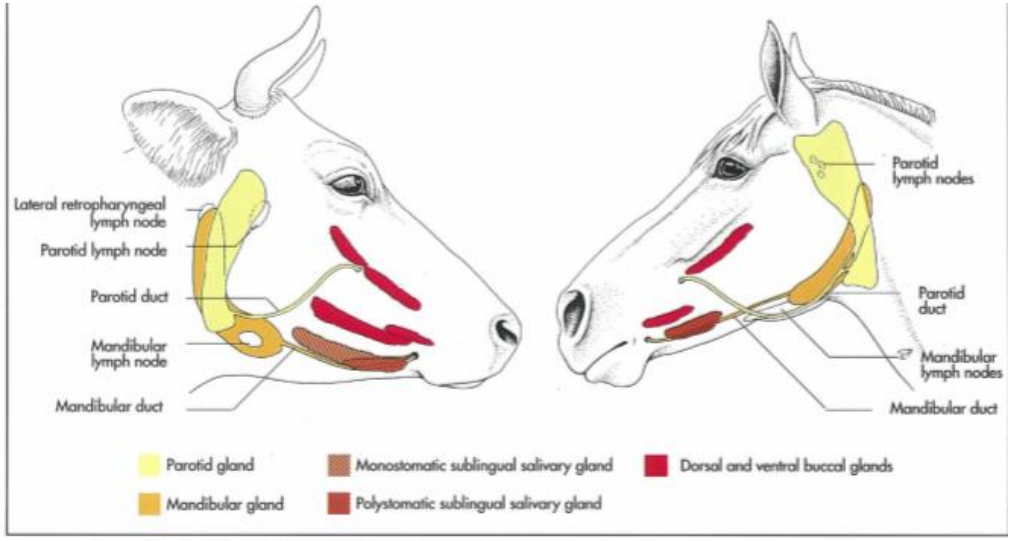


Fig 7-16. Salivary glands of the ox (left) and the horse (right), schematic (Dyce, Sack and Wensing, 1991).

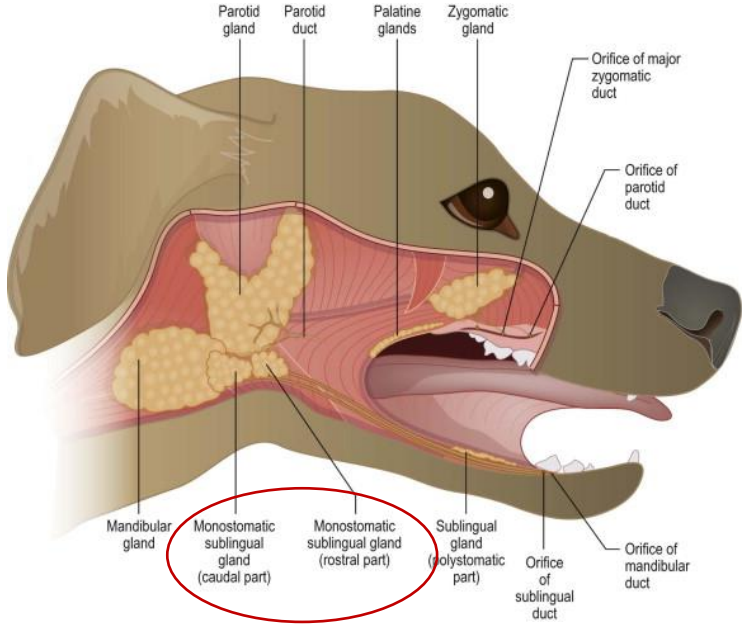
SALIVARY GLANDS OF THE ORAL CAVITY

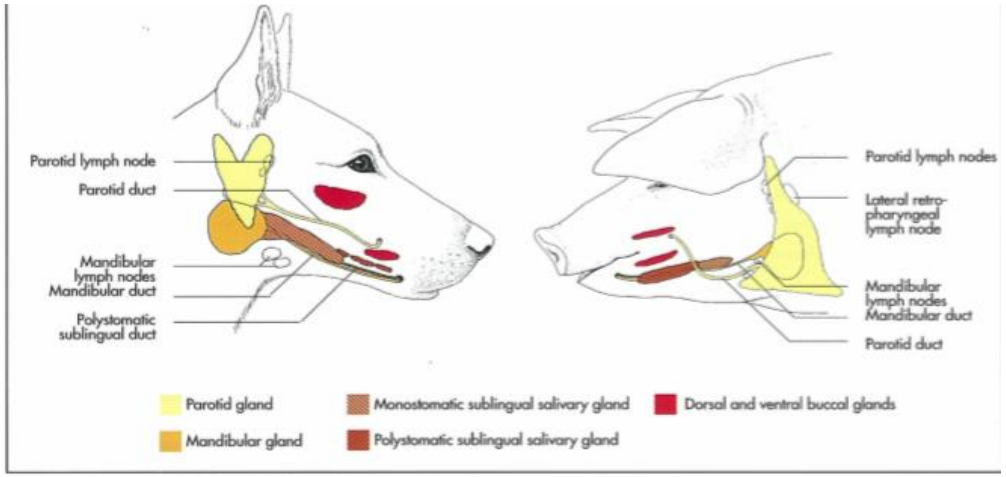
(GALNDULAE ORIS)

LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

Glandula sublingualis monostomatica:

- extends along the ductus mandibularis
- between M. digastricus and M. masseter
- medial to the mandibula
- in Car its caudal part connected with the Gl. mandibualris
- absent in Eq





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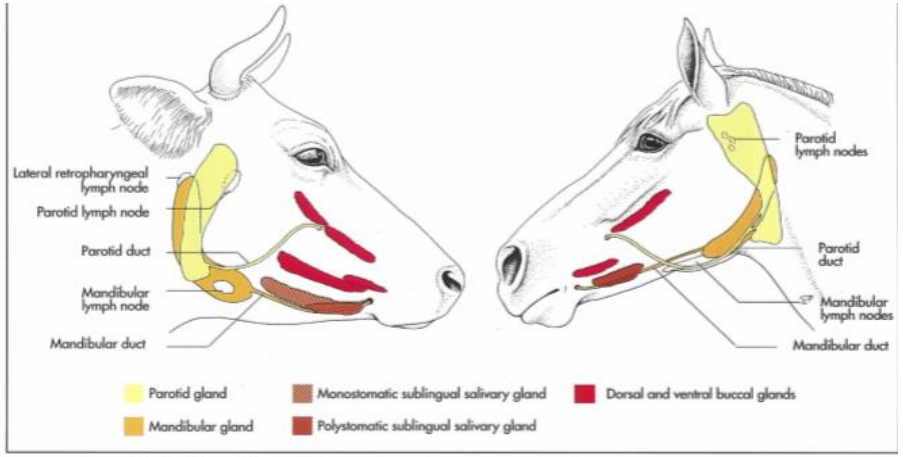

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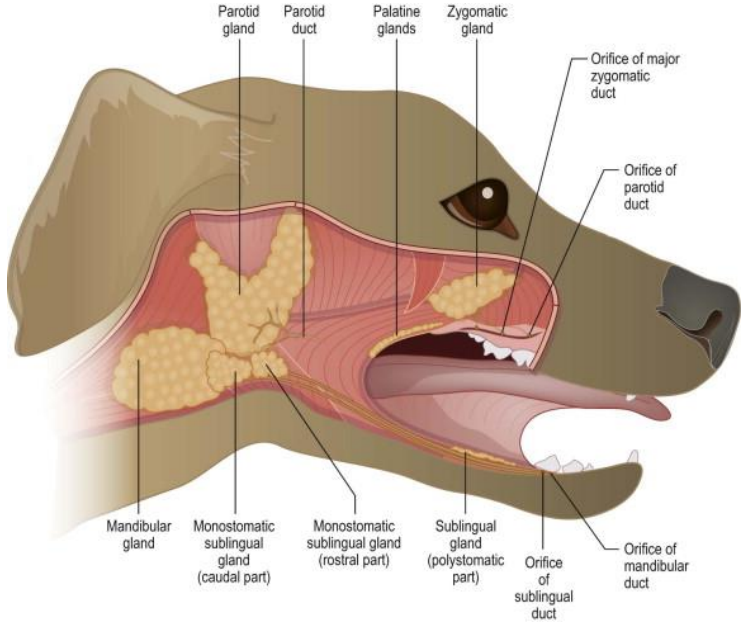
SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)



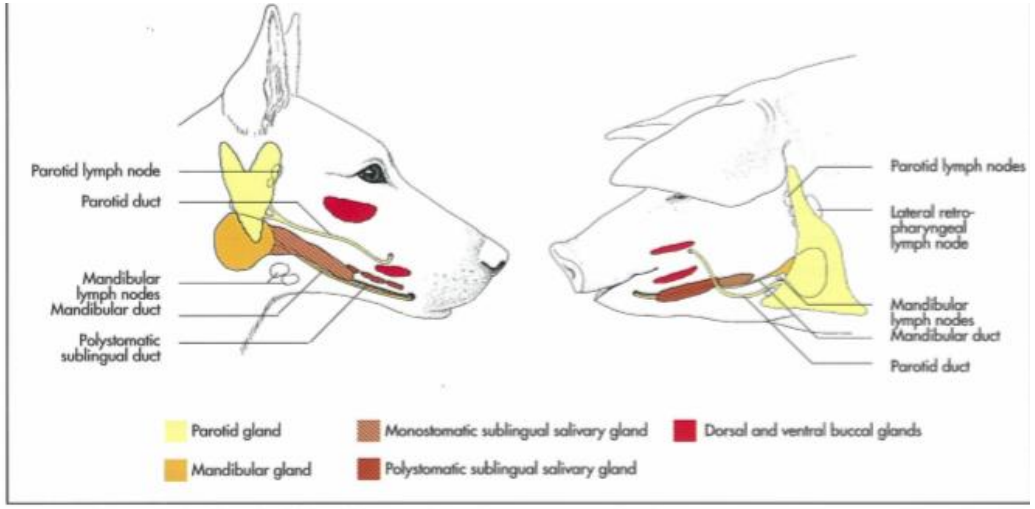
LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

Glandula sublingualis monostomatica:

Ductus sublingualis major:

- major duct of glandula sublingualis monostomatica

- **accompanies the ductus mandibularis**
- **opens on the caruncula sublingualis**



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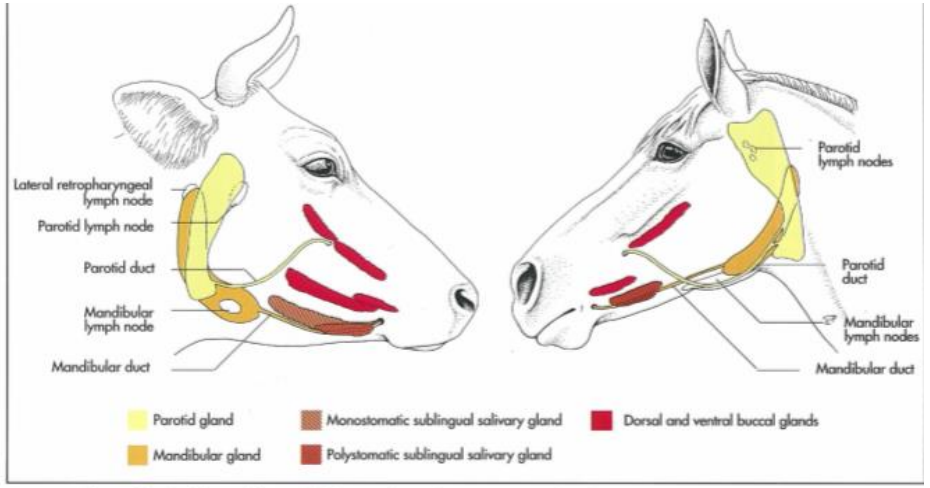

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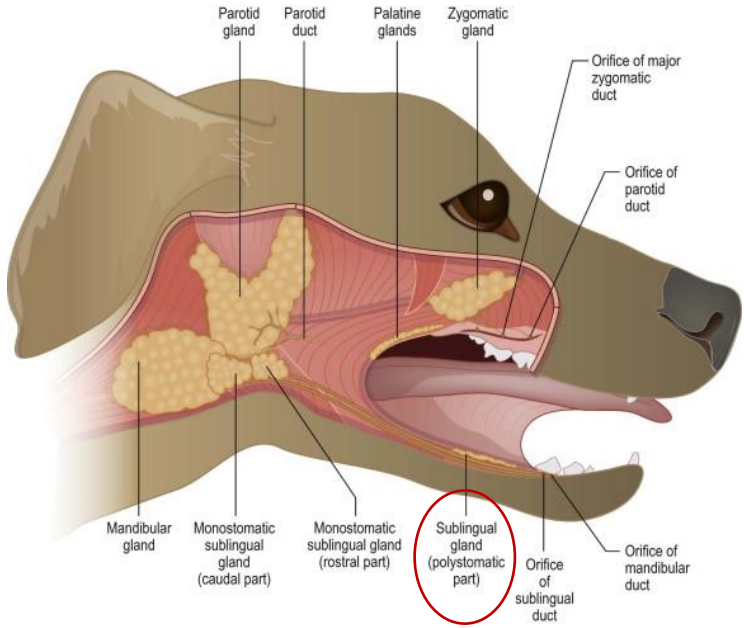
SALIVARY GLANDS OF THE ORAL CAVITY

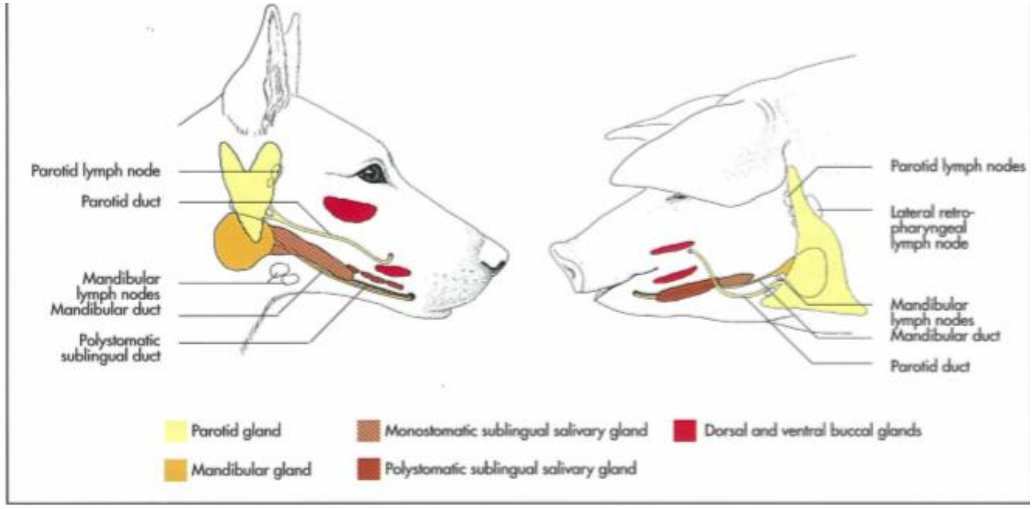
(GALNDULAE ORIS)

LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

Glandula sublingualis polystomatica:

- series of small salivary glands with separate ducts
- in the submucosa of the floor of the mounth
- along the ductus mandibularis
- ductus sublingualis minores – open along the plica sublingulais





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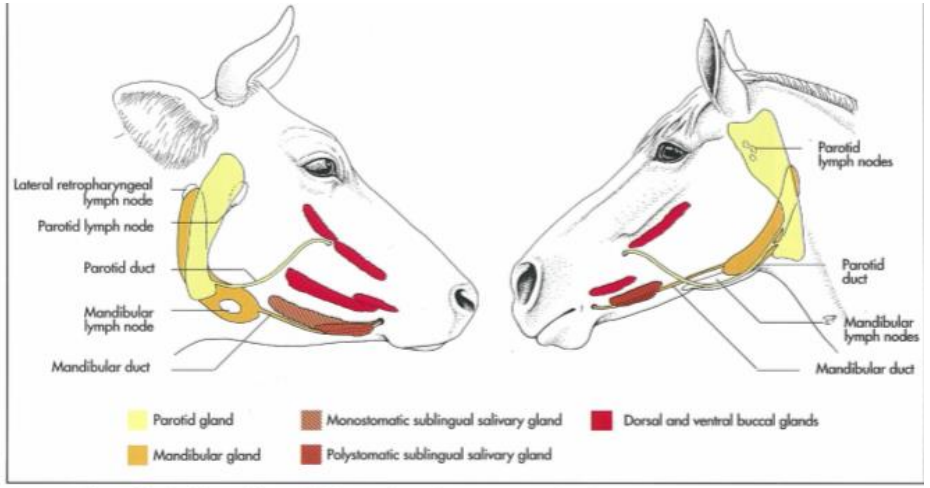

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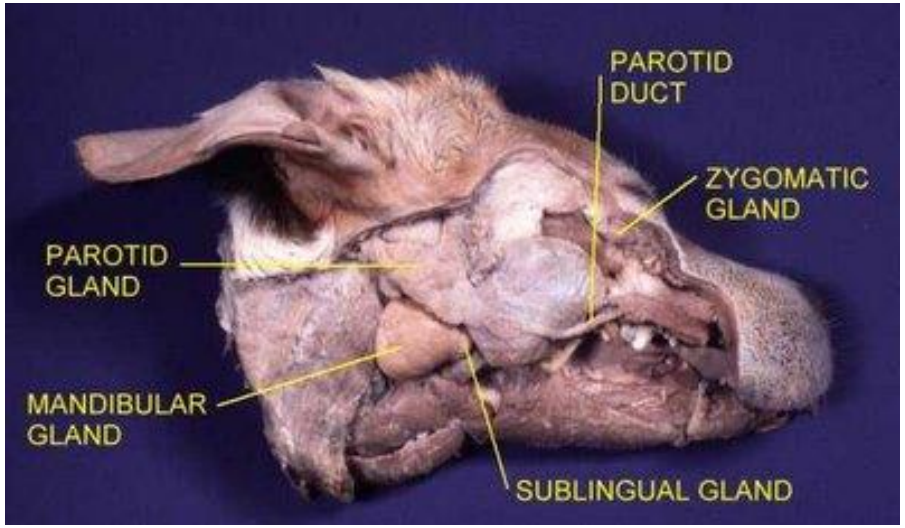
SALIVARY GLANDS OF THE ORAL CAVITY

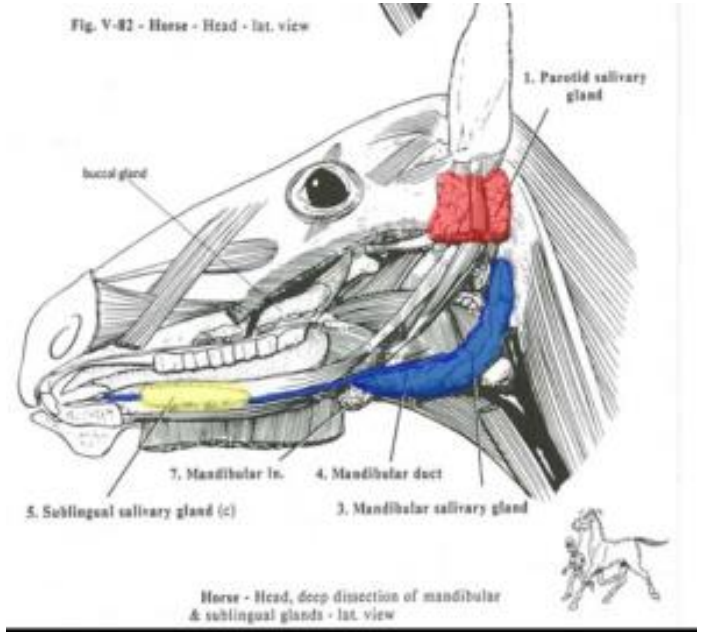
(GALNDULAE ORIS)

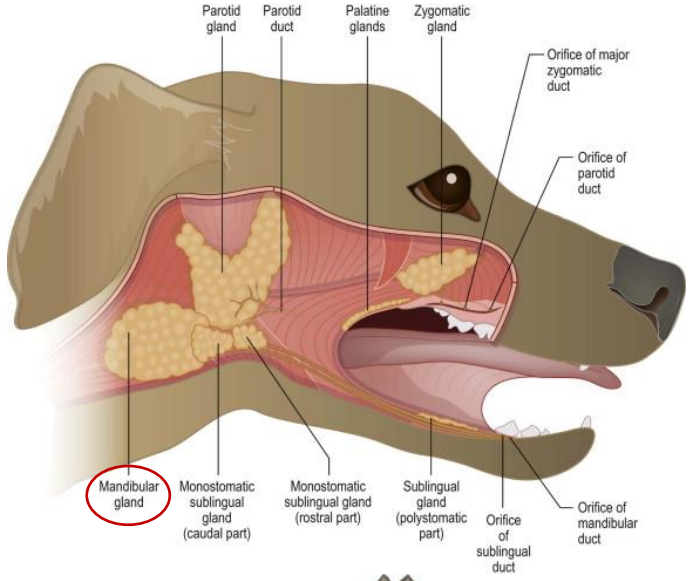
LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

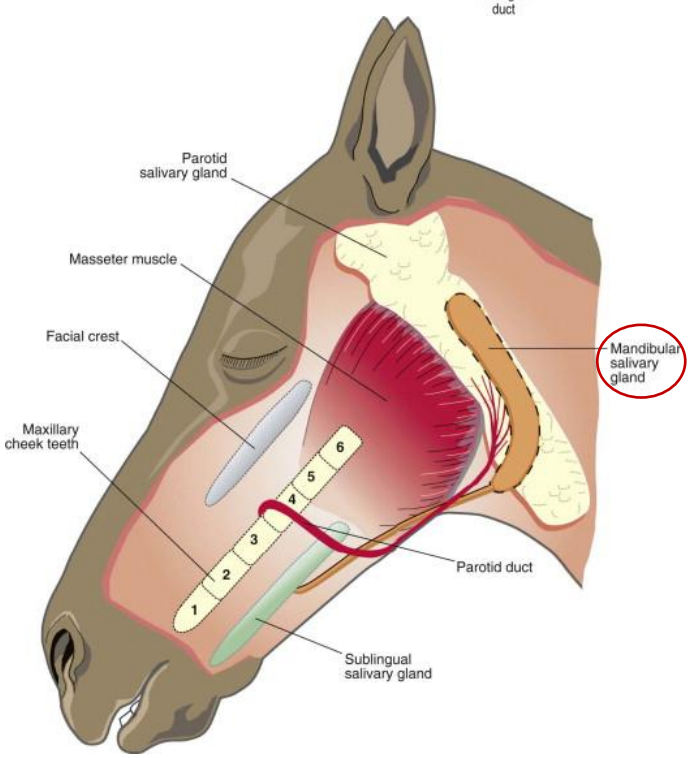
Glandula mandibularis:

- **mandibular gland**
- **between the basihyoid and ala atlantis**
- **partly covered by the parotid gland**









https://www.sciencedirect.com/topics/veterinary-science-and-veterinary-medicine/sublingual-gland

SALIVARY GLANDS OF THE ORAL CAVITY

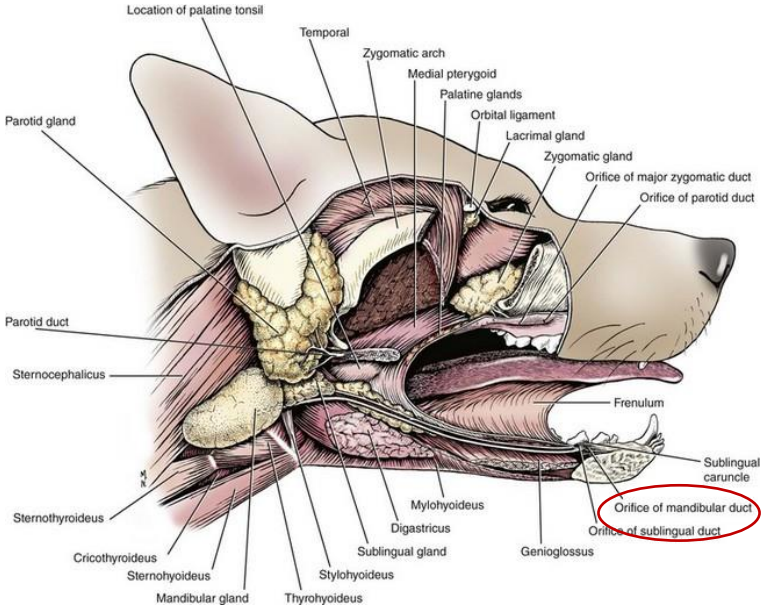
(GALNDULAE ORIS)

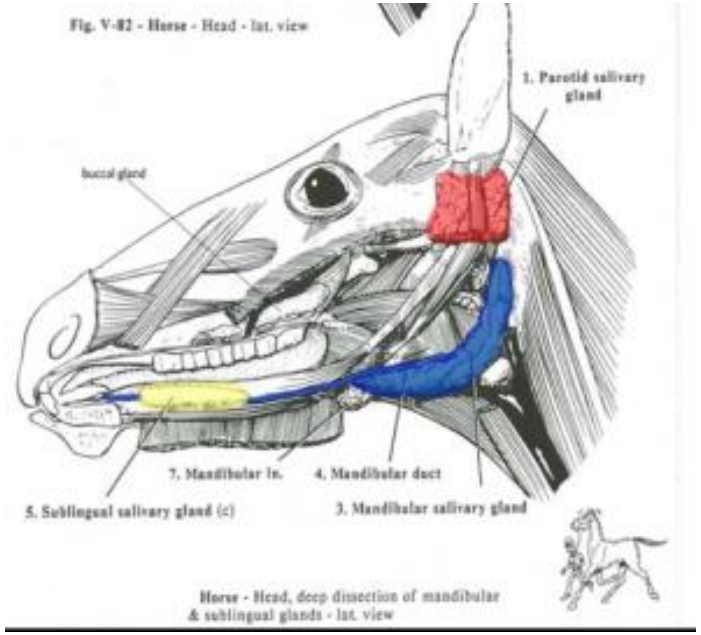
LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

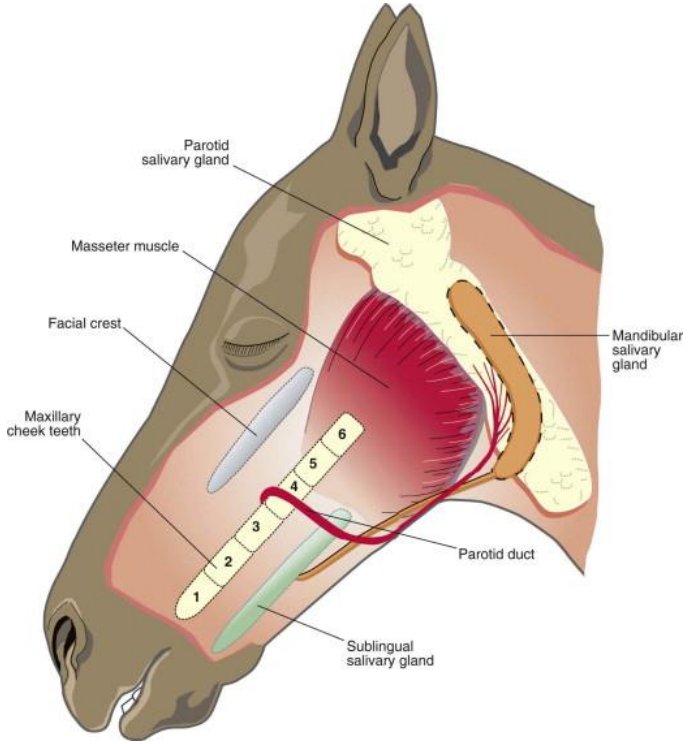
Glandula mandibularis

Ductus mandibularis:

- passes rostrally between the mylohyoid and hypoglossus muscles
- medial to the sublingual glands
- opens on the sublingual caruncle

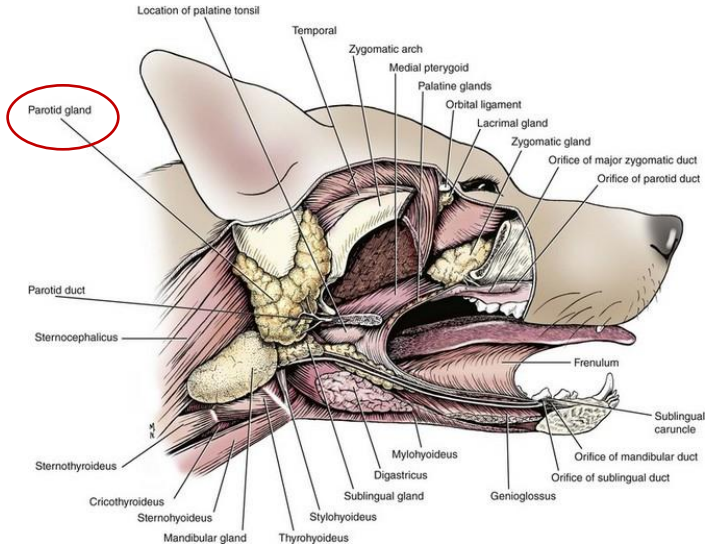






SALIVARY GLANDS OF THE ORAL CAVITY

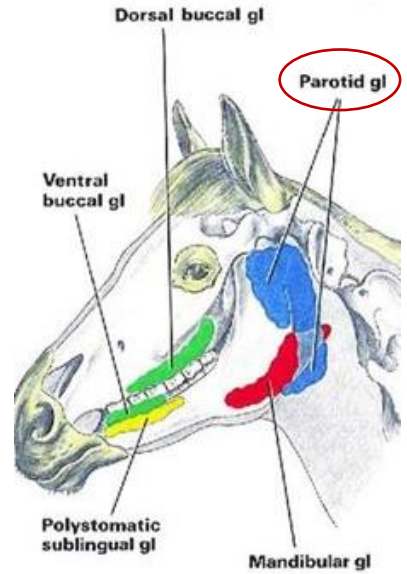
(GALNDULAE ORIS)

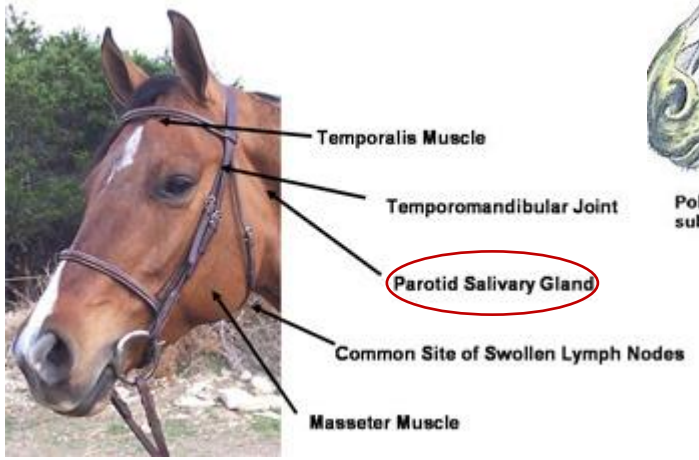


LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

Glandula parotidea:

- parotid gland
- the largest salivary gland – except Bo.
- fills the retromandibular fossa (fossa between the ramus mandibuale and ala atlantis)
- releated dorsally to the base of the ear
- fascia parotidea
- *behind the gland - A. carotis ext. V. jugularis ext., N. facialis. N. trigeminus*





https://www.horseforum.com/horse-health/swollen-face-72264/

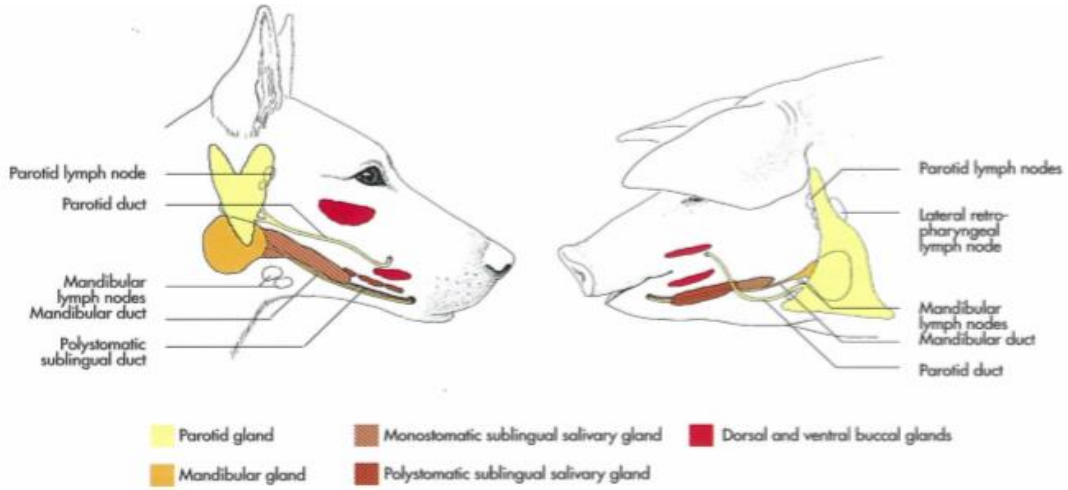
SALIVARY GLANDS OF THE ORAL CAVITY

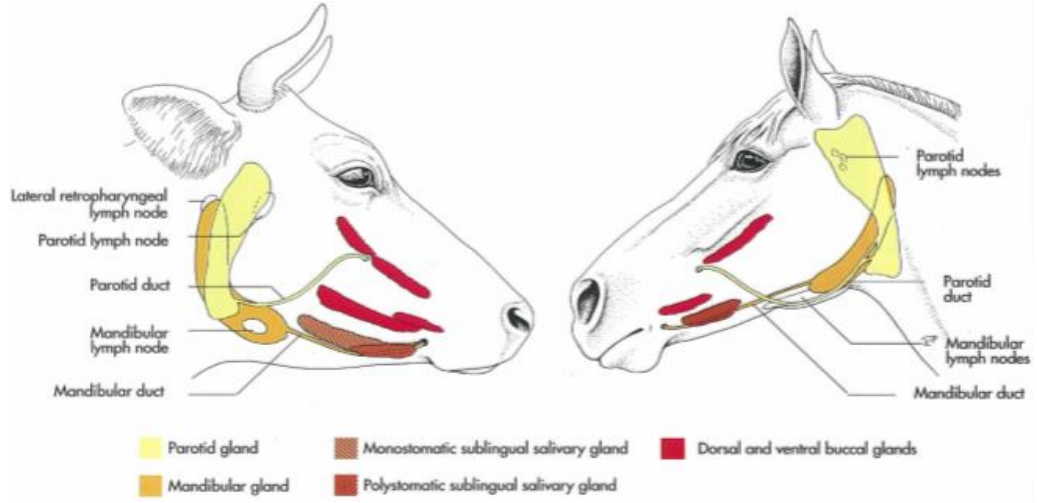
(GALNDULAE ORIS)

LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

Glandula parotidea:

1. **in Car. – small, triangular in shape**
2. **in pig – large, triangular in shape**
3. **in ox – club – shape**





SALIVARY GLANDS OF THE ORAL CAVITY

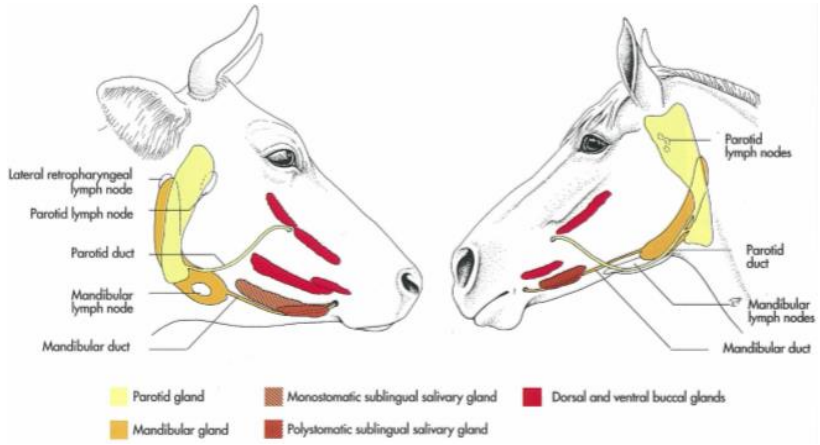
(GALNDULAE ORIS)

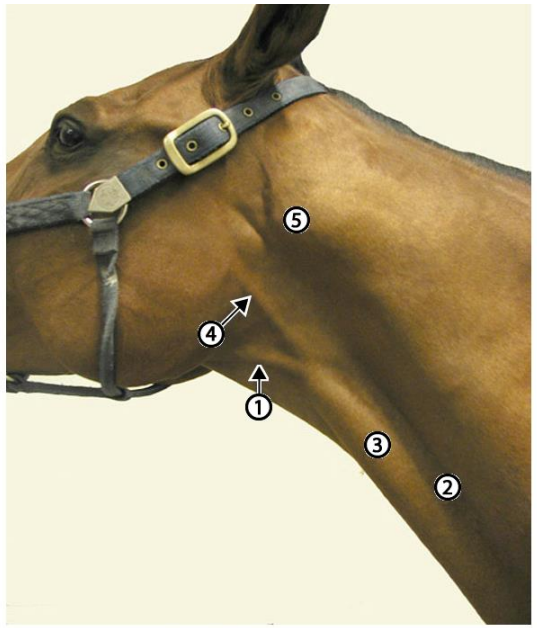
LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

Glandula parotidea:

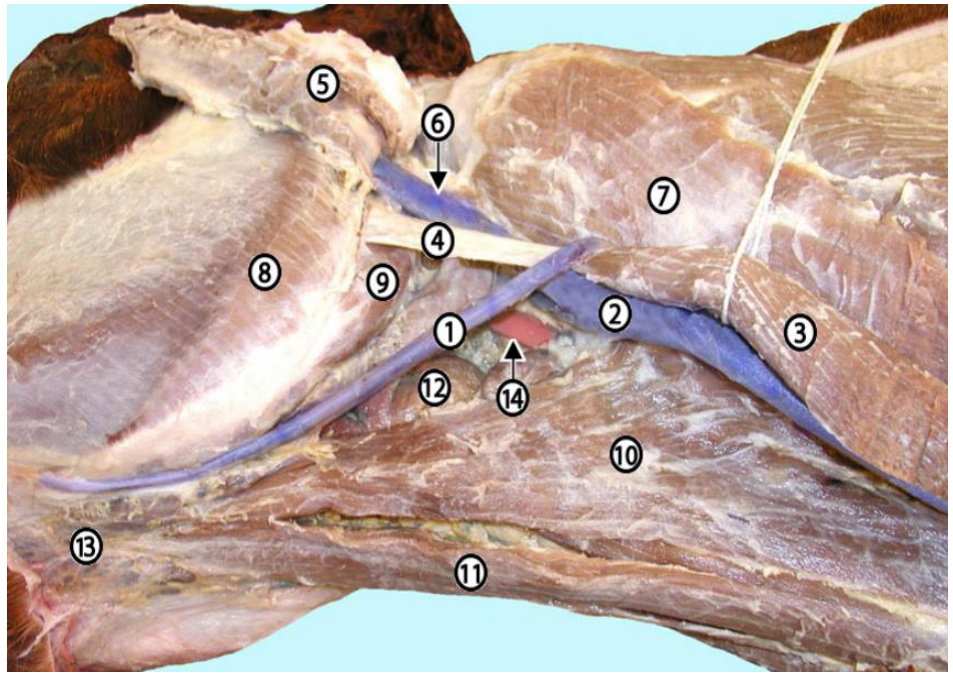
1. in horse:

- **large**
- **fills the retromandibular fossa completely**
- **the ventral end wider, occupies the angle between the linguofacial and external jugular veins**





Landmarks for Viborg's triangle. 1, linguofacial vein; 2, jugular groove; 3, sternocephalicus (sternomandibularis) m.; 4, sternocephalicus tendon; 5, location of the wing of the atlas.



Reflection of several structures to expose the maxillary vein (6) and the carotid artery (14). 1, linguofacial vein; 2, external jugular vein; 3, sternocephalicus m. reflected; 4, sternocephalicus tendon; 5, parotid salivary gland reflected; 7, mastoid part of the brachiocephalicus m.; 8, masseter m.; 9, occipitomandibularis m.; 10, omohyoideus m.; 11, sternohyoideus m.; 12, cranial deep cervical lymph nodes; 13, mandibular lymph nodes.

http://vanat.cvm.umn.edu/ungDissect/Lab08/Img8-14.html

SALIVARY GLANDS OF THE ORAL CAVITY

(GALNDULAE ORIS)

LARGE SALIVARY GLANDS (GLANDULAE SALIVARIEA MAJORES):

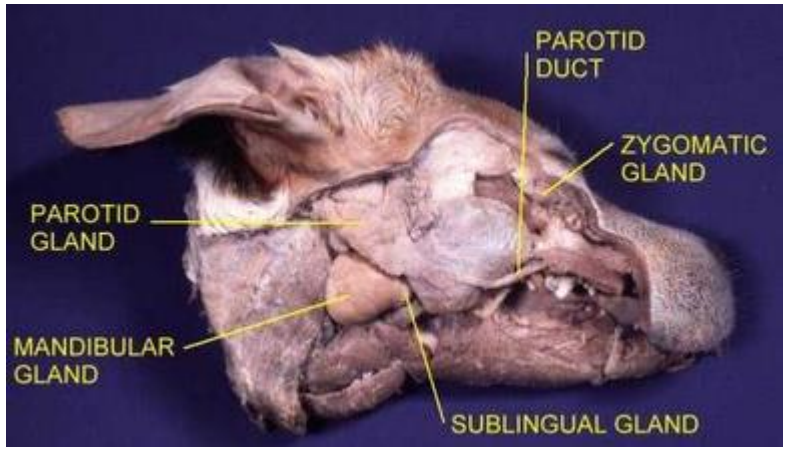
Glandula parotidea:

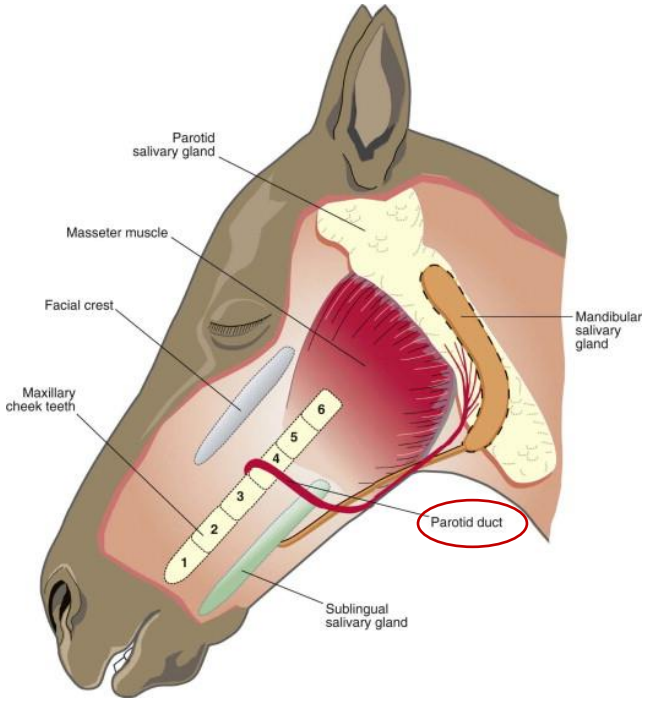
Ductus parotideus:

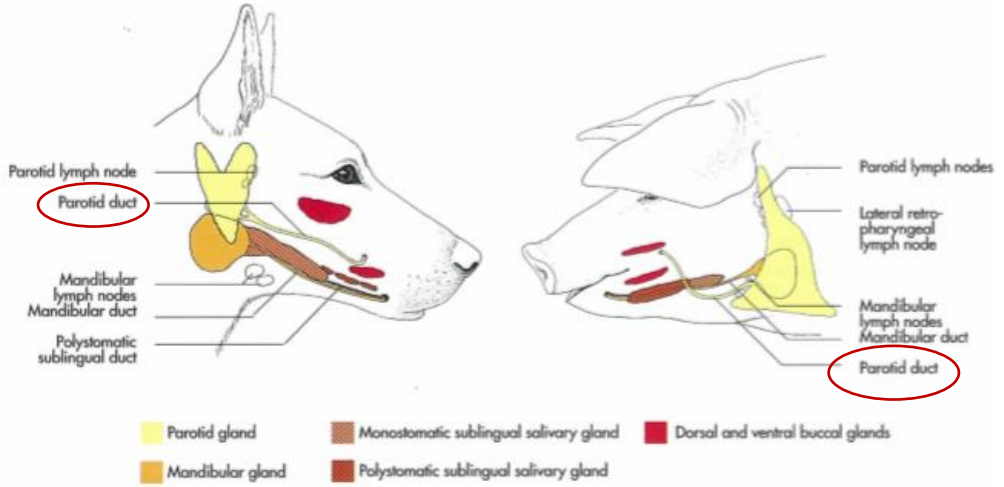
a. **in Car - runs across the lateral surface of the M. masseter**

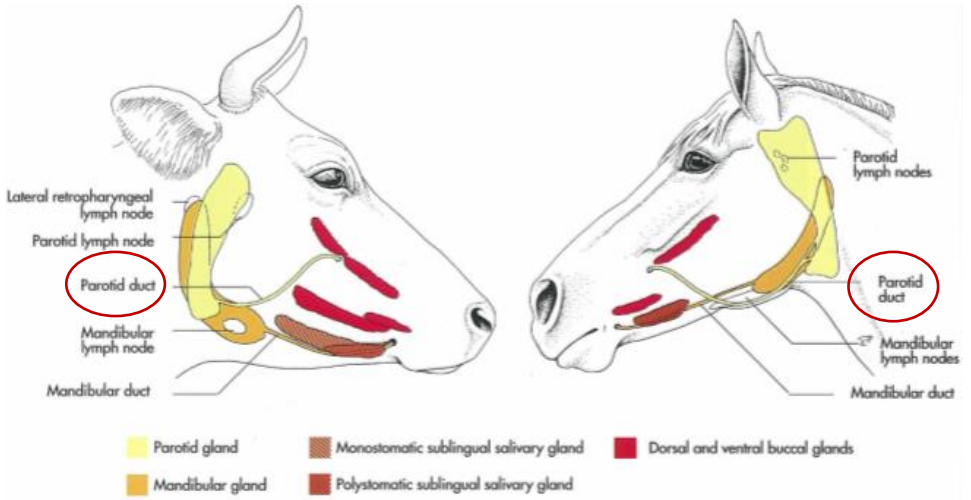
b. **in Su, Bo, Eq – runs ventral to M. masseter**

c. **ends at the papilla parotidea**









SALIVARY GLANDS OF THE ORAL CAVITY

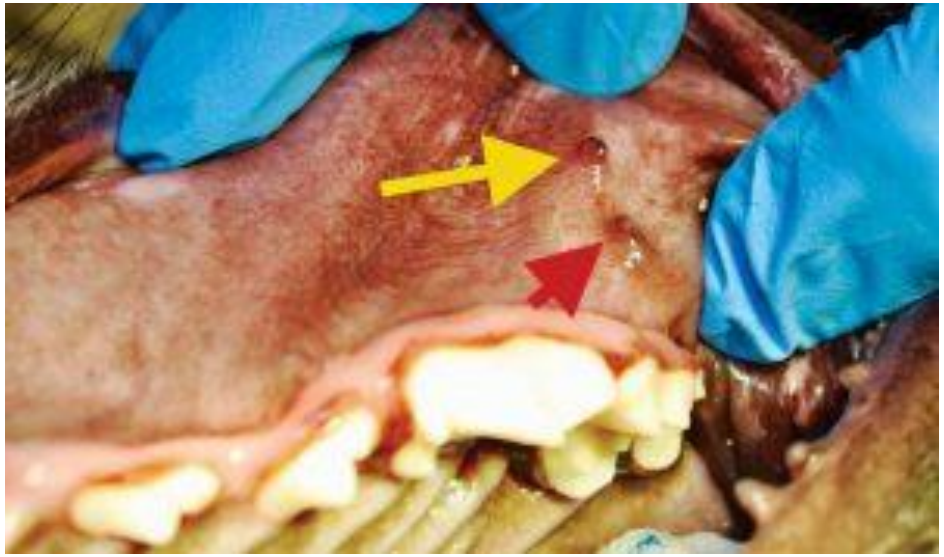
(GALNDULAE ORIS)

PAPILLA PAROTIDEA:

- **on the lateral wall of the buccal vestibule**
- **ductus parotideus ends on it**

a. located in dog, horse – opposite the third upper cheek tooth

b. located in ox opposite the fifth upper cheek tooth



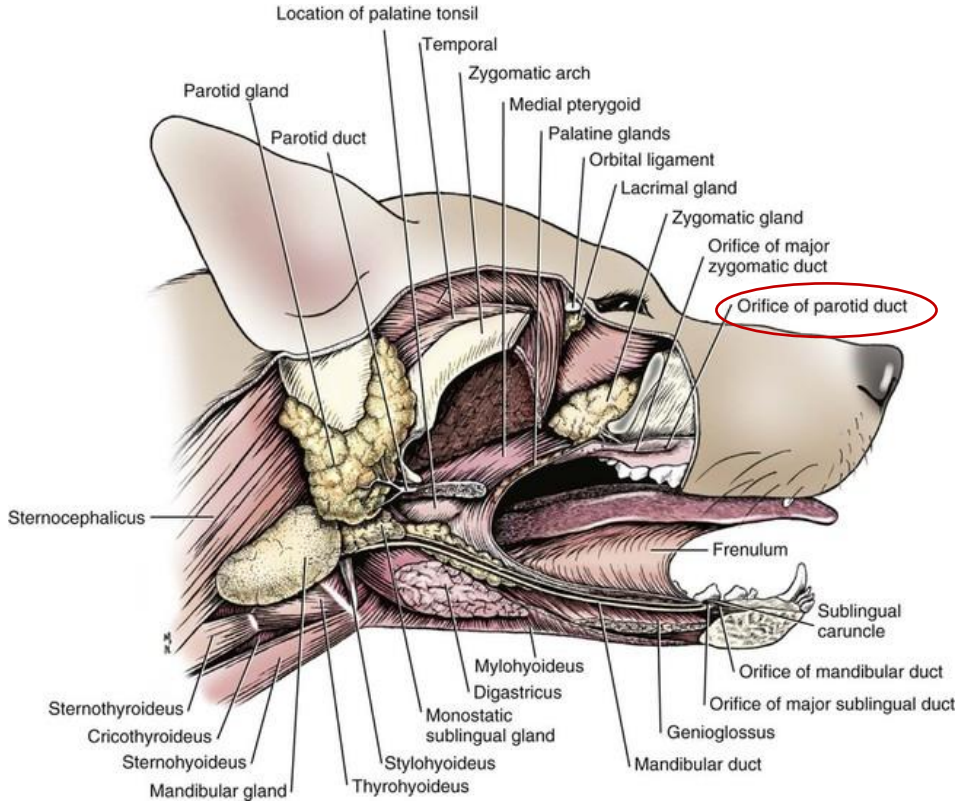


Figure 1: Parotid (yellow arrow) and zygomatic (red arrow) salivary duct openings dorsal to the left maxillary fourth premolar and first molar in a dog. These papillae are more prominent than in most canine patients.

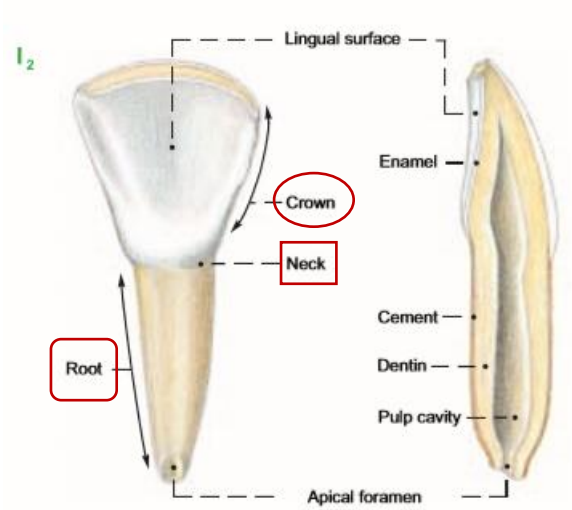
https://www.veterinarypracticenews.com/canine-feline-salivary-gland-anatomy/

TEETH (DENTES)

- **principal organs of mastication**

consists of:

1. **CORPUS DENTIS**
2. **CORONA DENTIS (CROWN)**
3. **RADIX DENTIS (ROOT)**
4. **COLLUM (CERVIX) DENTIS (NECK)**



RUMINANT TOOTH

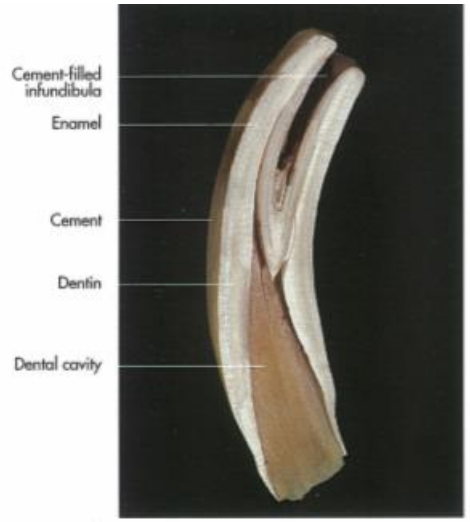


Fig 7-17. Section of an equine incisor.

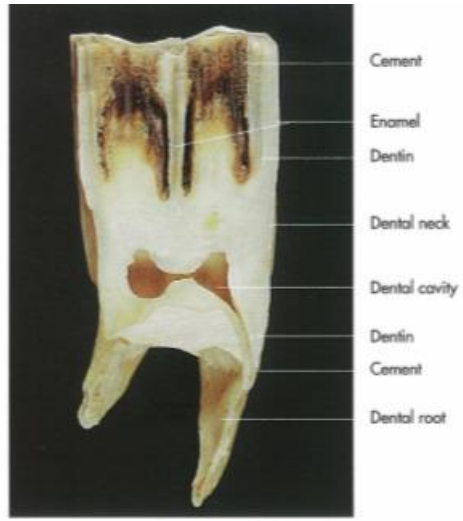
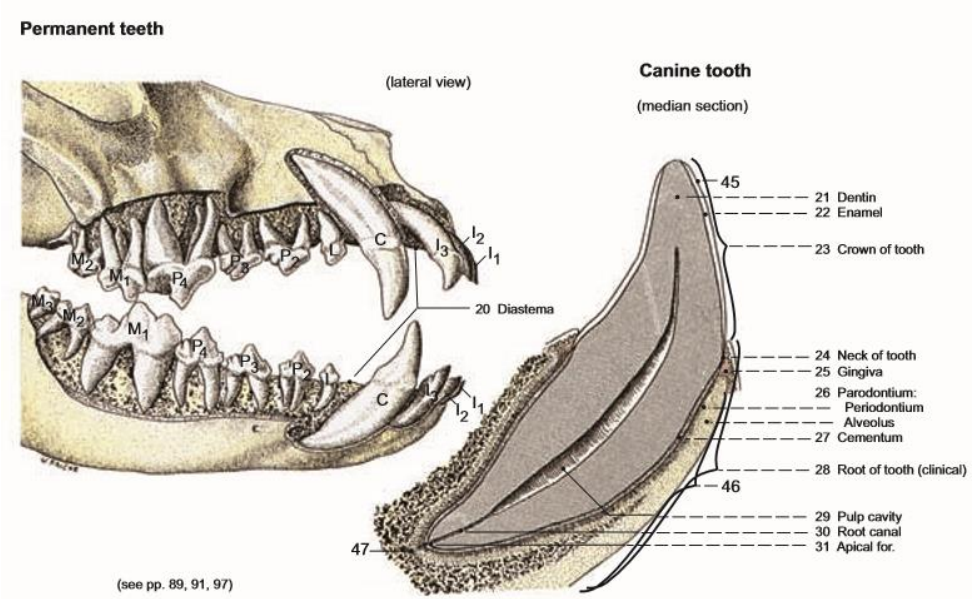
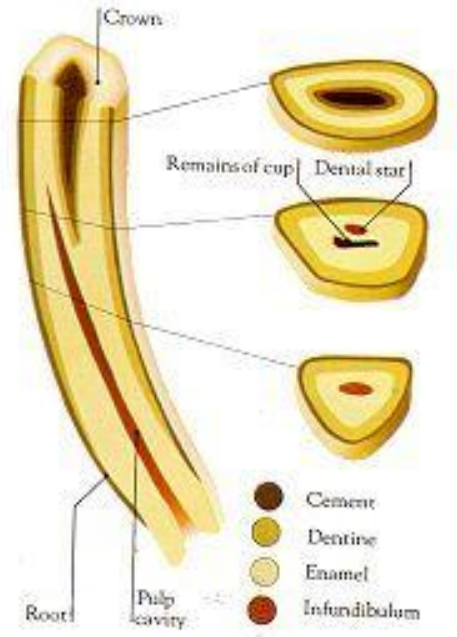


Fig 7-18. Section of an equine cheek tooth.



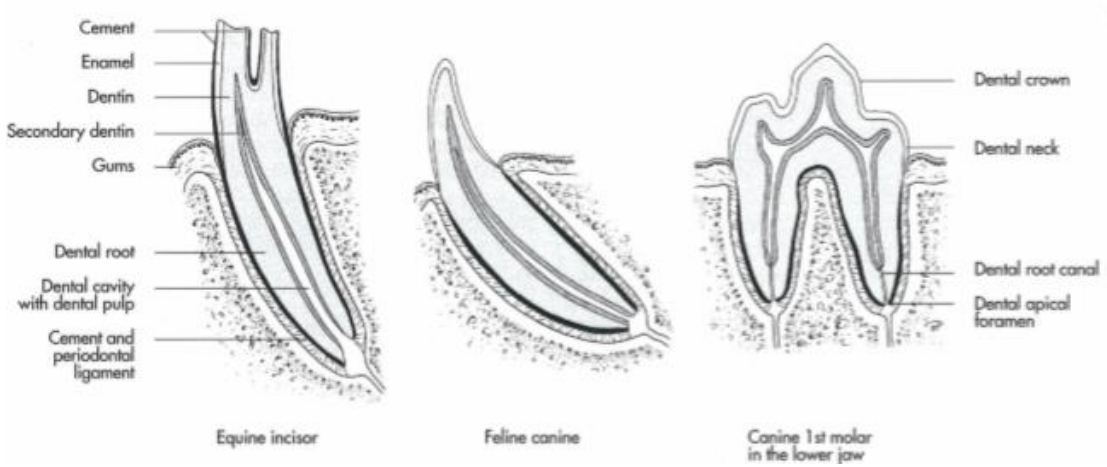


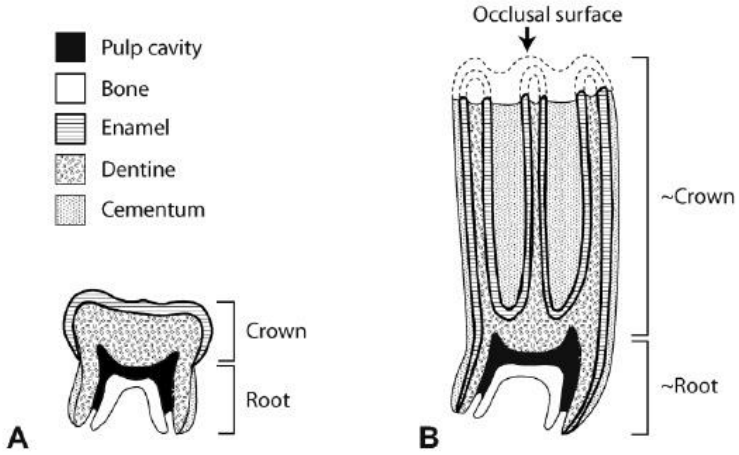
HORSE TOOTH
https://hu.pinterest.com/pin/471189179742222808/

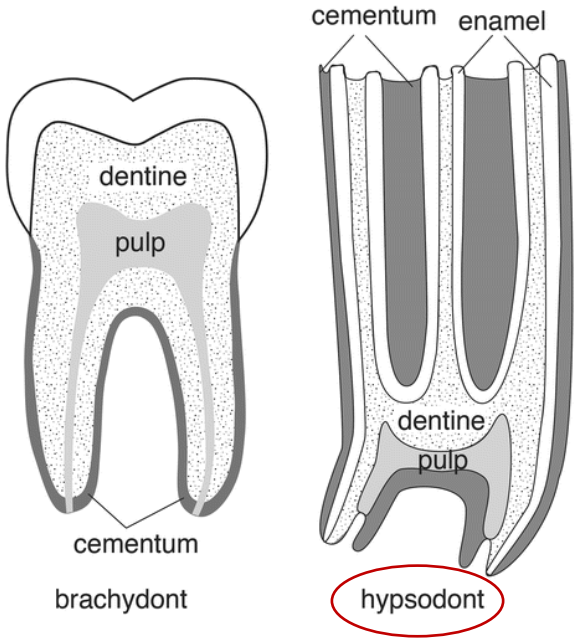
TEETH (DENTES)

CORPUS DENTIS:

- **body of the tooth**
- **applied to hypsodont teeth**
- **at hypsodont teeth the corona and radix cannot be distinguished**







http://marmotism.blogspot.com/2015/07/horse-intelligent-design-fail.html

Fig 7-17. Section of an equine incisor.

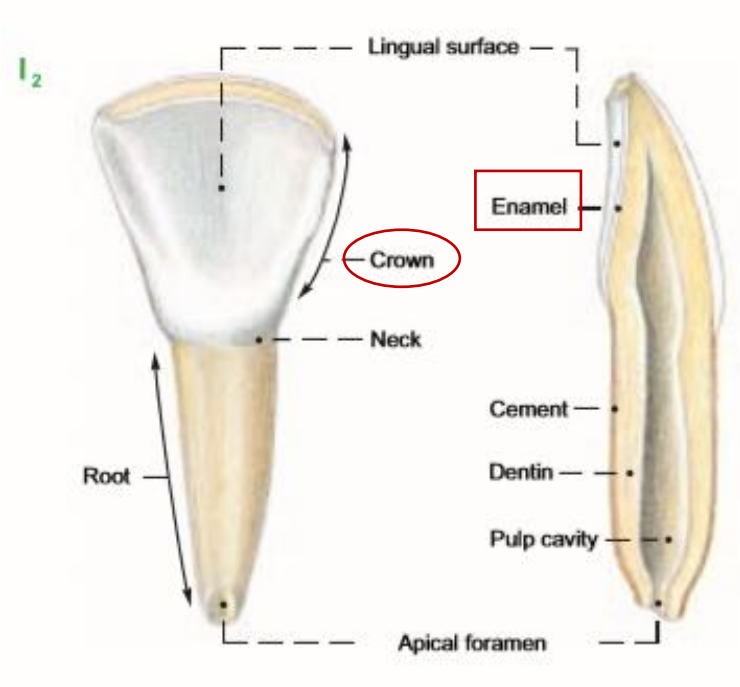
Fig 7-18. Section of an equine cheek tooth.

https://link.springer.com/protocol/10.1007/978-1-4939-3185-9_13

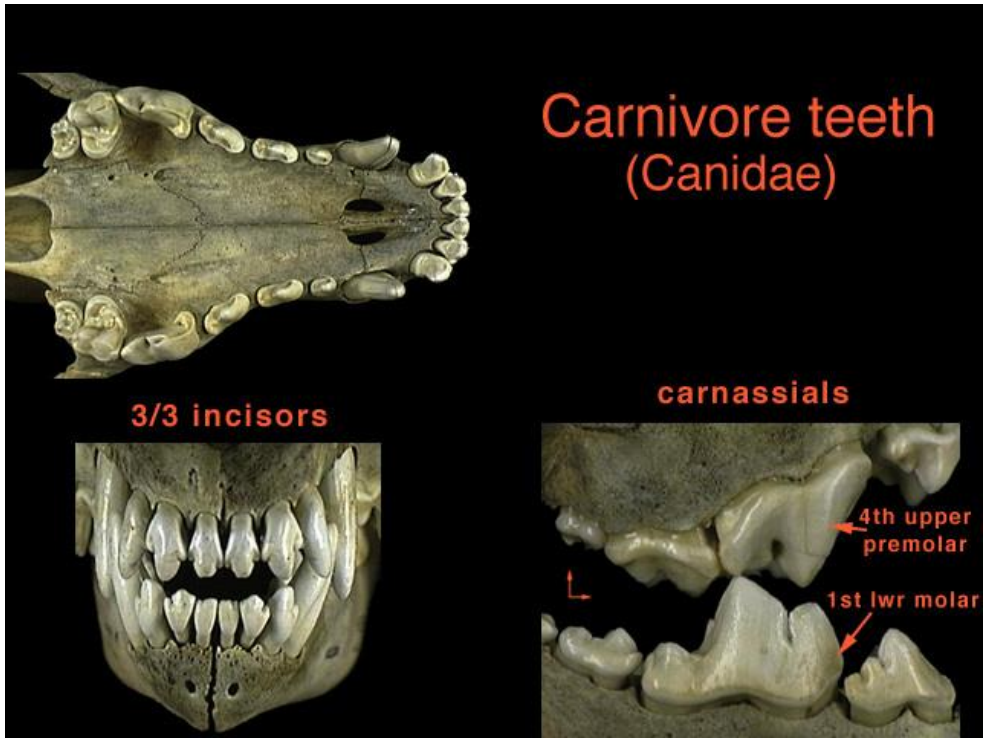
TEETH (DENTES)

CORONA DENTIS (CROWN):

- **covered by enamel**
- **demarceted from the root by the neck**
- **free distal portion of the tooth**
- **projects into the mouth**



RUMINAT TOOTH



https://animaldiversity.org/collections/contributors/anatomical_images/family_pages/carnivora/carnivore_teeth/

TEETH (DENTES)

CORONA DENTIS (CROWN):

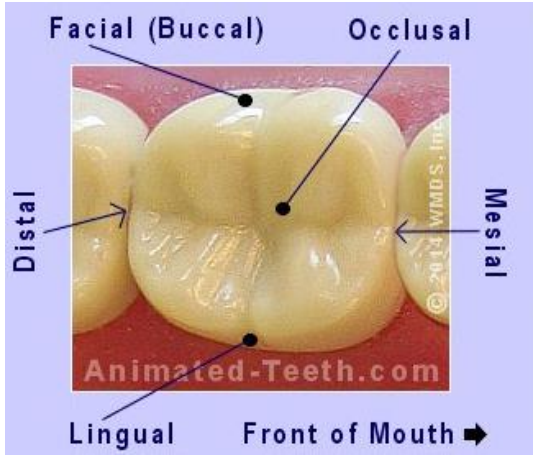
a. CUSPIS CORONAE DENTIS:

- **cusp**
- **one of the main projections on the occlusal surface**

b. APEX CUSPIS

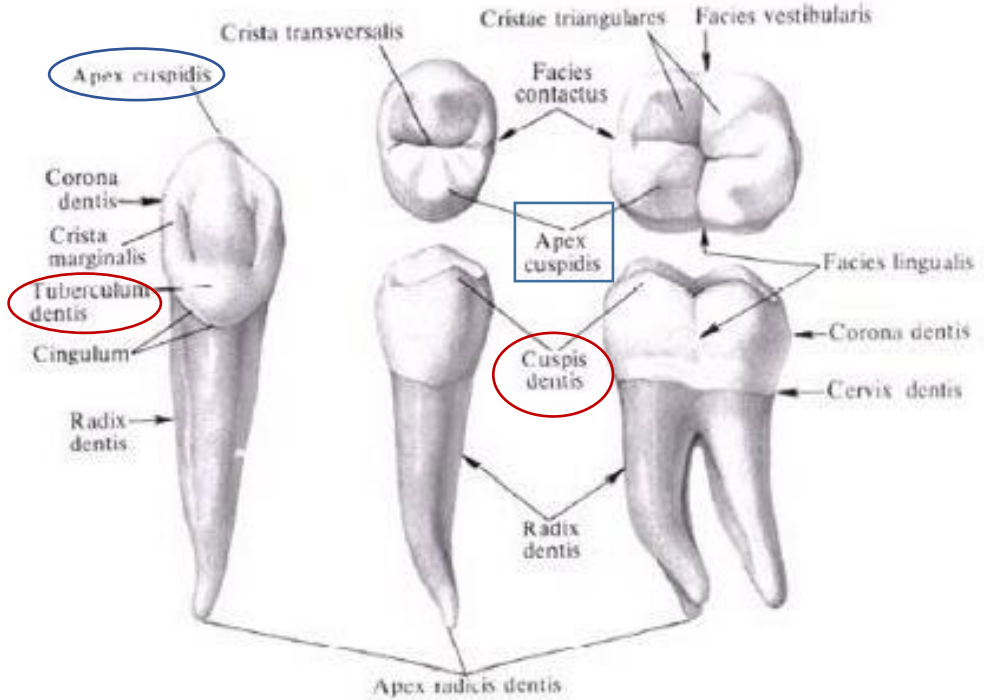
c. TUBERCULUM CORONAE DENTIS:

- **tubercle**
- **secondary projection of the crown**
- **on the lingual surface of some incisors of Fe and Bo**



https://www.animated-teeth.com/tooth-bonding/a-tooth-bonding-costs.htm

http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/toothsurfaces.jpg



https://www.pinterest.com.mx/pin/554083560401230770/

TEETH (DENTES)

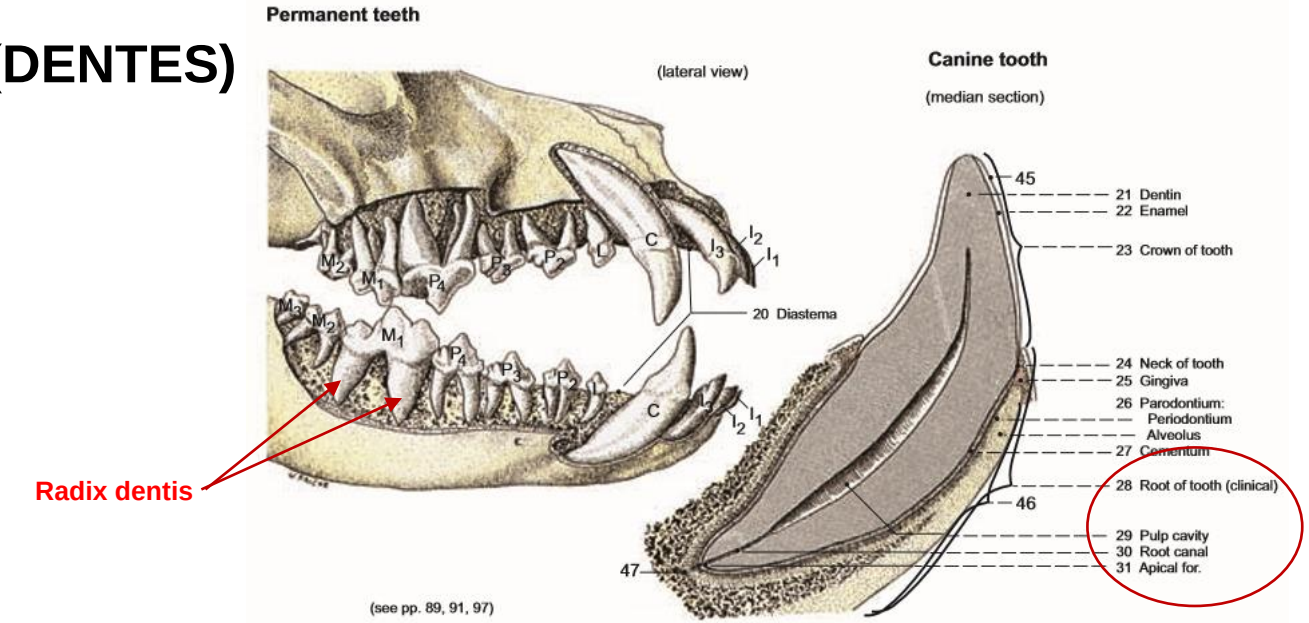
RADIX DENTIS (ROOT):

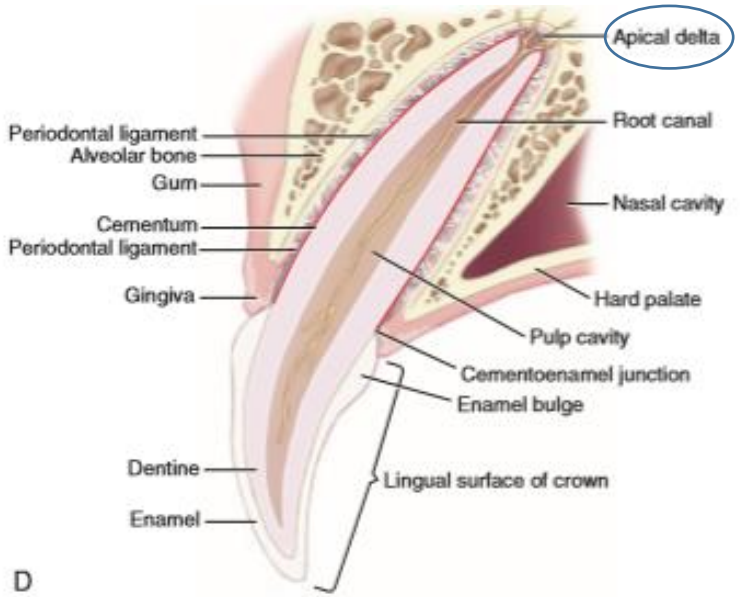
- **embedded portion**
- **not covered by enamel**

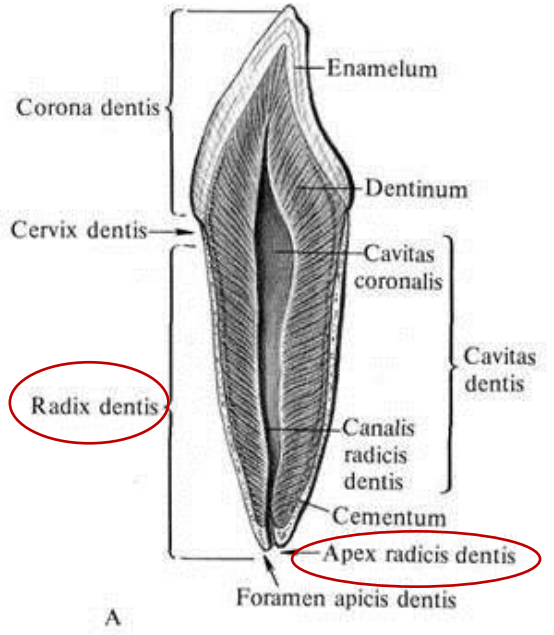
a. Apex radicis dentis

b. Radix clinica:

- **clinial root**
- **concealed by the gingiva and alveolus**







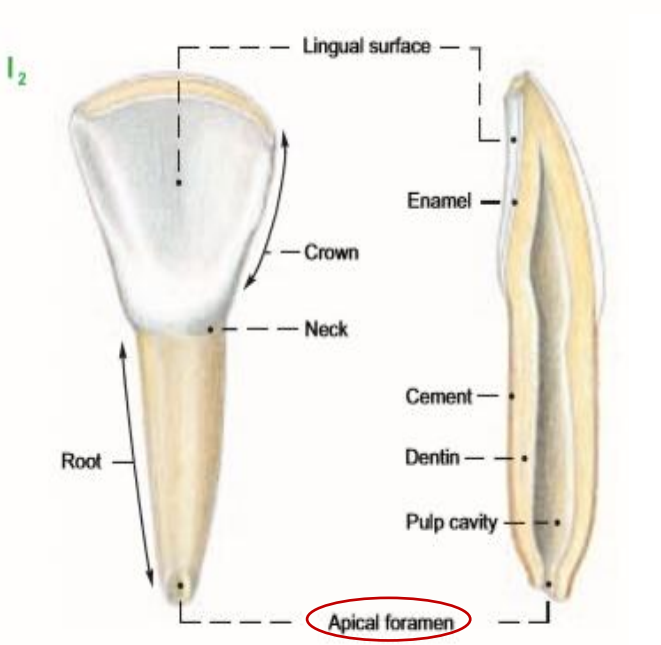
https://hu.pinterest.com/pin/236157574189372374/

TEETH (DENTES)

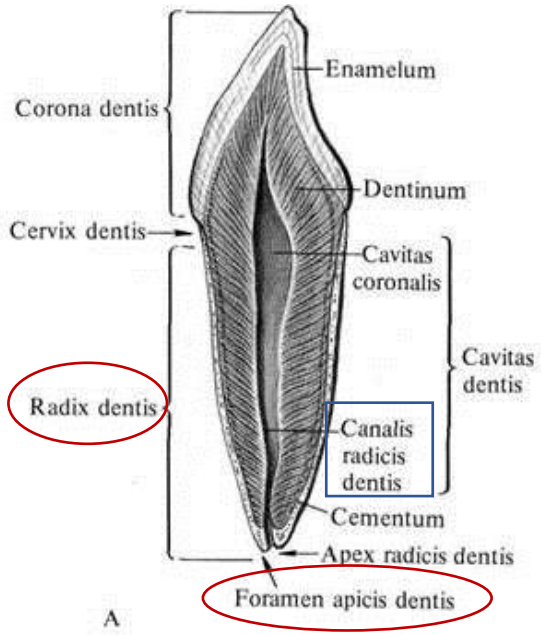
RADIX DENTIS (ROOT):

c. Canalis radicis dentis – root canal

d. Foramen apicis dentis – orifice of the root canal



RUMINAT TOOTH



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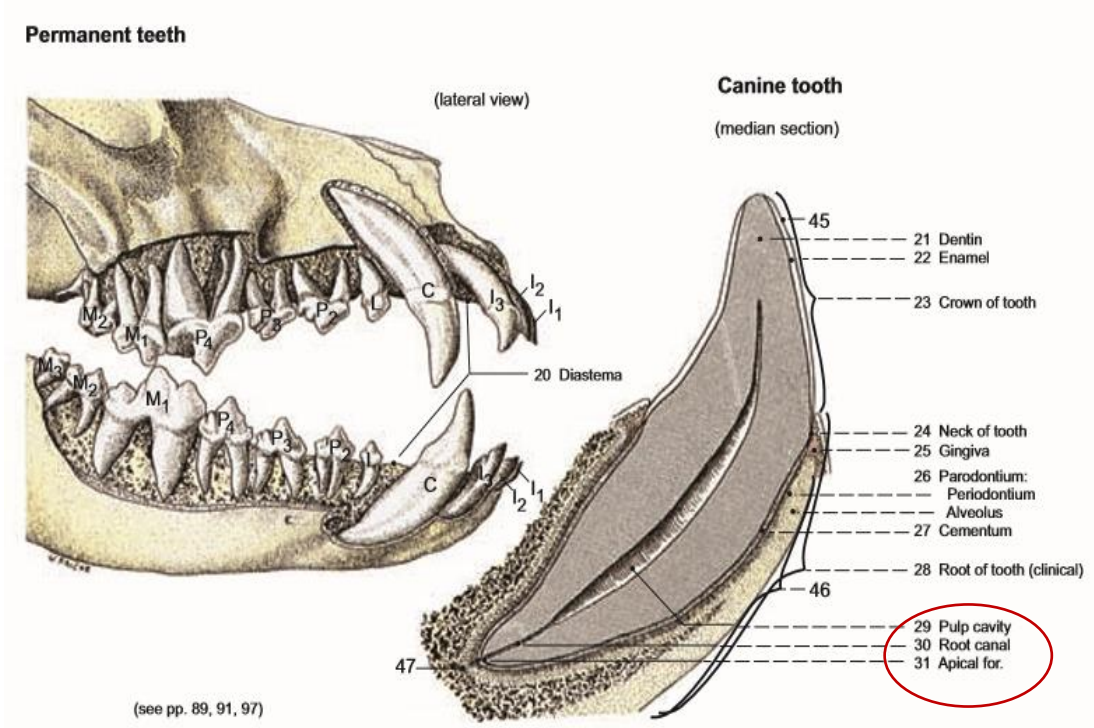


TEETH (DENTES)

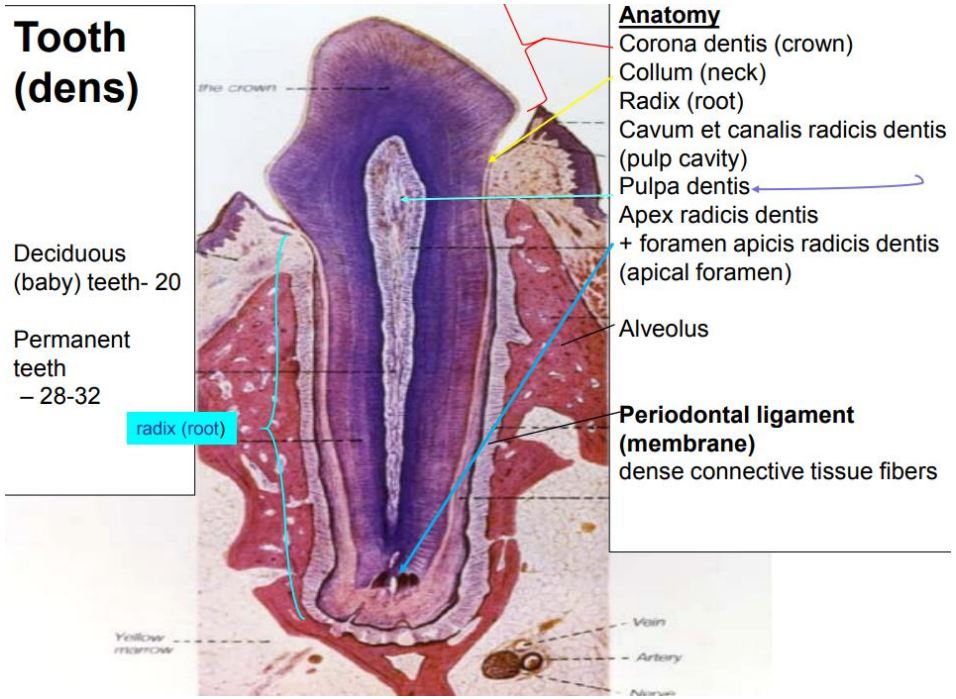
RADIX DENTIS (ROOT):

a. Pulpa dentis:

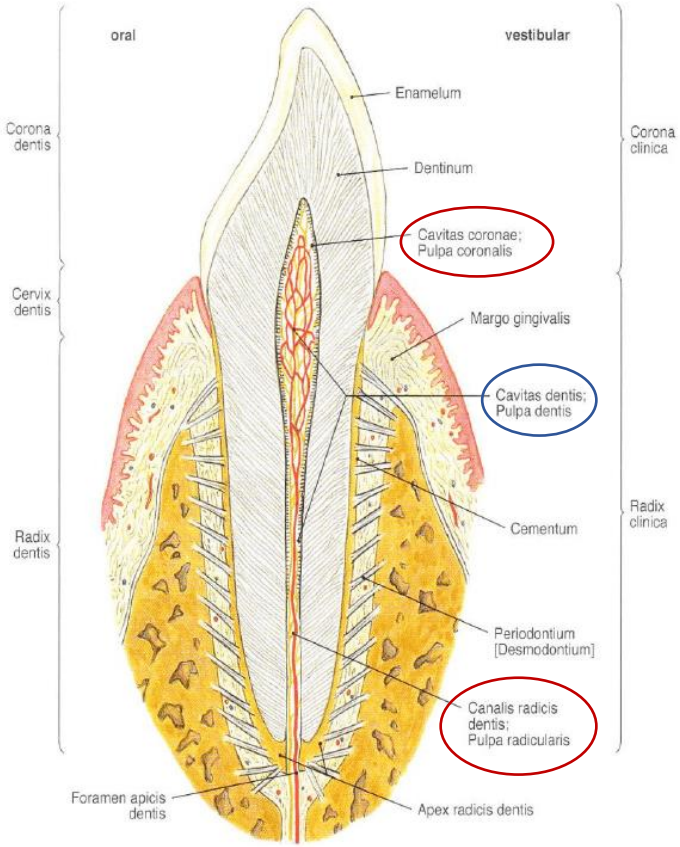
- **pulp of the tooth**

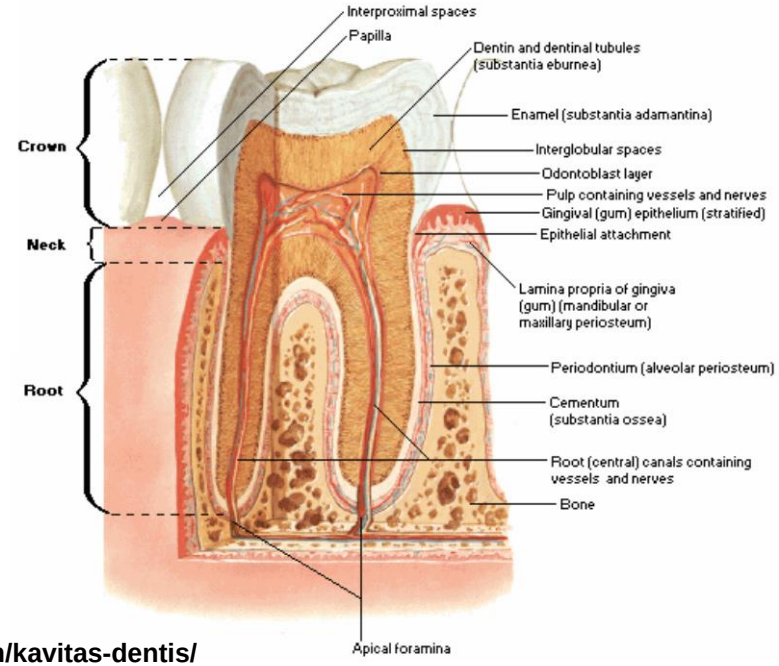
b. Pulpa coronalis – pulp in crown

c. Pulpa radicularis – pulp in the root canal



https://is.muni.cz/el/1411/podzim2017/aVLHE0322c/um/GIT_I_ENG.pdf



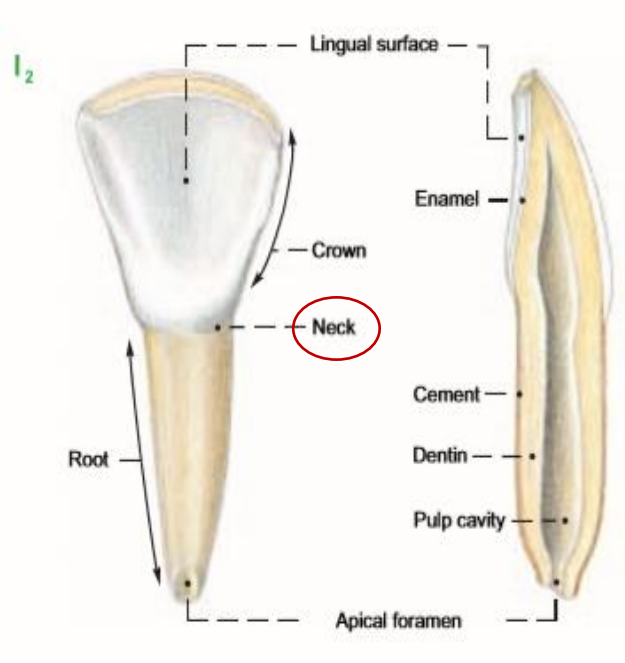


https://www.tipacilar.com/kavitas-dentis/

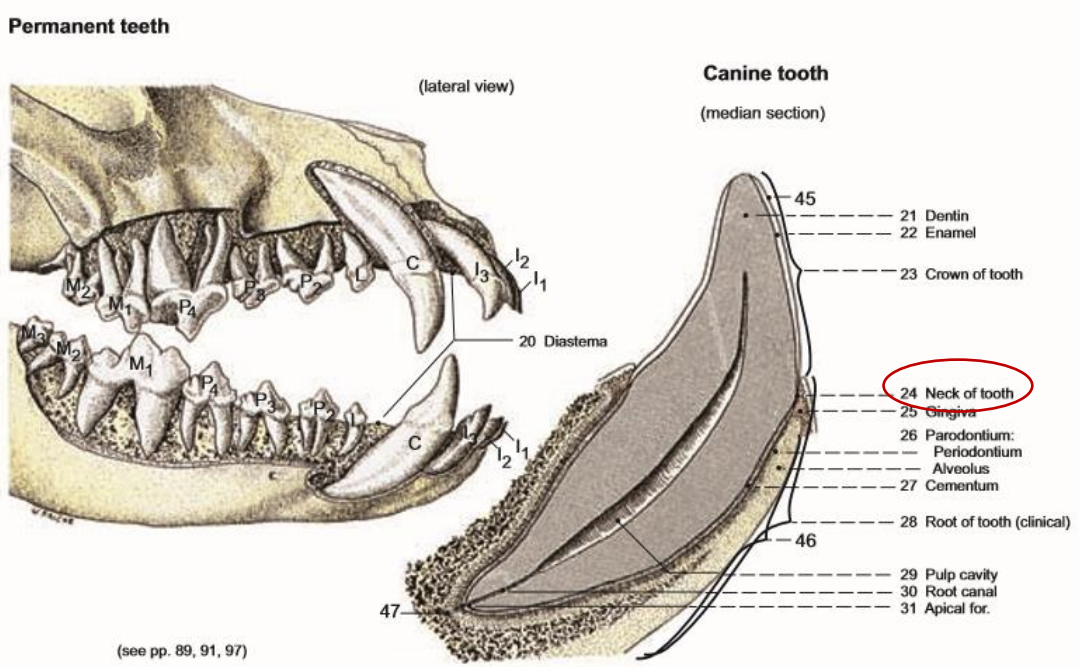
TEETH (DENTES)

COLLUM (CERVIX) DENTIS (NECK):

- **constriction between crown and root**



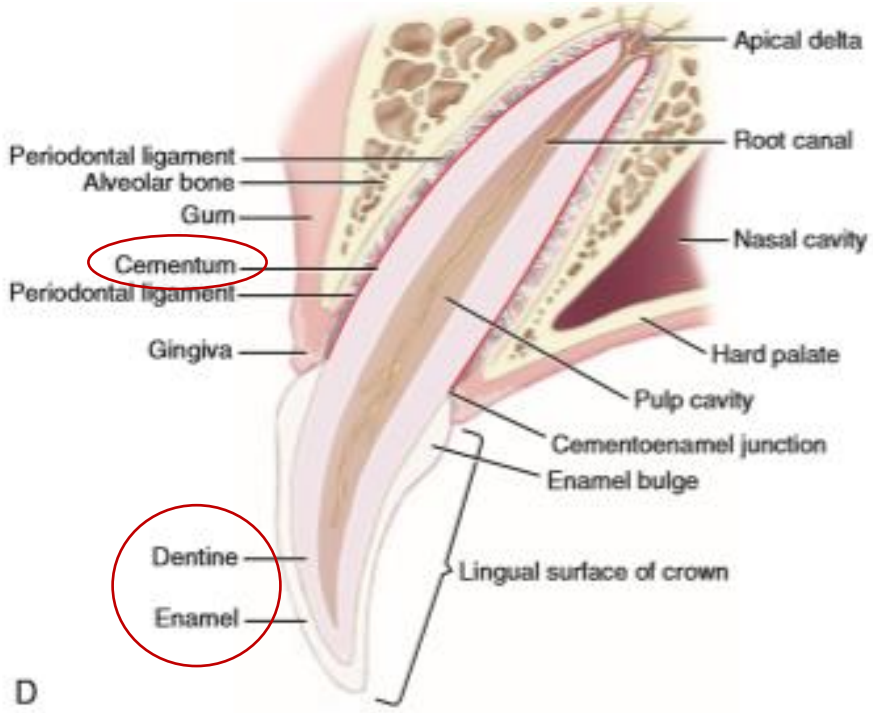
RUMINAT TOOTH



TEETH (DENTES)

- **mammalian teeth composed of three substances:**

1. **ENAMEL (ENAMLEUM)**
2. **DENTINE (DENTINUM)**
3. **CEMENT (CEMENTUM)**



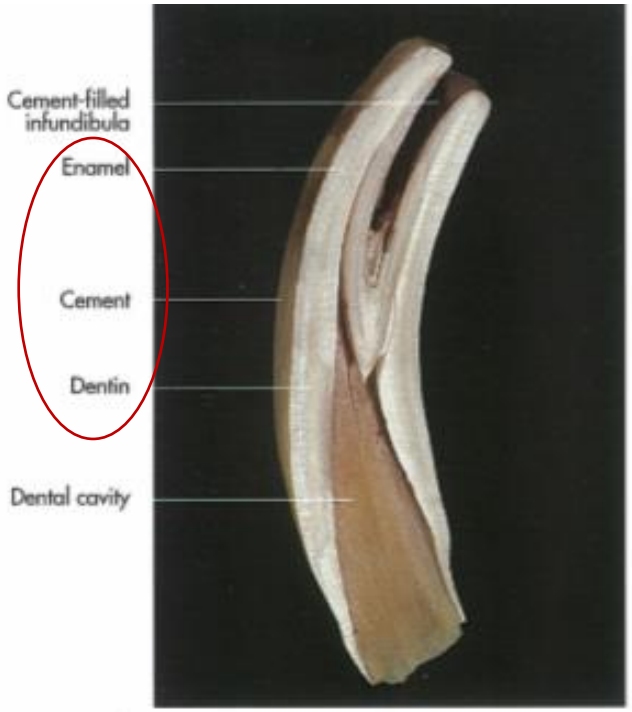


Fig 7-17. Section of an equine incisor.

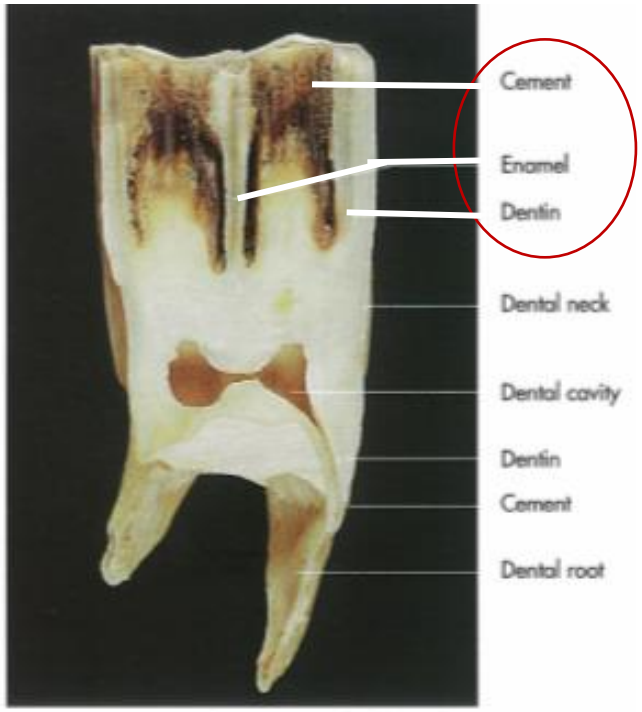
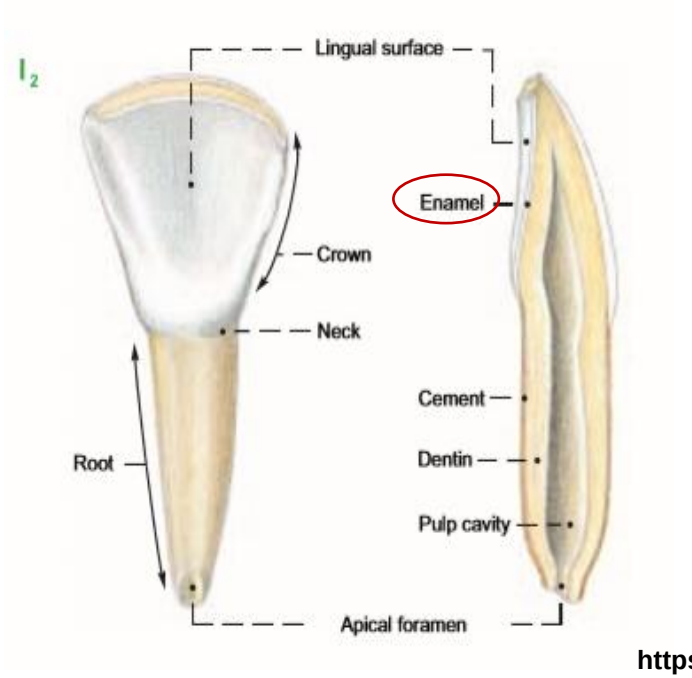


Fig 7-18. Section of an equine cheek tooth.

TEETH (DENTES)

ENAMEL (ENAMELUM):

- **hard, white substance**
- **produced by amelobalsts**
- **covers the dentin in the crown**



RUMINAT TOOTH

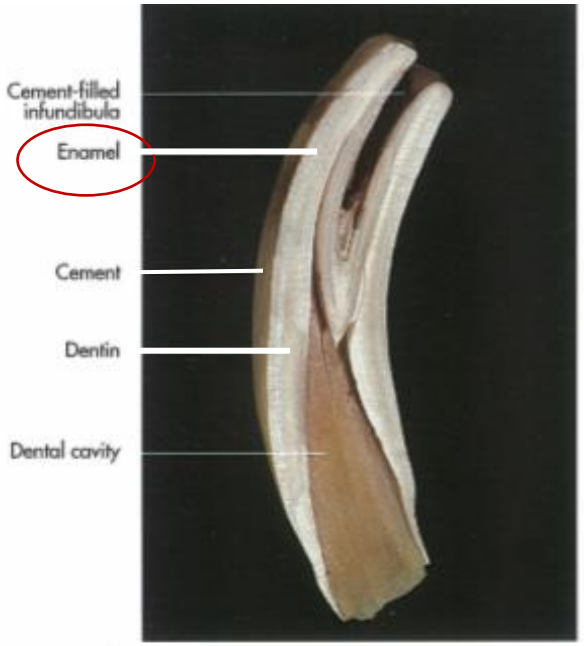


Fig 7-17. Section of an equine incisor.

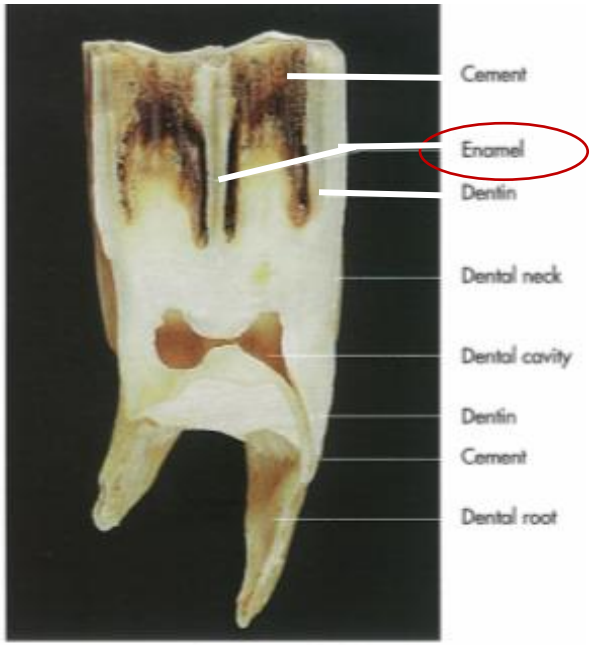
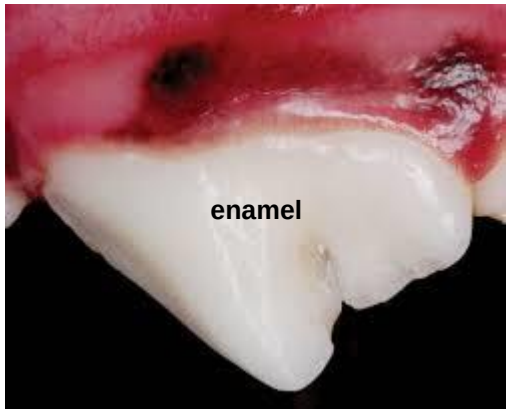
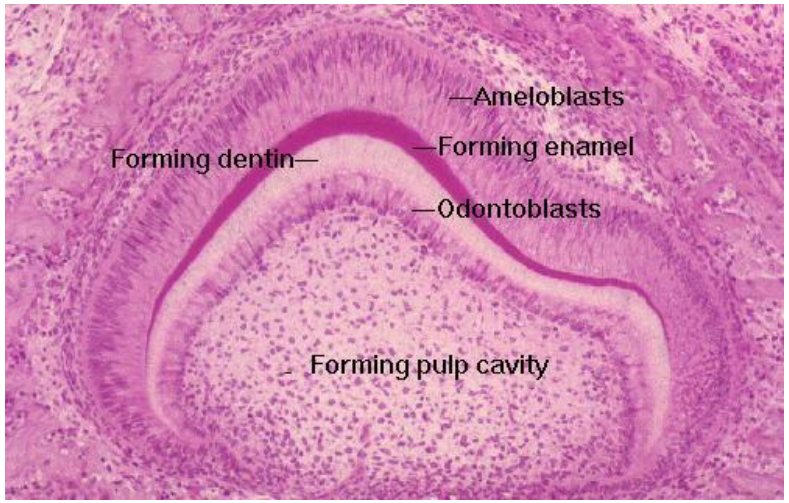


Fig 7-18. Section of an equine cheek tooth.



https://vcahospitals.com/know-your-pet/dental-disease-in-dogs



http://163.178.103.176/temas/temaf6dig/fisodigescg/lavi/digestivo/caceci/extthfrm.htm

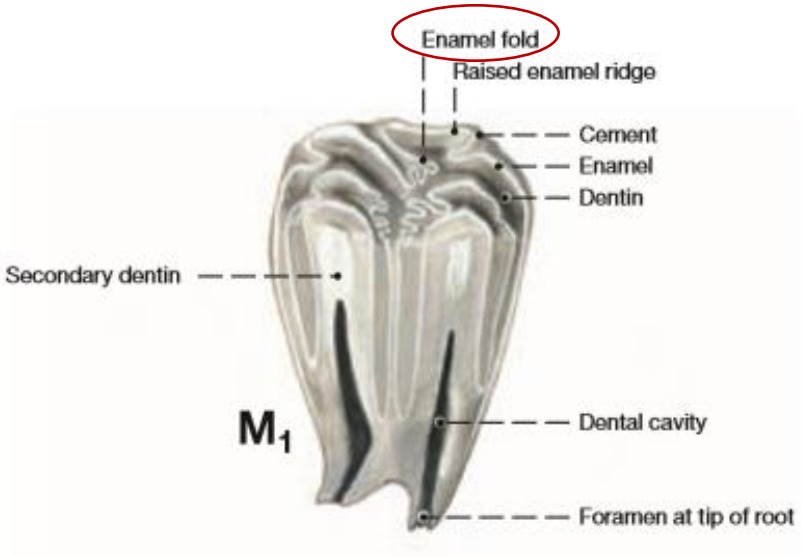
TEETH (DENTES)

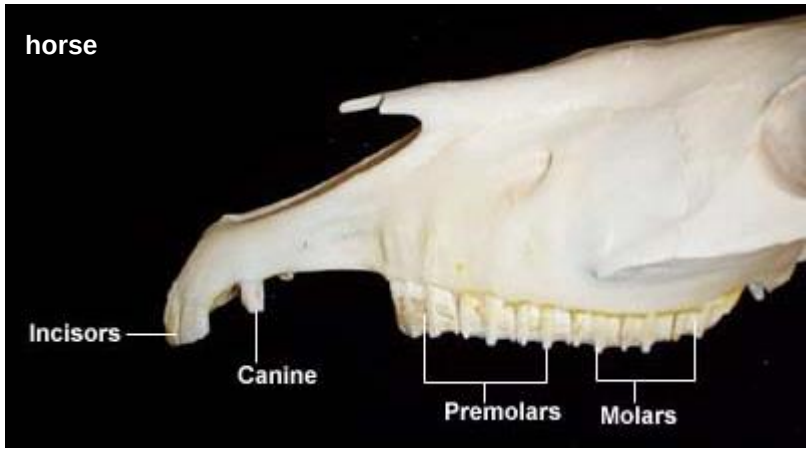
ENAMEL (ENAMELUM):

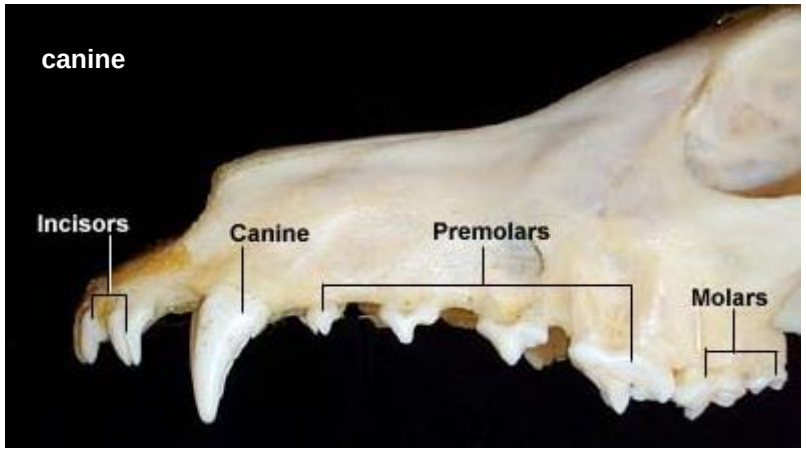
PLICAE ENAMELI (ENAMEL FOLD):

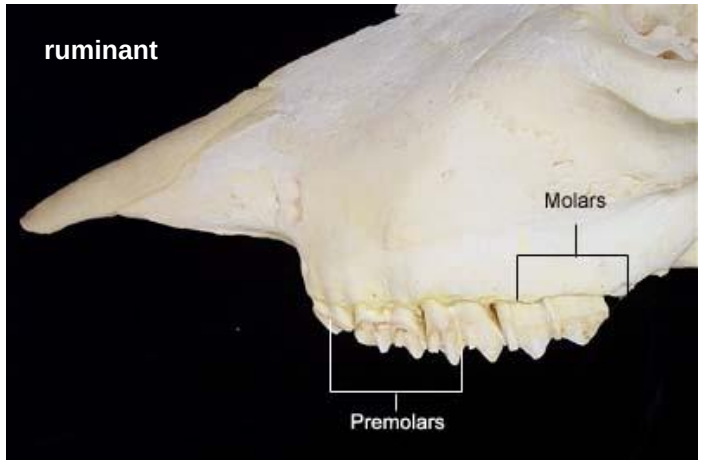
– longitudinal folds

- on premolar or molar teeth



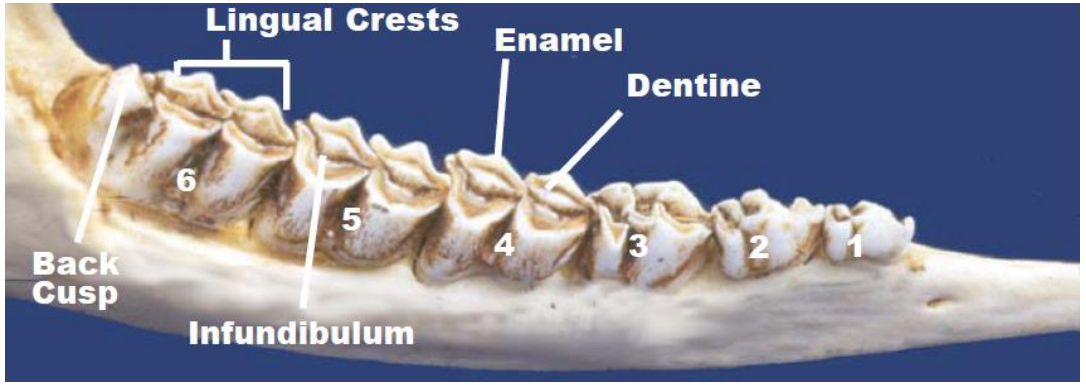






http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/cowpage.html

TEETH (DENTES)

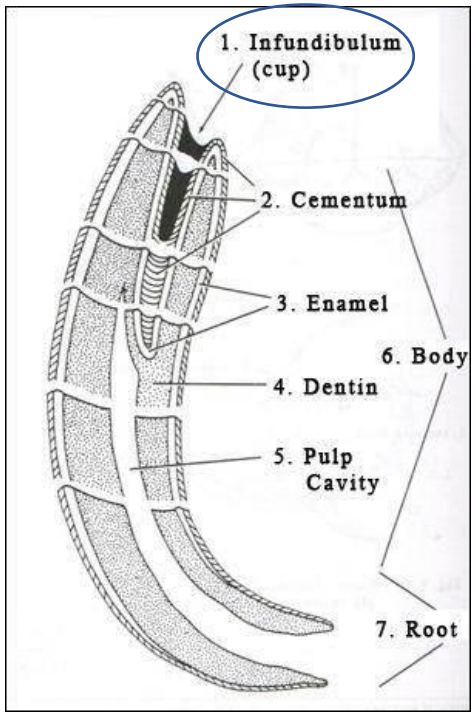


http://vistamountainwma.org/news/age-determination-of-white-tailed-deer/

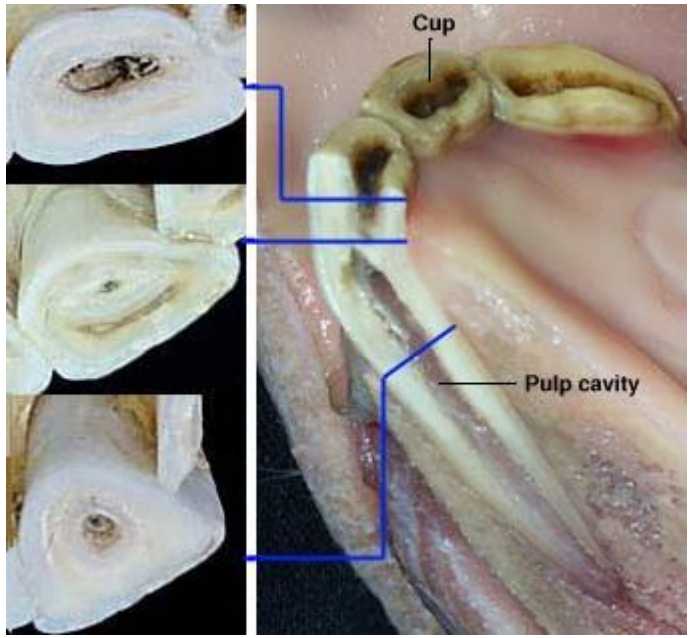
ENAMEL (ENAMELUM):

INFUNDIBULUM DENTIS:

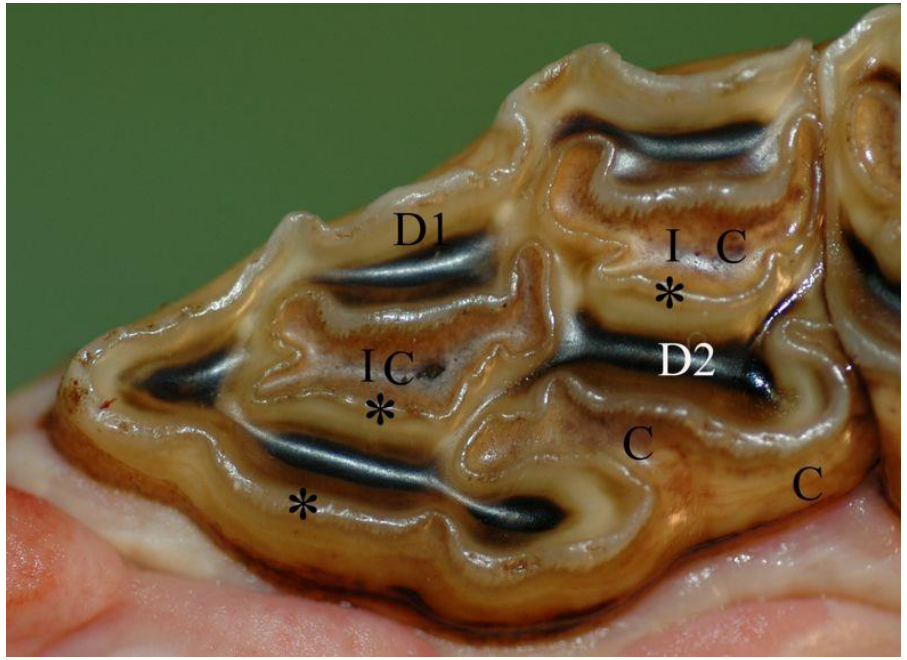
- **invagination of enamel on the occlusal surface of incisors in Su, Eq**
- **invagination of enamel on the occlusal surface of premolars, molars in Ru, Eq**



https://www.pinterest.ca/pin/477803841695519454/



http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/aginghorses.html



Normal permanent maxillary P2. Photograph of a P2 occlusal surface. C = cement (light brown), D1 = primary dentin (white/yellowish), D2 = secondary dentin overlying pulp horn (dark brown). * = enamel (visible as a winding ridge). I = infundibulum, (A cone shaped invagination from the occlusal surface of the tooth. The invagination is lined with enamel and filled with cementum (C) to different degrees).[8]

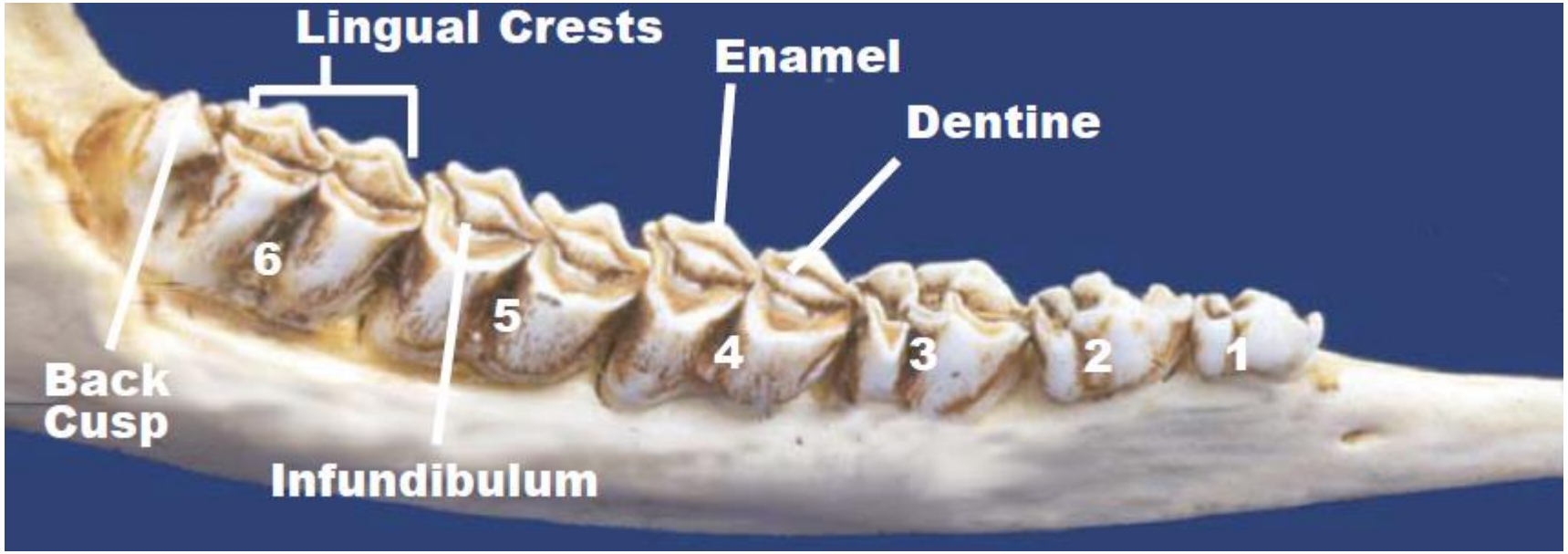
https://actavetscand.biomedcentral.com/articles/10.1186/1751-0147-49-10

TEETH (DENTES)

ENAMEL (ENAMELUM):

CRISTA ENAMELI:

- **enamel crest**
- **free occlusal edge of one of the enamel layers of a worn teeth**

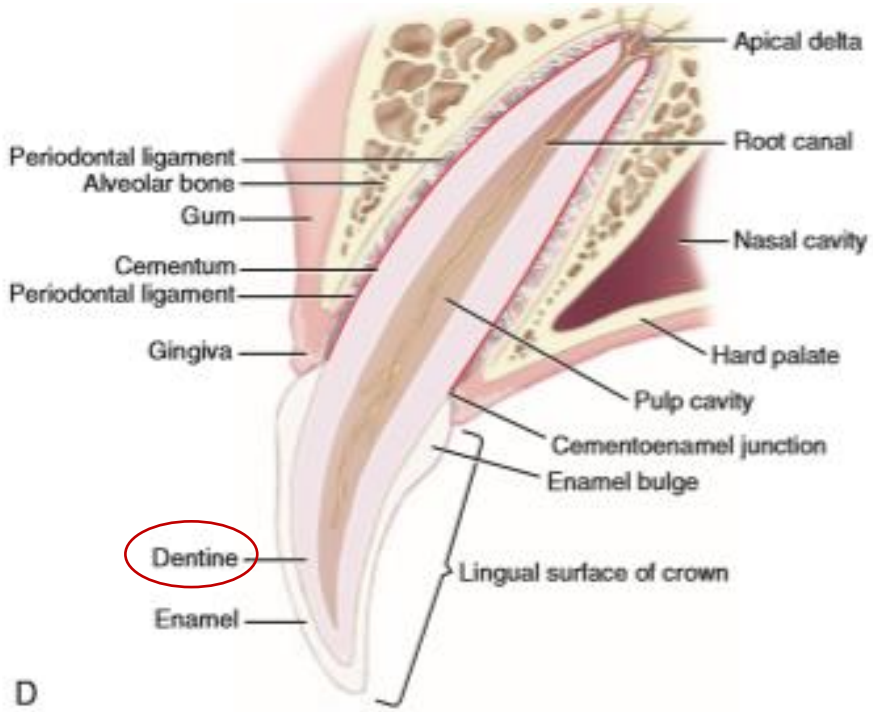


http://vistamountainwma.org/news/age-determination-of-white-tailed-deer/

TEETH (DENTES)

DENTINE (DENTINUM):

- **main substance of the tooth**
- **calcified, collagenous matrix**
- **produced by the odontoblasts**
- **dental cavity – dental pulp**



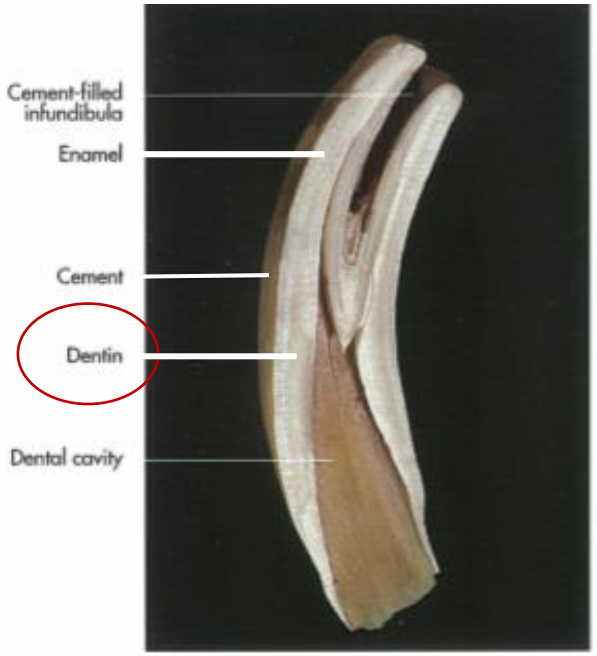


Fig 7-17. Section of an equine incisor.

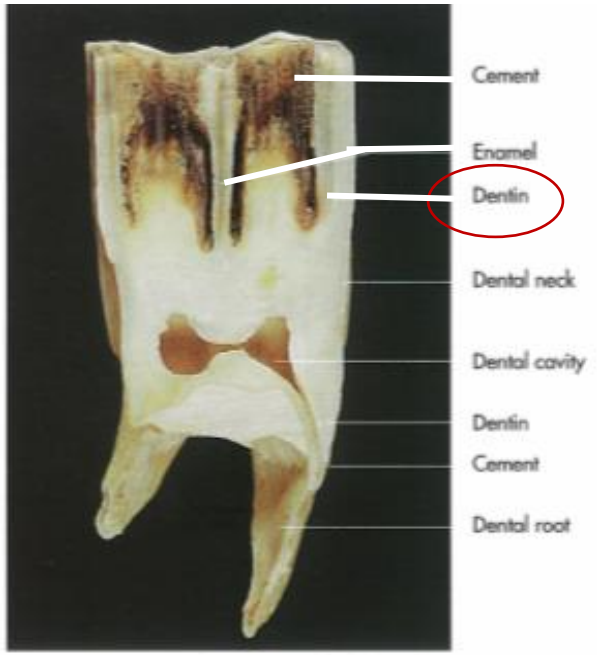
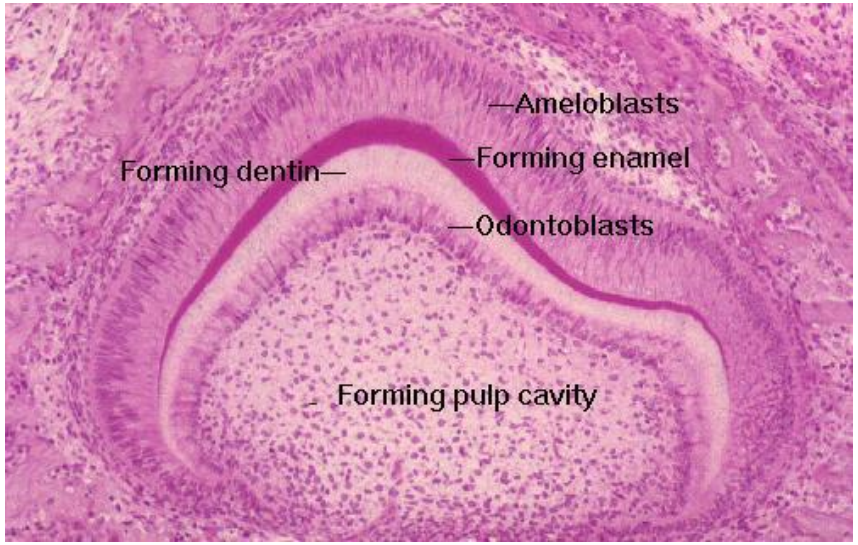


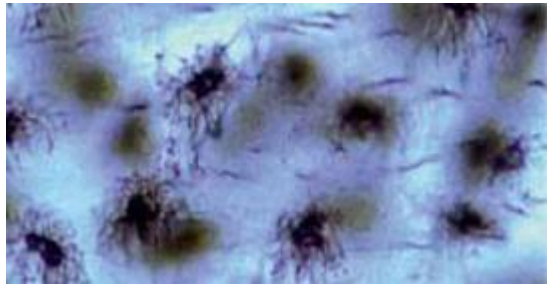
Fig 7-18. Section of an equine cheek tooth.



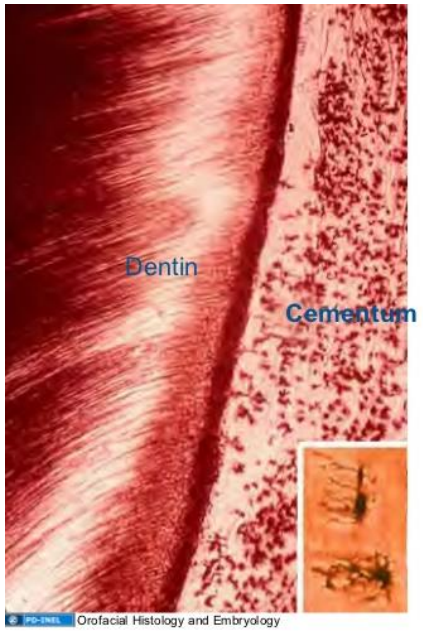
TEETH (DENTES)

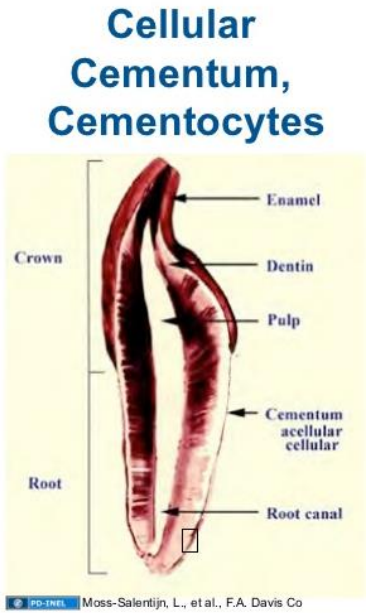
CEMENT (CEMENTUM):

- **produced by cementoblasts**
- **bone – like substance**
- **covers the root**



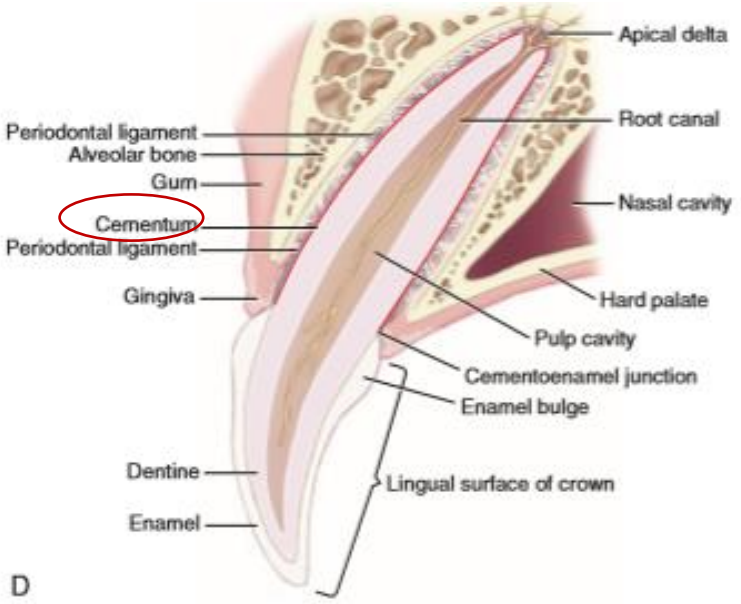
Cementocytes
http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2176-94512012000100003





- **in hypsodont teeth covers the corpus dentis, fills the plicae and infundibulum**

https://www.slideshare.net/openmichigan/010509-histology-oral-cavity-and-salivary-glands



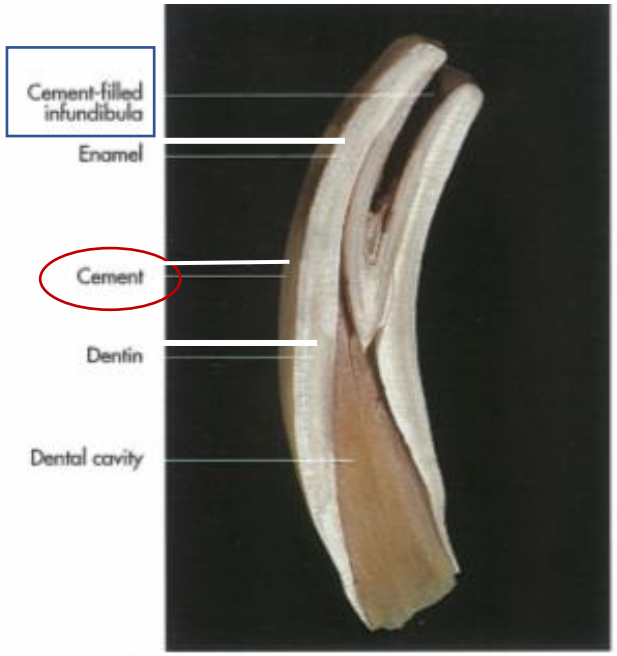


Fig 7-17. Section of an equine incisor.

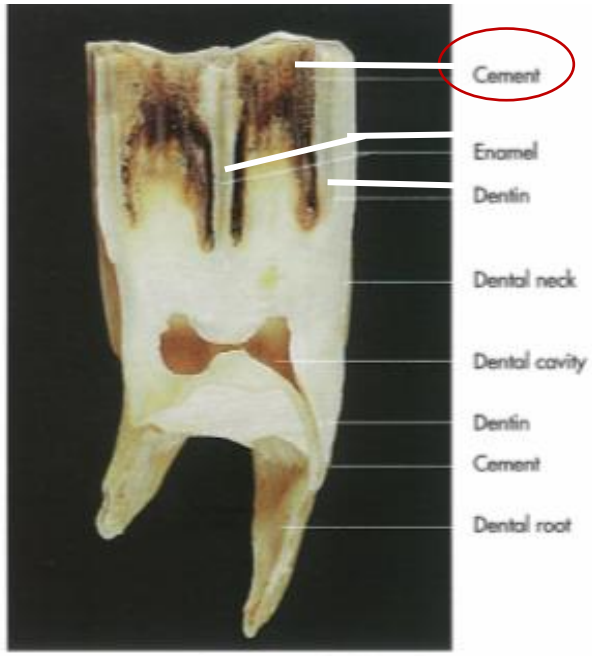
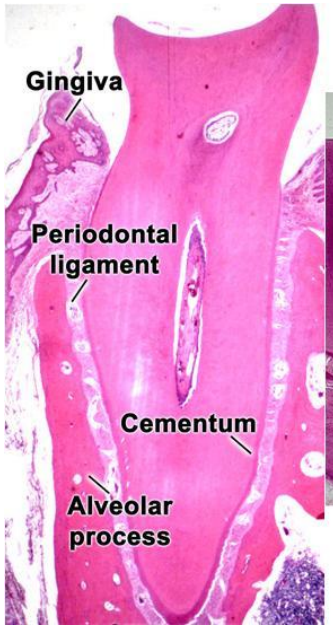


Fig 7-18. Section of an equine cheek tooth.

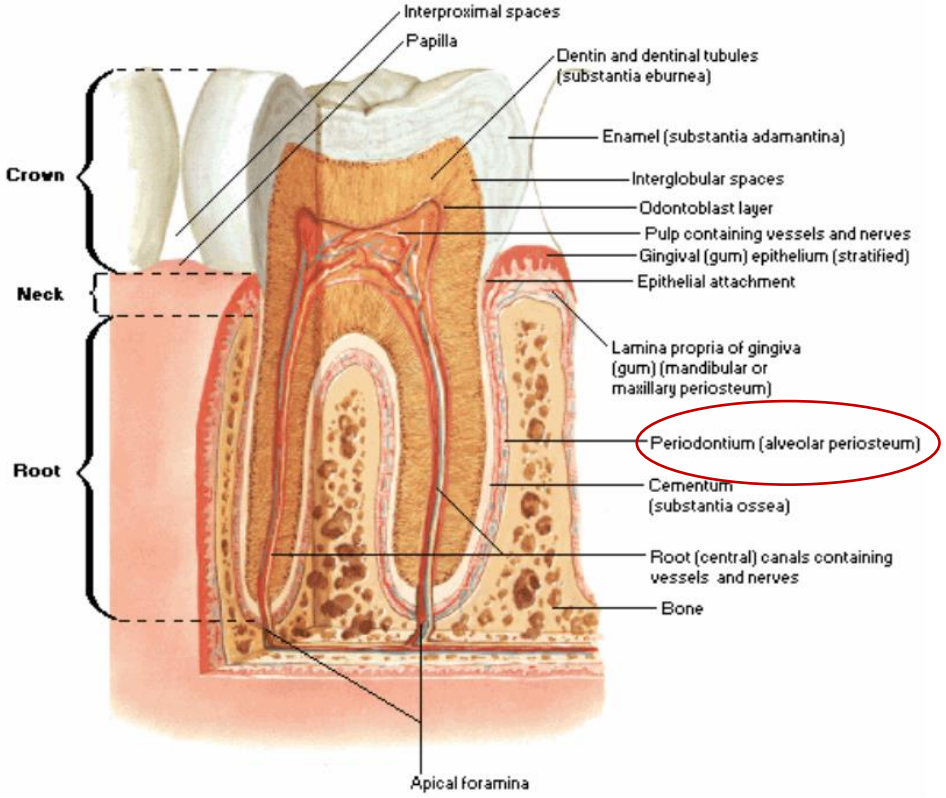
TEETH (DENTES)

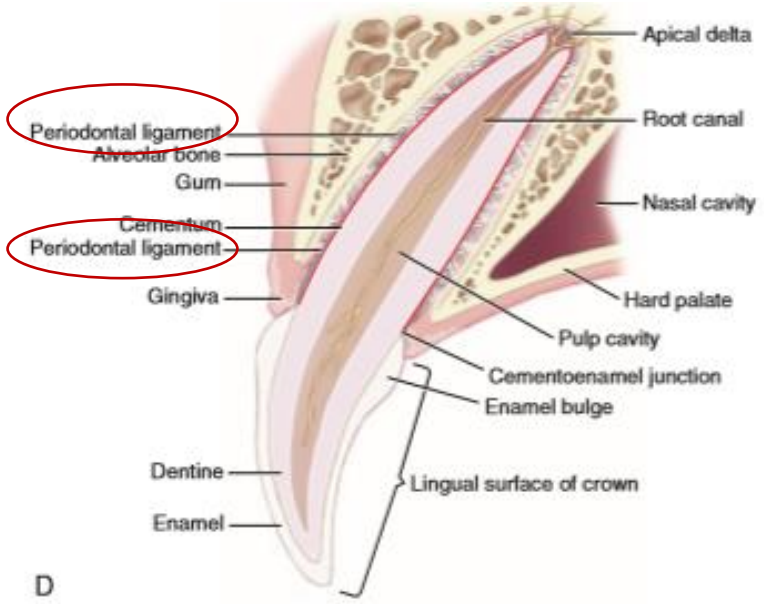
PERIODONTIUM:

- **connective tissue**
- **atteches the tooth and the gingive to the alveolus**



http://traffic-club.info/2018pimage-periodontal-ligament-histology.awp

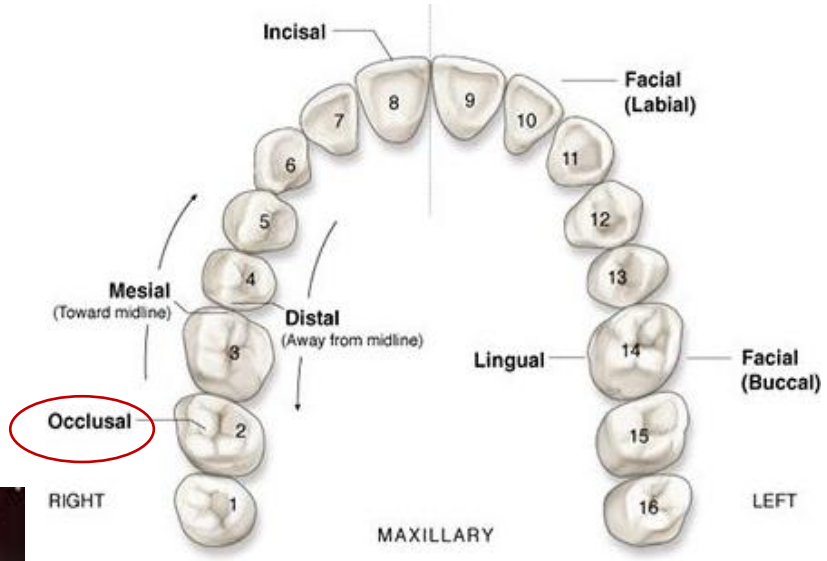




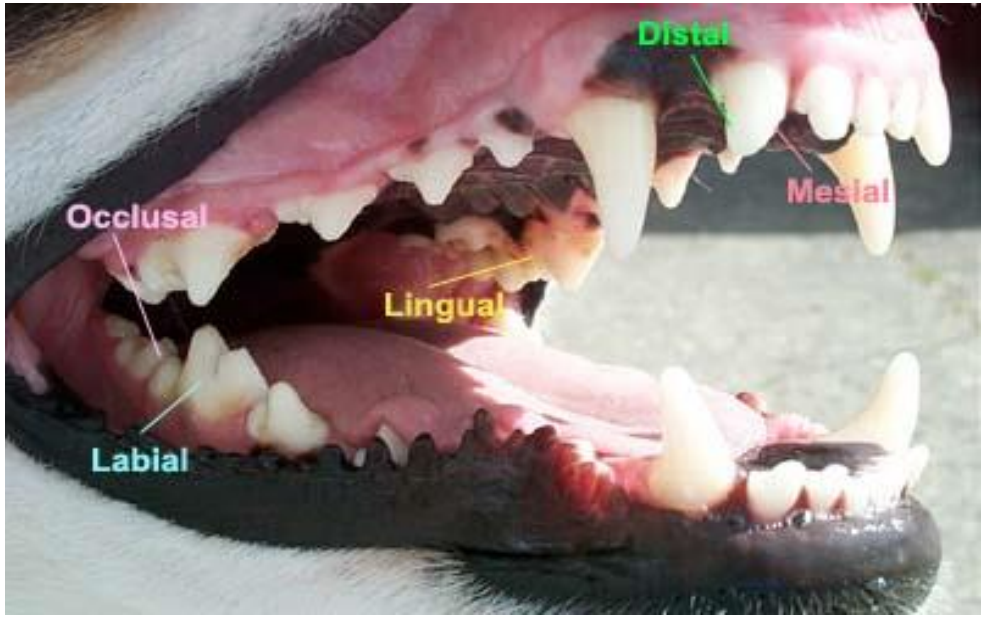
SURFACES OF THE TEETH (DENTES)

1. Facies occlusalis:

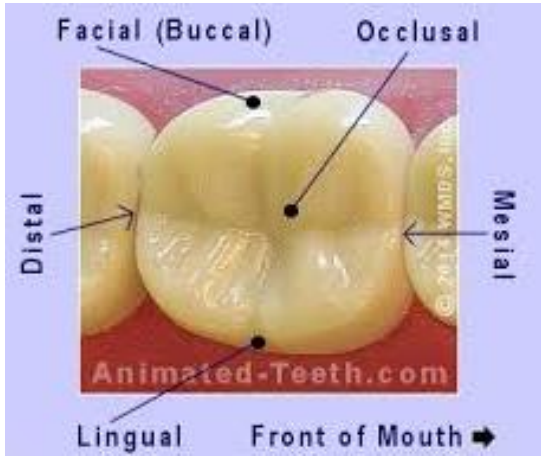
- **occlusal surface**
- **meets the teeth of the opposite jaw**



https://www.dentalcare.com/en-us/professional-education/ce-courses/ce500/surfaces-of-the-teeth



http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dentalanat.html



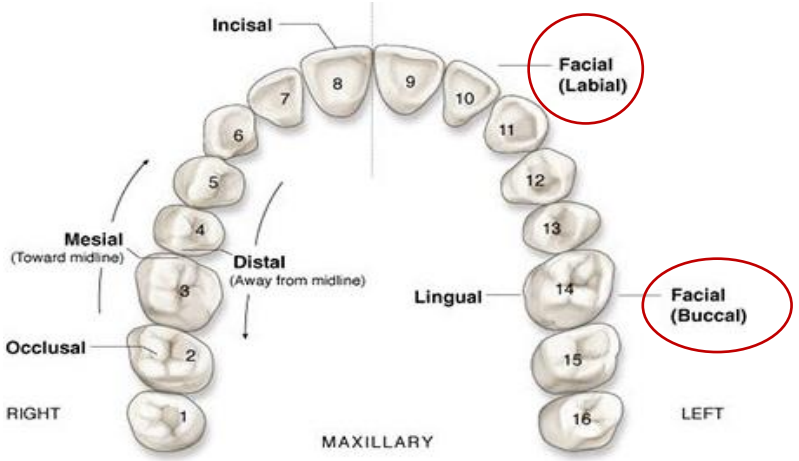
https://www.animated-teeth.com/tooth-bonding/a-tooth-bonding-costs.htm

SURFACES OF THE TEETH (DENTES)

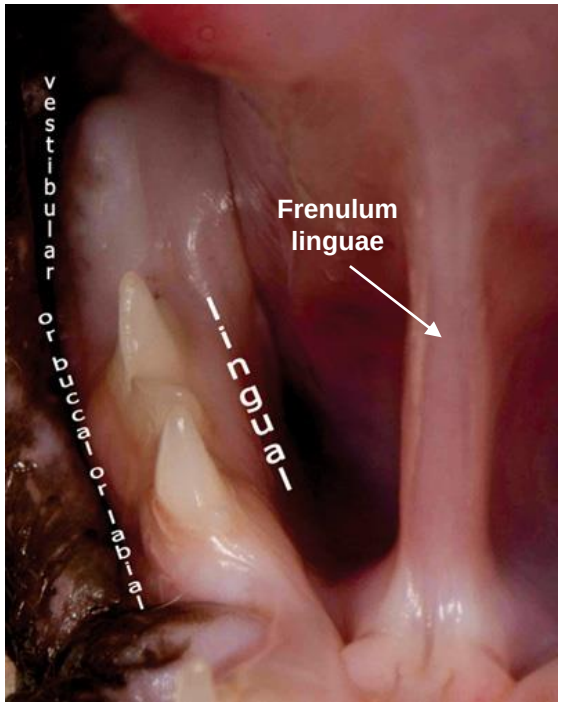
http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dentalanat.html

2. Facies vestibularis (facialis, buccal):

- **outer surface**
- **directed toward the vestibulum oris**



https://www.dentalcare.com/en-us/professional-education/ce-courses/ce500/surfaces-of-the-teeth



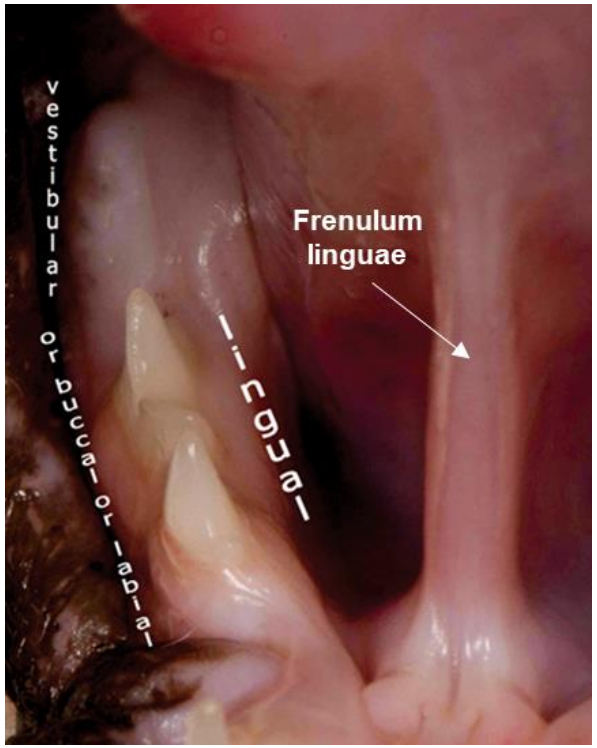
http://veterinarynews.dvm360.com/dentistry-101-surfaces-teeth-and-directions-mouth

SURFACES OF THE TEETH (DENTES)

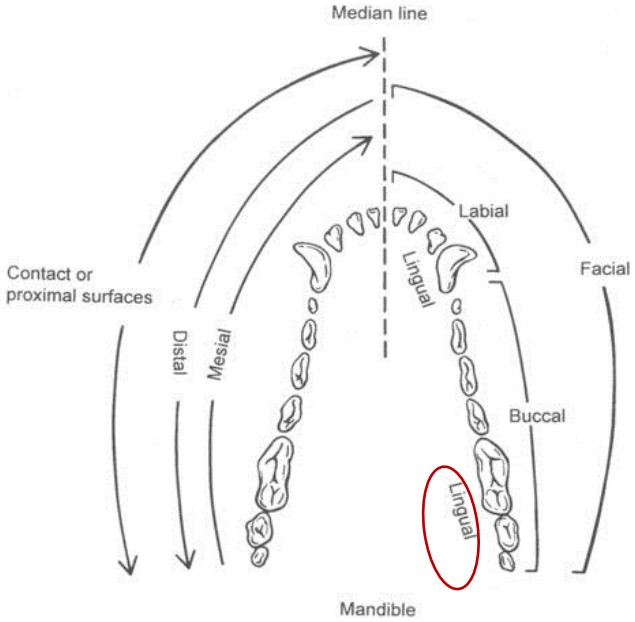
3. Facies lingualis:

- **inner surface**
- **directed toward the tongue**

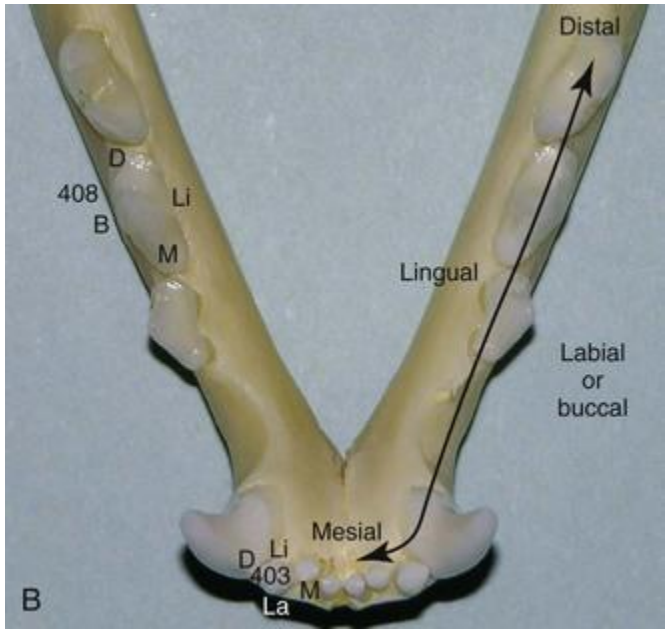
http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dentalanat.html



http://veterinarynews.dvm360.com/dentistry-101-surfaces-teeth-and-directions-mouth



https://quizlet.com/4260536/test

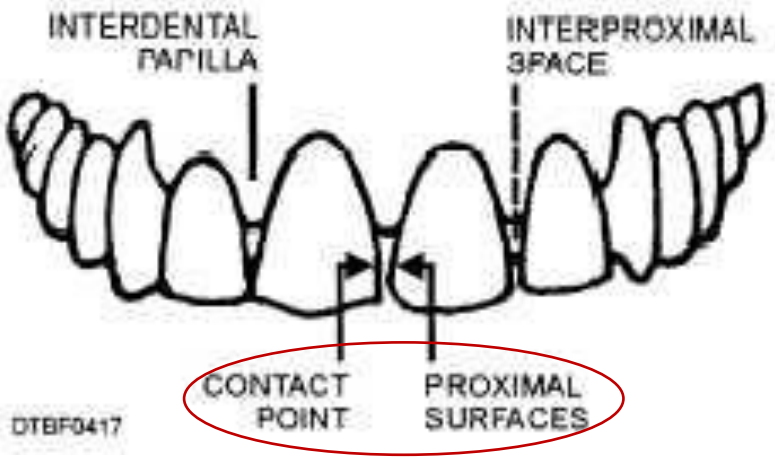


https://veteriankey.com/dental-and-oral-diseases/

SURFACES OF THE TEETH (DENTES)

4. Facies contactus:

- **each tooth, except the last molar, has two contact surfaces**
- **releated to the adjacent teeth in the same dental arch**



http://medical.tpub.com/14274/css/Proximal-Surfaces-67.htm

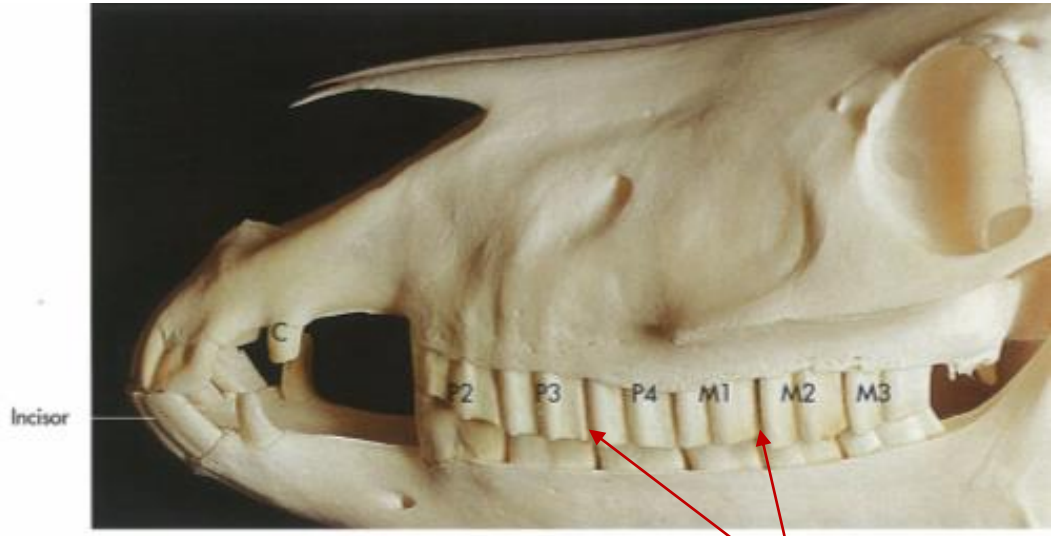
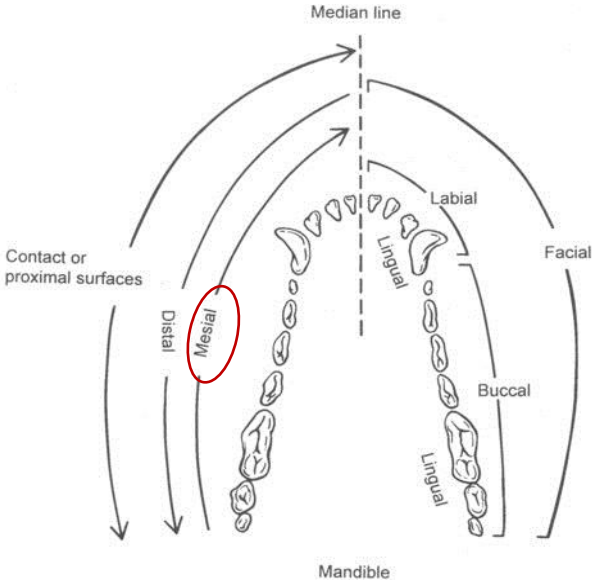


Fig 7-21. Permanent dentition of a stallion.

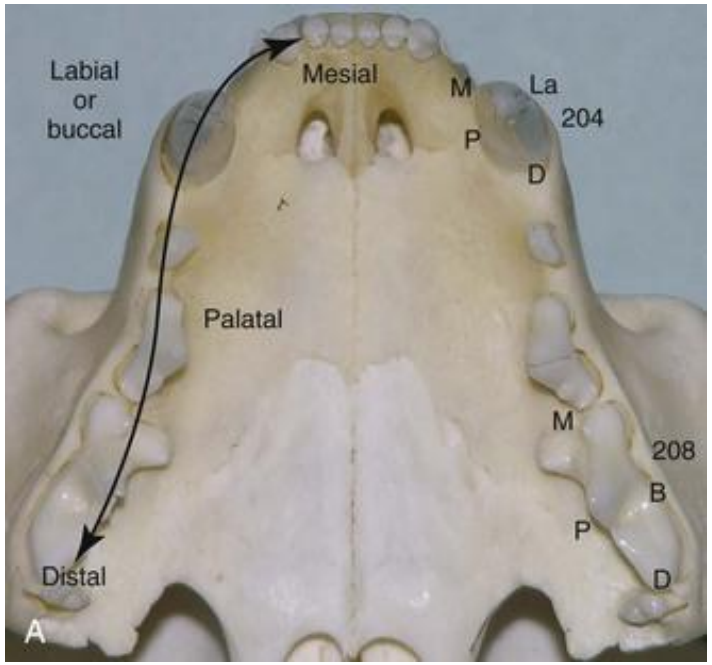
Facies contactus

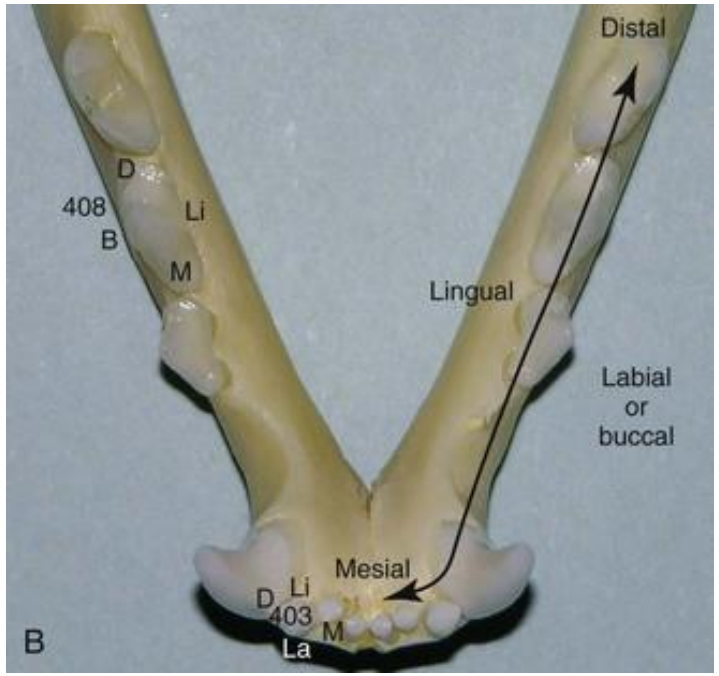
SURFACES OF THE TEETH (DENTES)



5. Facies mesialis:

- **on the first incisor next to the median plane**
- **on the other teeth directed toward the first incisors**

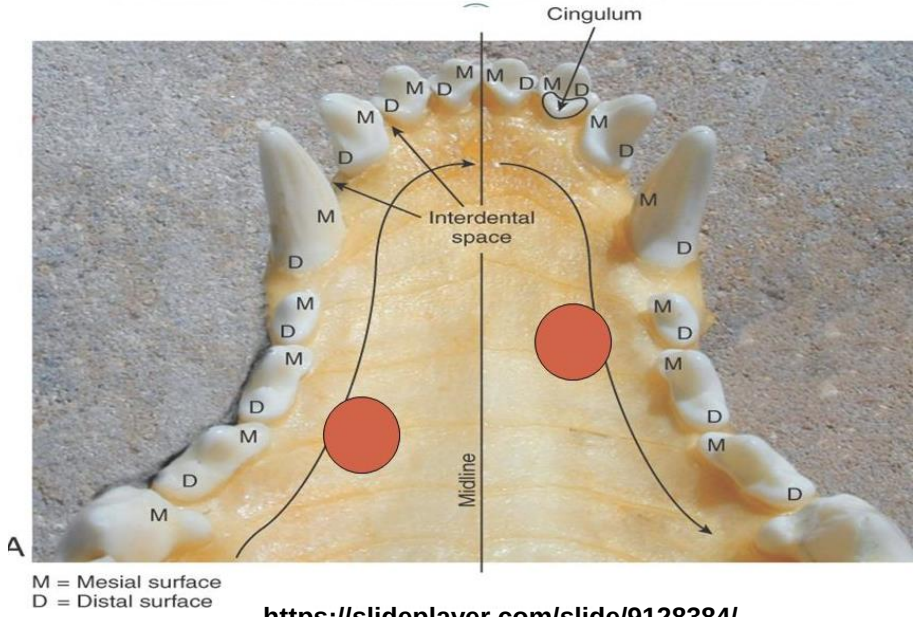




***B,* buccal; *D,* distal; *P,* palatal; *Li,* lingual.**

https://veteriankey.com/dental-and-oral-diseases/

A palatal view of the dog maxilla. The midline is marked with a line, and the mesial and distal tooth surfaces are marked with an M or D.

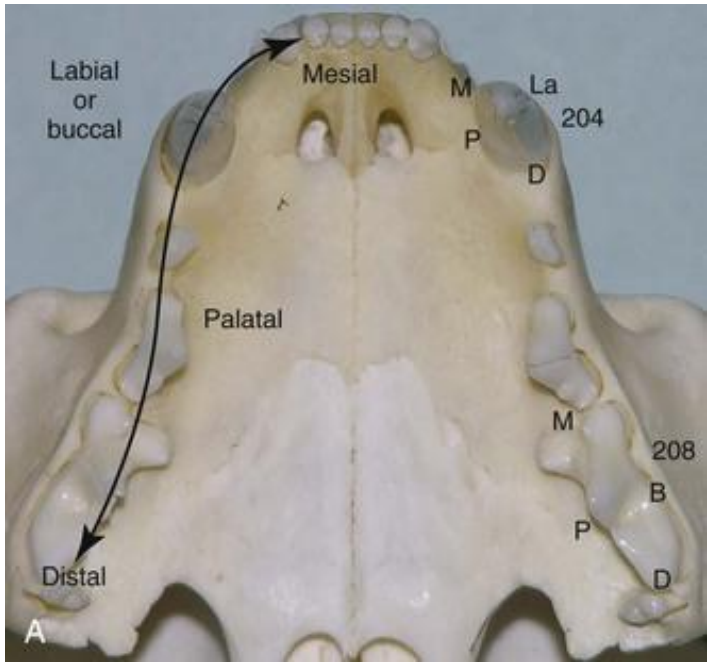


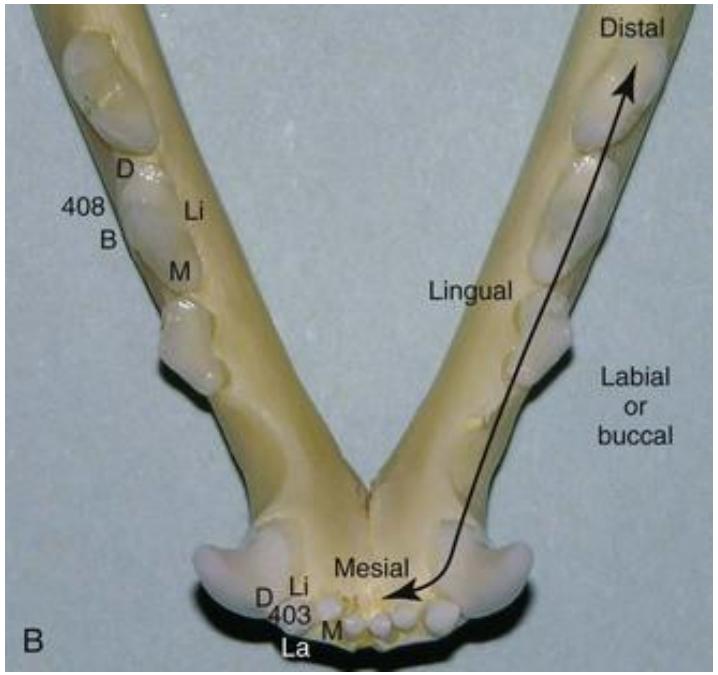
https://slideplayer.com/slide/9128384/

SURFACES OF THE TEETH (DENTES)

6. Facies distalis:

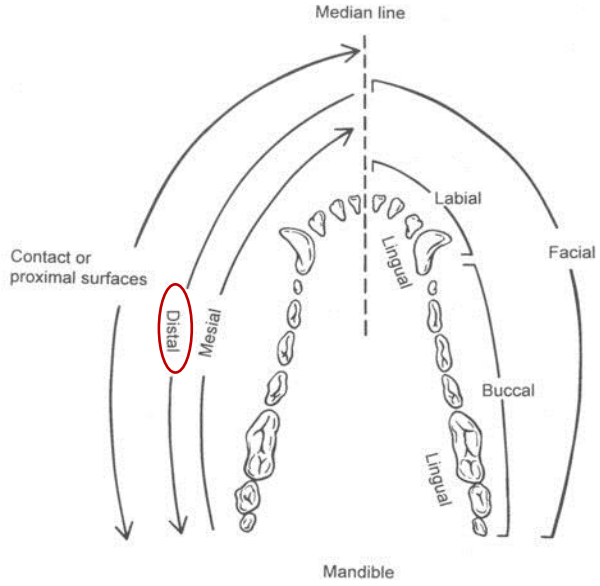
- opposite surface from the facies mesialis



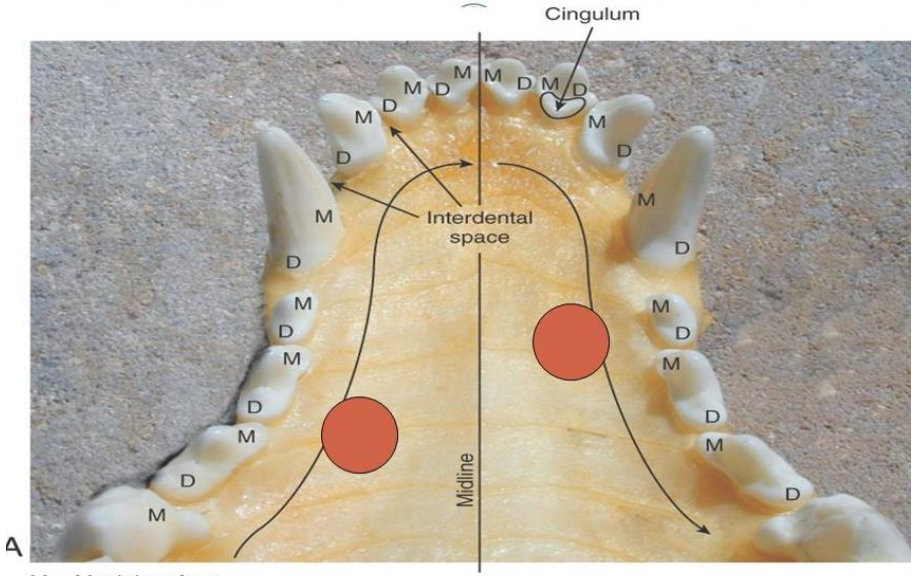


***B,* buccal; *D,* distal; *P,* palatal; *Li,* lingual.**

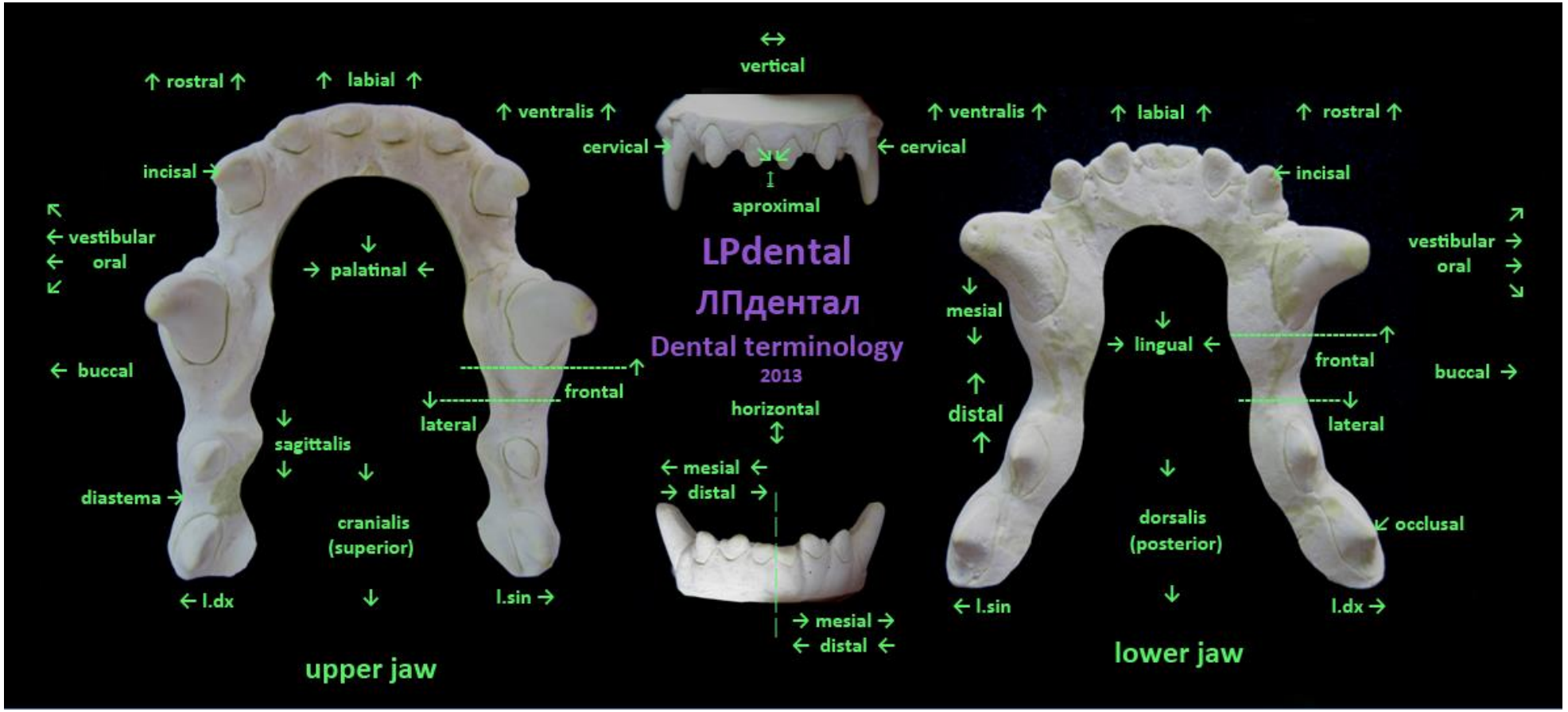
https://veteriankey.com/dental-and-oral-diseases/



A palatal view of the dog maxilla. The midline is marked with a line, and the mesial and distal tooth surfaces are marked with an M or D.



SURFACES OF THE TEETH (DENTES)



http://www.lpdental.cz/p144/Tooth-Morphology

TYPES OF THE TEETH (DENTES)

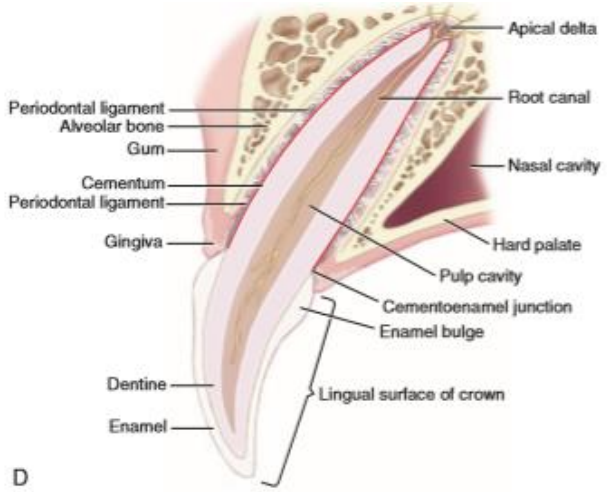
BRACHYDONT TOOTH:

consists of:

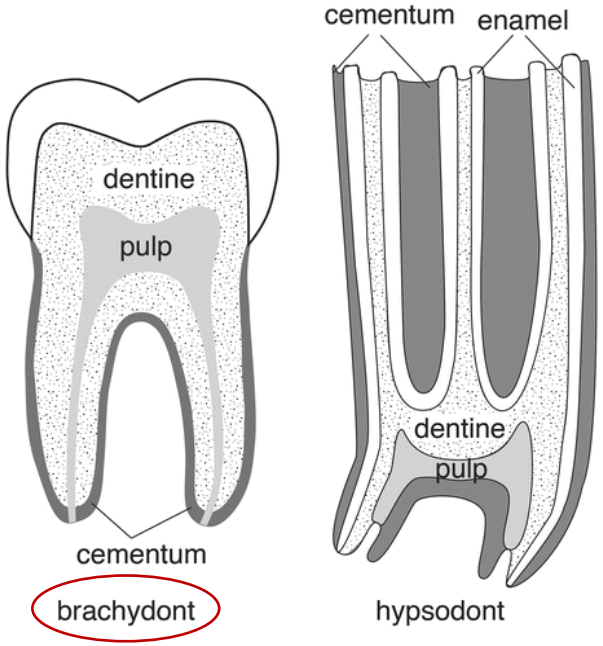
a) **corona dentis**

b) **radix dentis**

c) **collum dentis**



http://undergraduate.vetmed.wsu.edu/courses/vph-308/gross/lab-9-gross-digestive/head/head-teeth



https://link.springer.com/protocol/10.1007/978-1-4939-3185-9_13

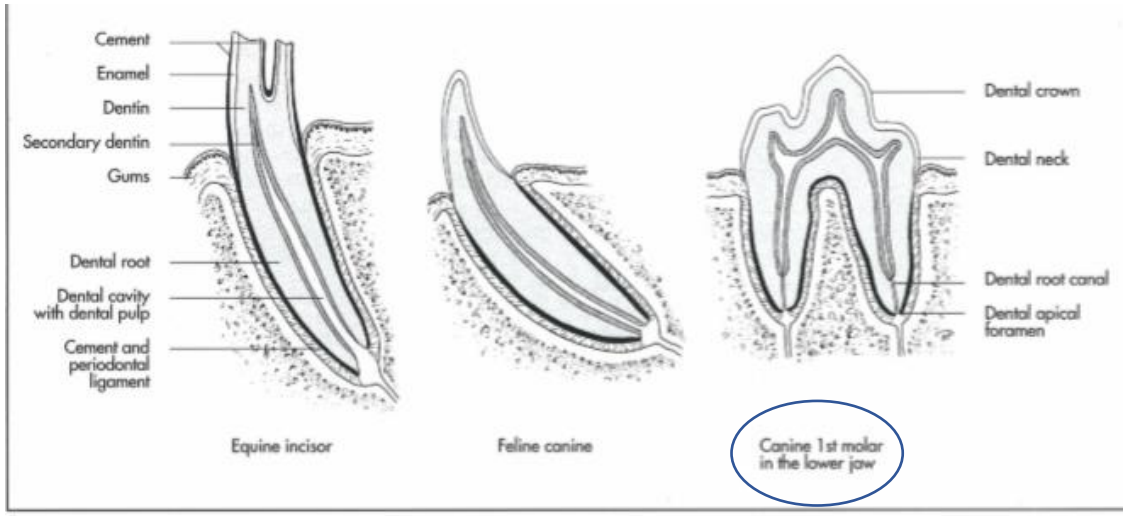


Fig 7-19. Hypselodont and brachyodont teeth, schematic.

TYPES OF THE TEETH (DENTES)

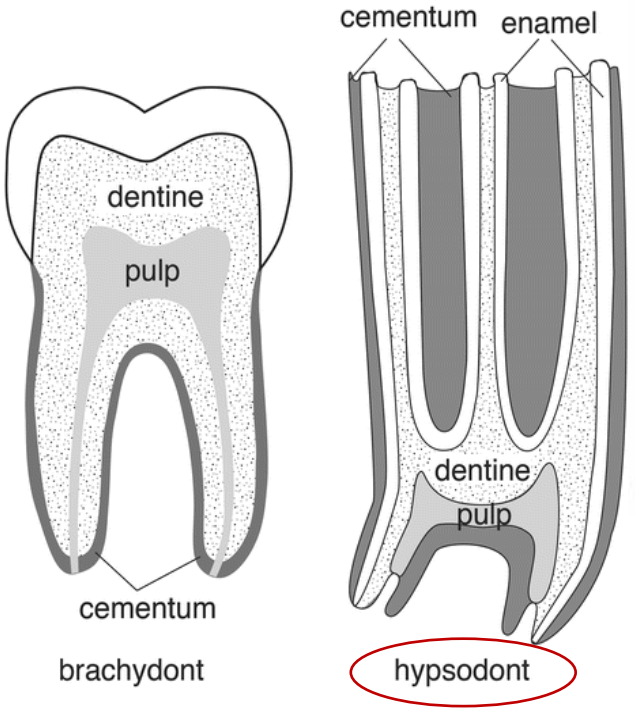
http://undergraduate.vetmed.wsu.edu/courses/vph-308/gross/lab-9-gross-digestive/head/head-teeth

HYPSODONT TOOTH:

consists of:

a) corona dentis and collum dentis are not easily distinguished

b) only body and root



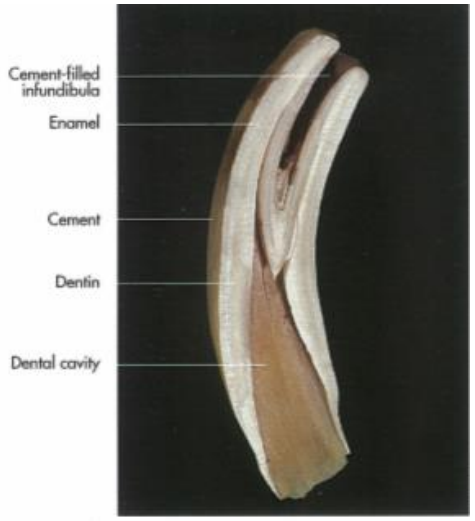


Fig 7-17. Section of an equine incisor.

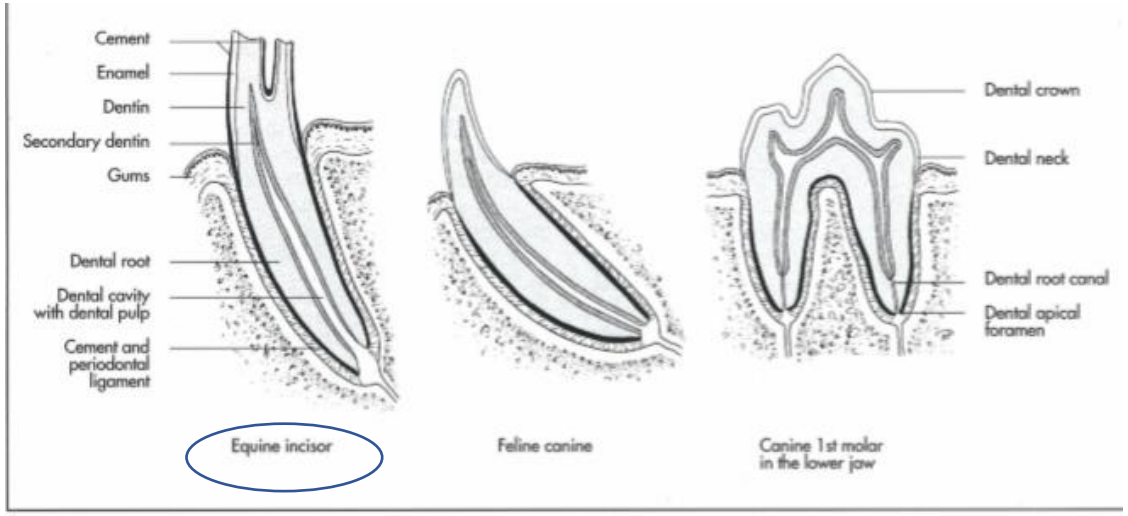


Fig 7-19. Hypselodont and brachyodont teeth, schematic.

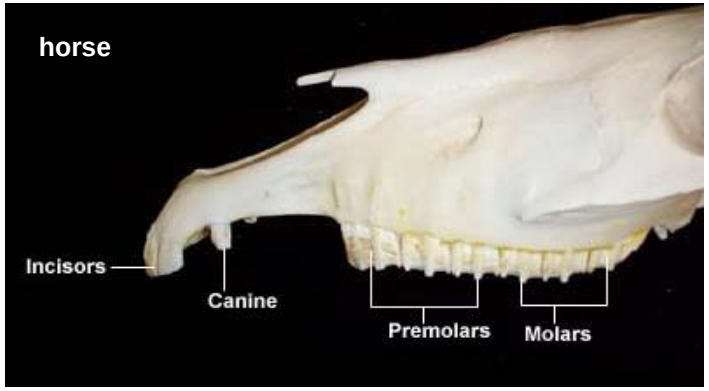
https://link.springer.com/protocol/10.1007/978-1-4939-3185-9_13

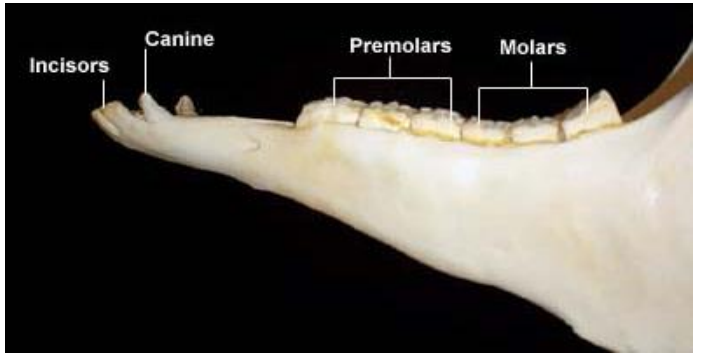
TYPES OF THE TEETH (DENTES)

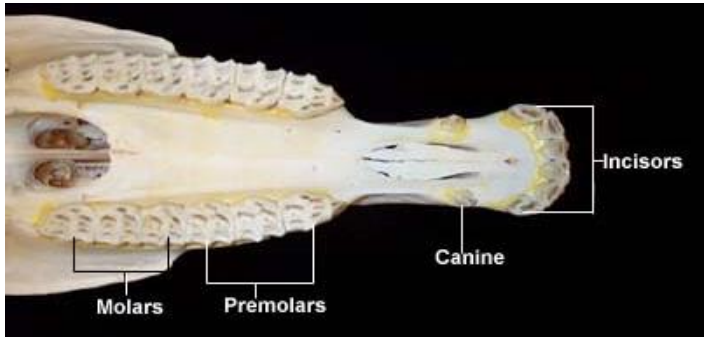
1. INCISORS (DENS INCISIVI, I.)
2. CANINES (DENTES CANINI, C.)
3. CHEEK TEETH:

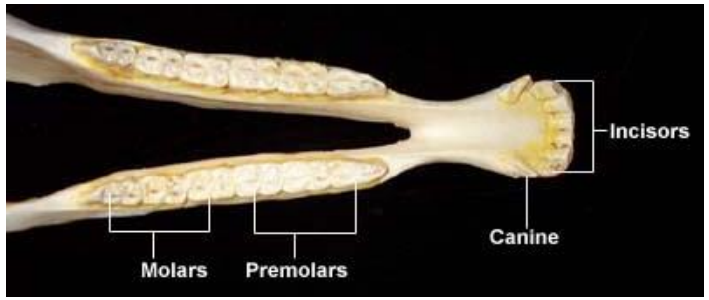
a. PREMOLARS (DENTES PREMOLARES, P.)

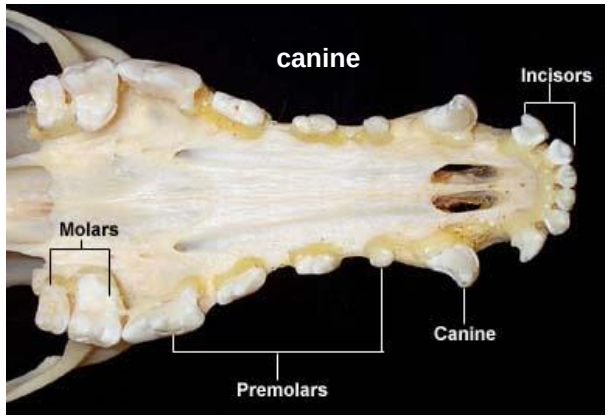
b. MOLARS (DEBTES MOLARES, M.)

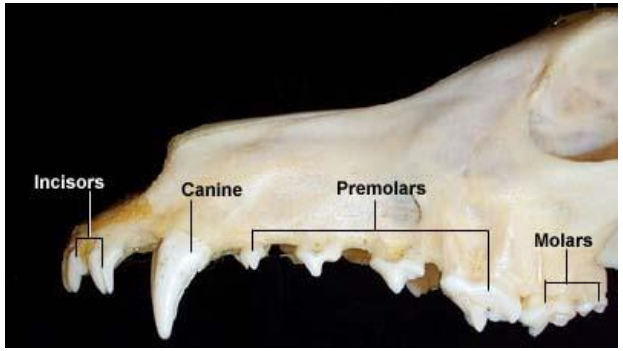


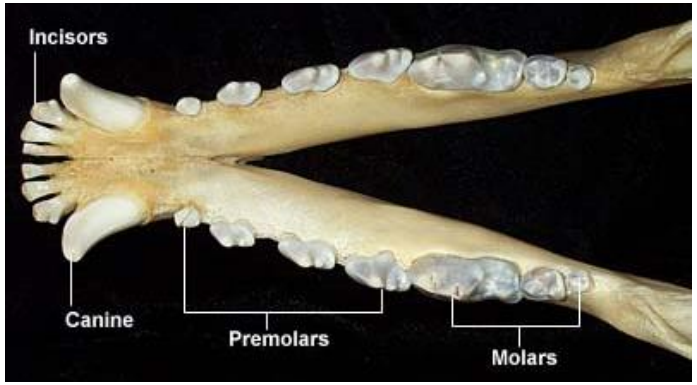


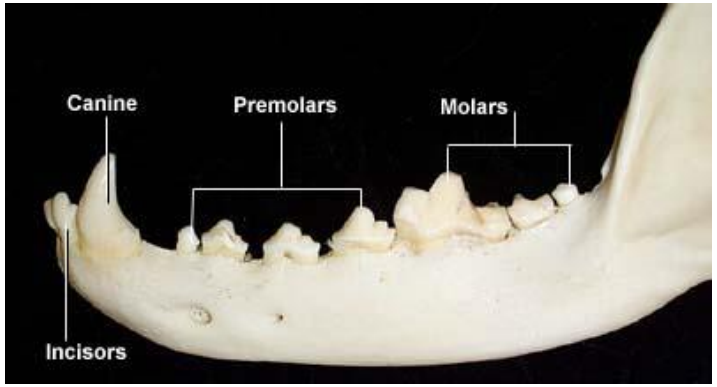












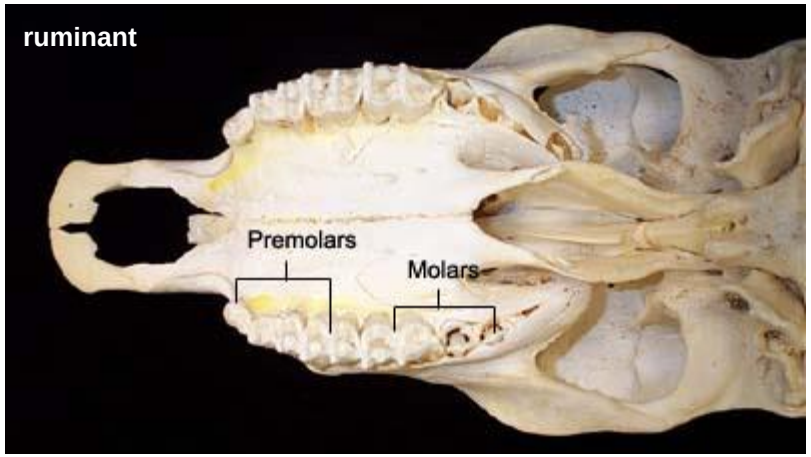
http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dogpage.html

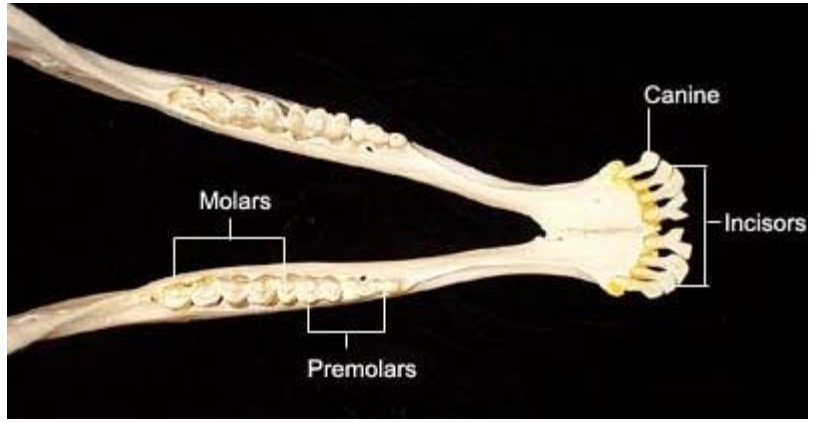
TYPES OF THE TEETH (DENTES)

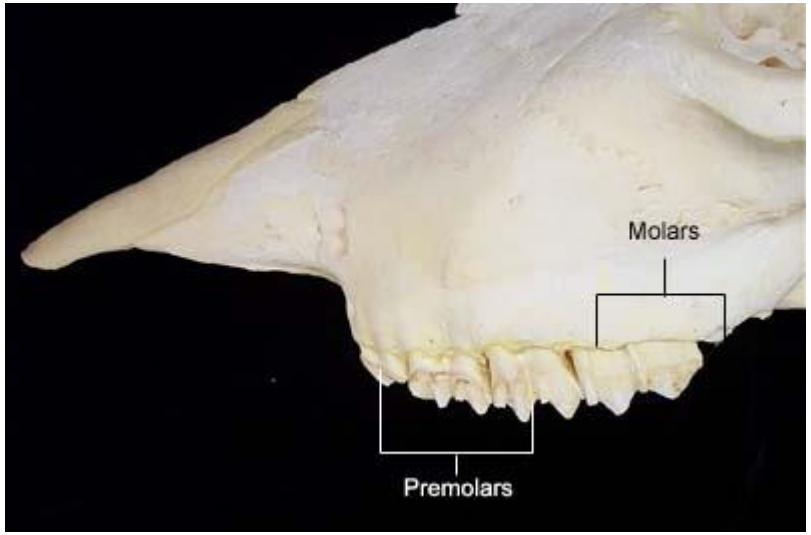
1. **INCISORS (DENS INCISIVI, I.)**
2. **CANINES (DENTES CANINI, C.)**
3. **CHEEK TEETH:**

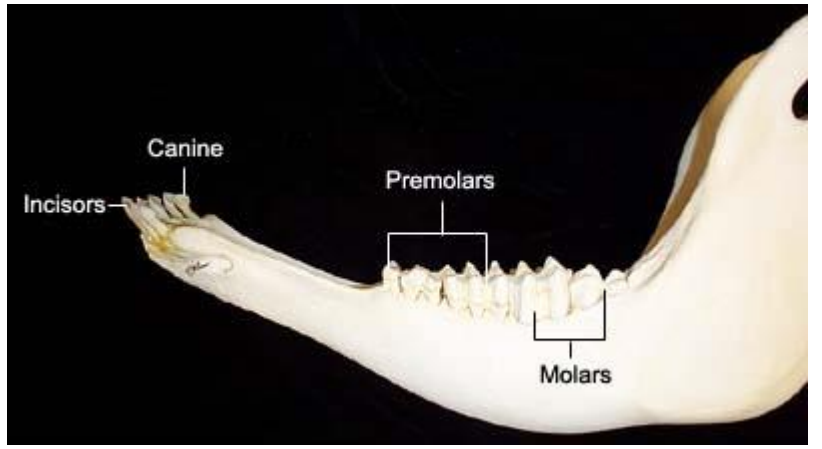
a. **PREMOLARS (DENTES PREMOLARES, P.)**

b. **MOLARS (DEBTES MOLARES, M.)**







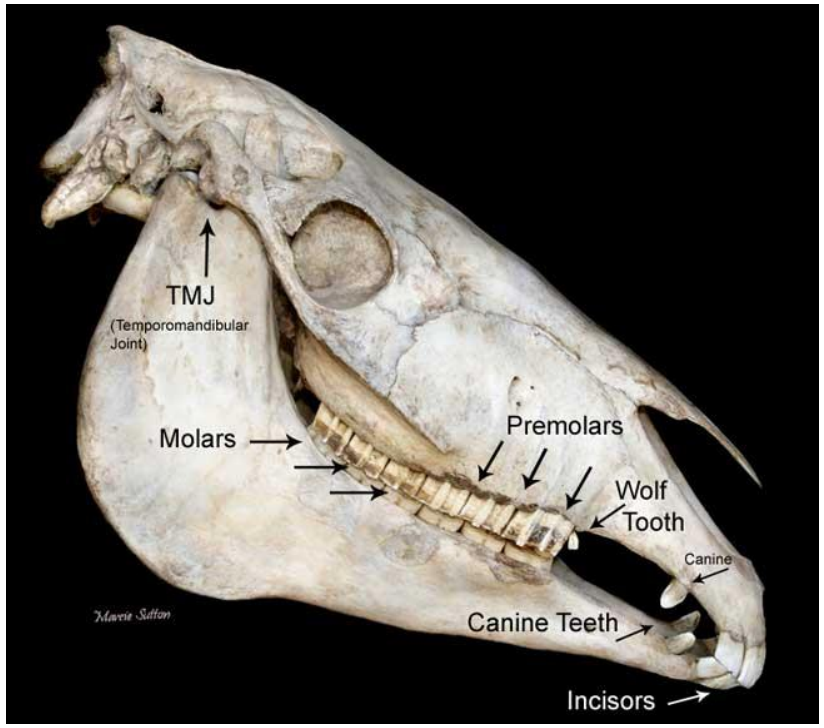


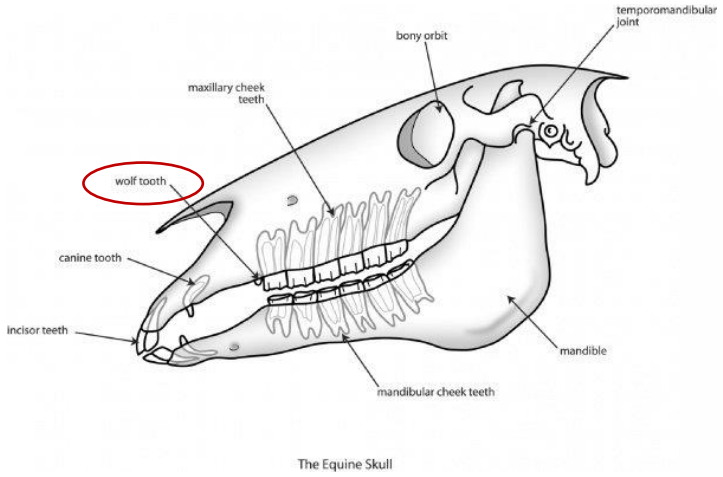
http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dogpage.html

TYPES OF THE TEETH (DENTES)

A. DENS LUPINUS:

- in Eq
- wolf tooth
- the first upper premolar (P1)
- rudimentary, inconstant





The Equine Skull

https://vcahospitals.com/know-your-pet/equine-dentistry

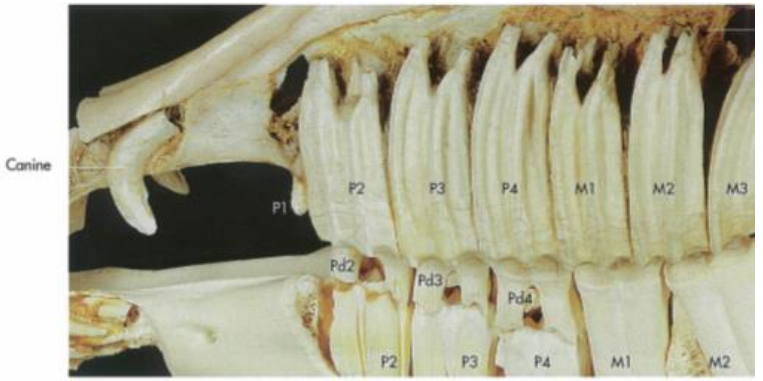
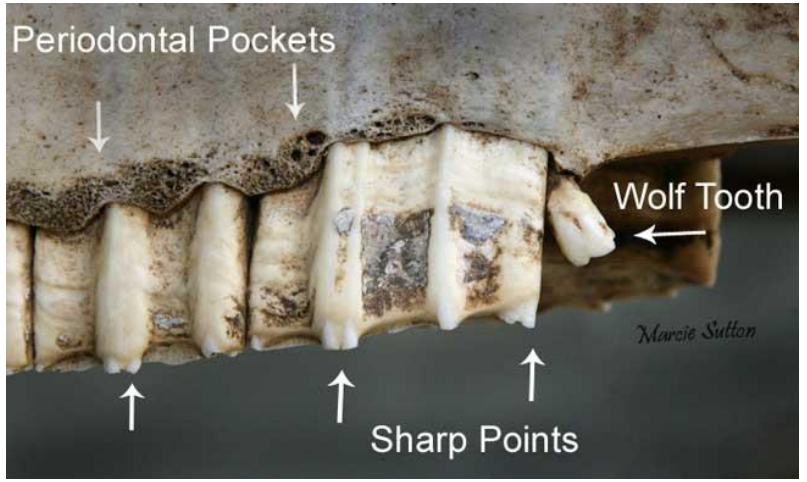


Fig 7-23. Mandibular and maxillary arcade during eruption, tooth roots exposed.

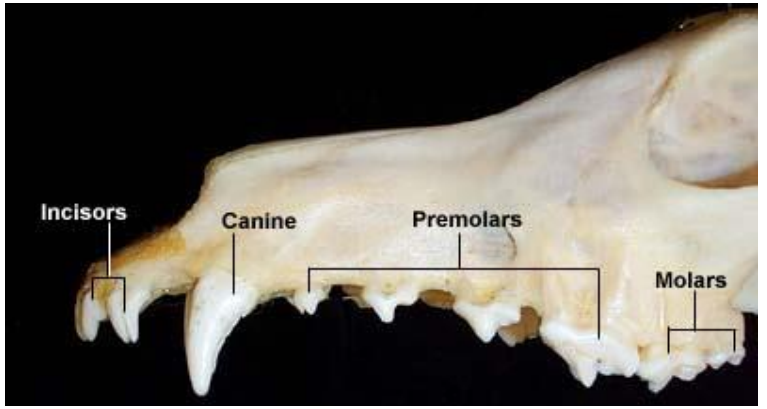


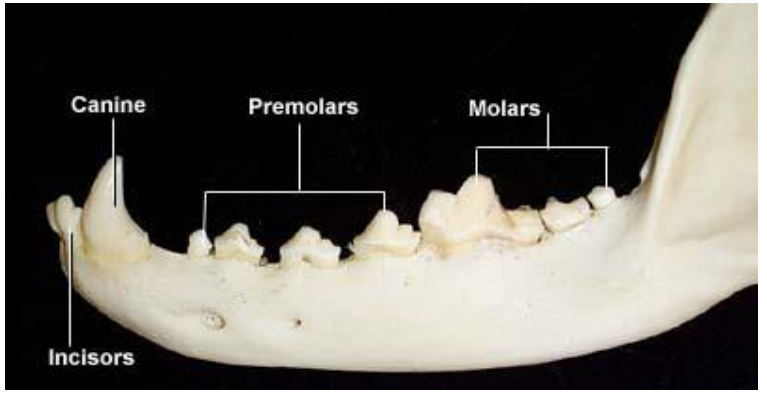
http://www.restless-night.com/articles/horses_mouth.shtml

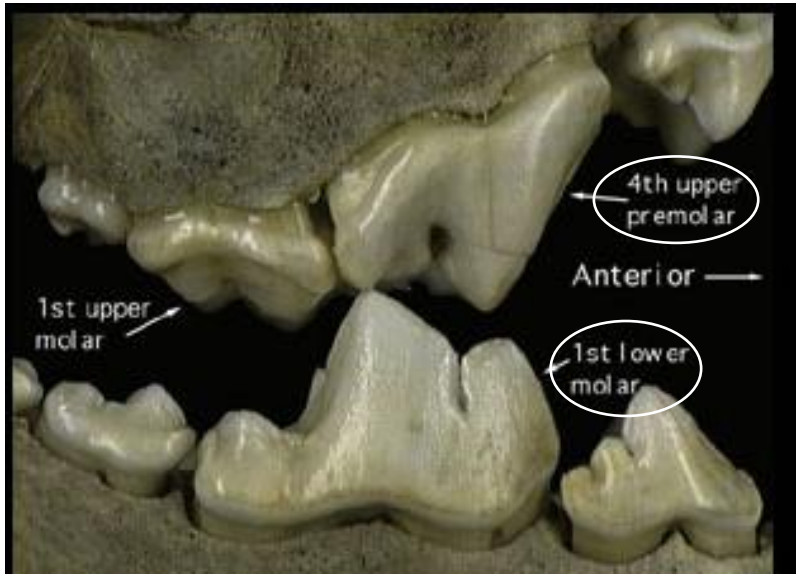
TYPES OF THE TEETH (DENTES)

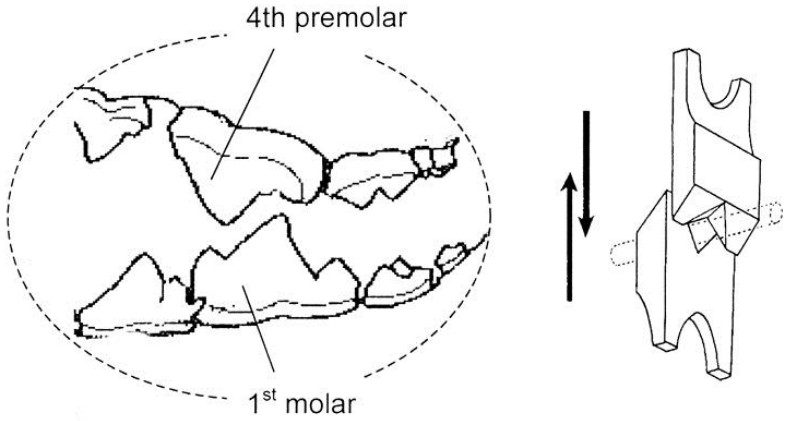
B. DENS SECTORIUS:

- **in Car**
- **sectorial tooth**
- **largest cutting tooth in each jaw**
- **last upper premolar and the first lower molar**









The 4th upper premolar and the 1st lower molar are the carnassial teeth. They are large and sharp and pass each other like shears to cut flesh from bones and crack small bones.

https://animaldiversity.org/collections/mammal_anatomy/tooth_diversity/

http://www.biology-resources.com/drawing-teeth-dog-carnassial.html

TYPES OF THE TEETH (DENTES)

DENS DECIDUI (decidous teeth):

- **milk teeth**

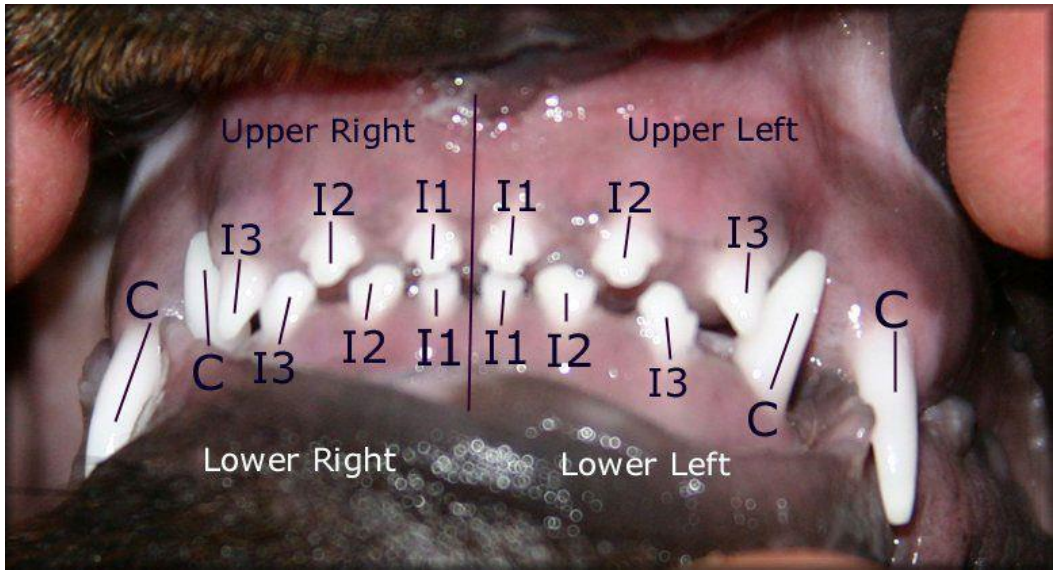
repleaced by the permanent:

a. incisors

b. canines

c. premolars – with the exception of the first premolar,

- the molars are not present in the deciduous dentition

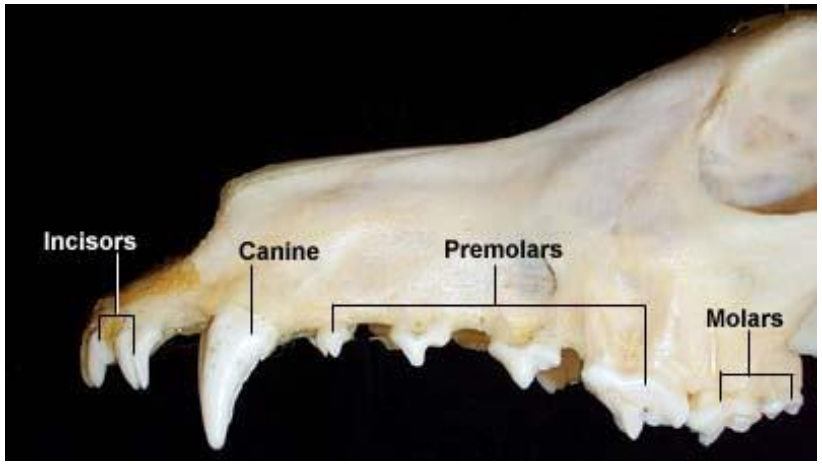


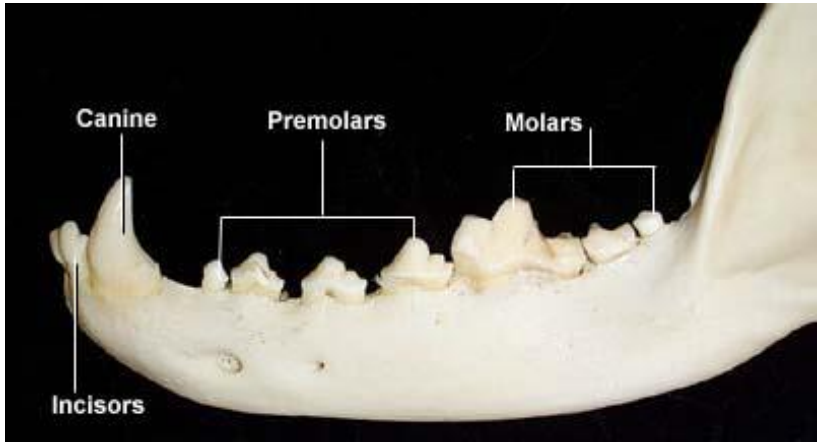
https://hu.pinterest.com/pin/45247171226388221/

TYPES OF THE TEETH (DENTES)

DENS PERMANENTES:

- permanent teeth





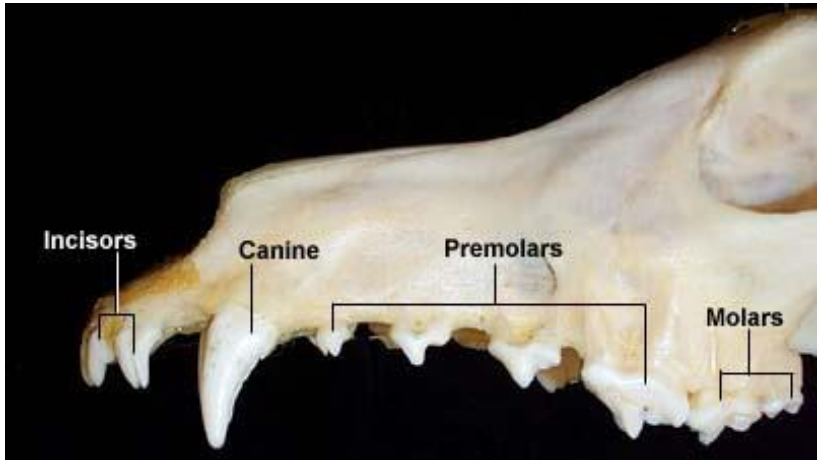
TYPES OF THE TEETH (DENTES)

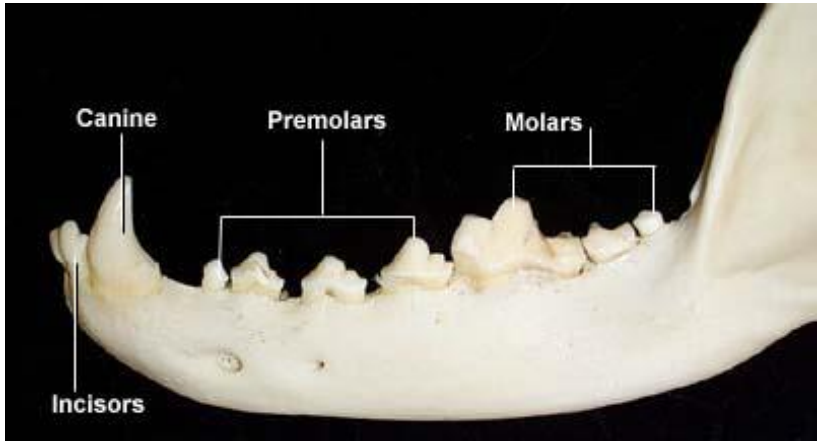
ARCUS DENTALIS SUPERIOR:

- arch formed by all of the upper teeth

ARCUS DENTALIS INFERIOR:

- arch formed by all of the lower teeth





THE TEETH OF THE CARNIVORES

- **the dentition of the dog consists of tuberculate teeth**
- **well – developed roots**
- **brachydont type**

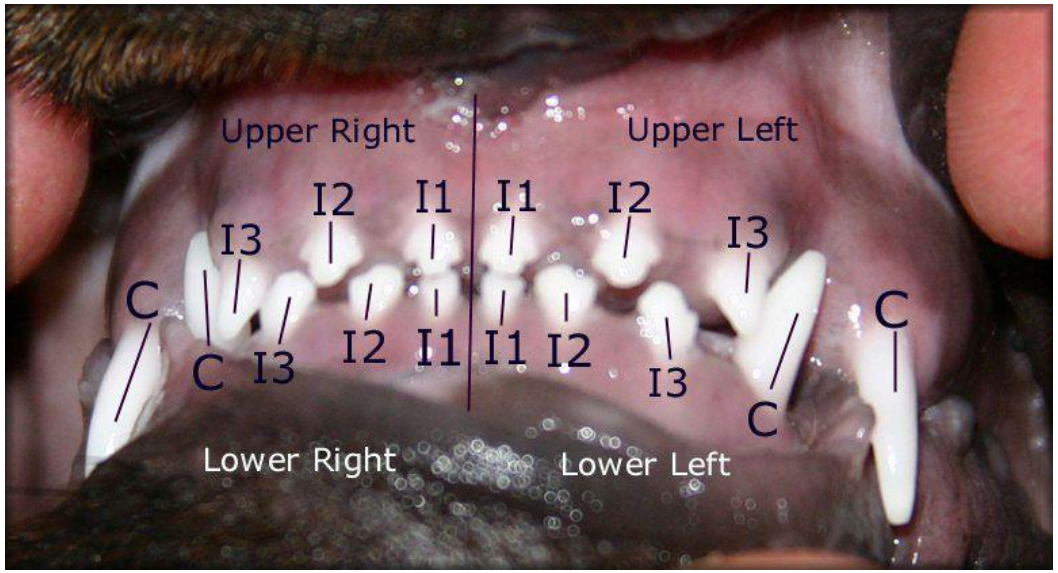
https://www.rvc.ac.uk/review/dentistry/extraction/Deciduous.html

Dental Formulae					
Deciduous	$\frac{3\,1\,3}{3\,1\,3}$	= 14	**Permanent**	$\frac{3\,1\,4\,2}{3\,1\,4\,3}$	= 21

Note: P^4 and M_1 are the carnasial or shearing teeth

Tooth Eruption		
	Deciduous	**Permanent**
Incisors	4 - 6 weeks	3 - 5 months
Canine	5 - 6 weeks	4 - 6 months
Premolars	6 weeks	4 - 5 months
Molars		5 - 7 months

http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dogpage.html



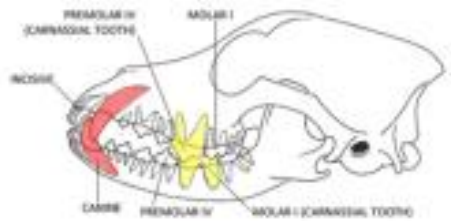
THE TEETH OF THE CARNIVORES

FORMULA FOR THE PERMANENT DENTITION:

- **upper I (incisors) 3, C (canines) 1, P (premolars) 4, M (molars) 2**
- **lower I 3 C 1 P 4 M 3**

Deciduous teeth: 2(I 3/3 C1/1 P3/3)=28 Permanent teeth: 2(I 3/3 C1/1 P4/4 M2/3)=42

LEFT DECIDUOUS TEETH
6 WEEKS OLD DOG



LEFT ADULT TEETH

https://www.studyblue.com/notes/note/n/dog-digestive-apparatus/deck/14348928

Dental formulae

	Deciduous Dentition	Permanent Dentition
Horse	3 1 3 3 1 3	3 1 3 (4) 3 3 1 3 3
Ruminant	– – 3 3 1 3	– – 3 3 3 1 3 3
Pig	3 1 3 3 1 3	3 1 4 3 3 1 4 3
Dog	3 1 3 3 1 3	3 1 4 2 3 1 4 3
Cat	3 1 3 3 1 2	3 1 3 1 3 1 2 1

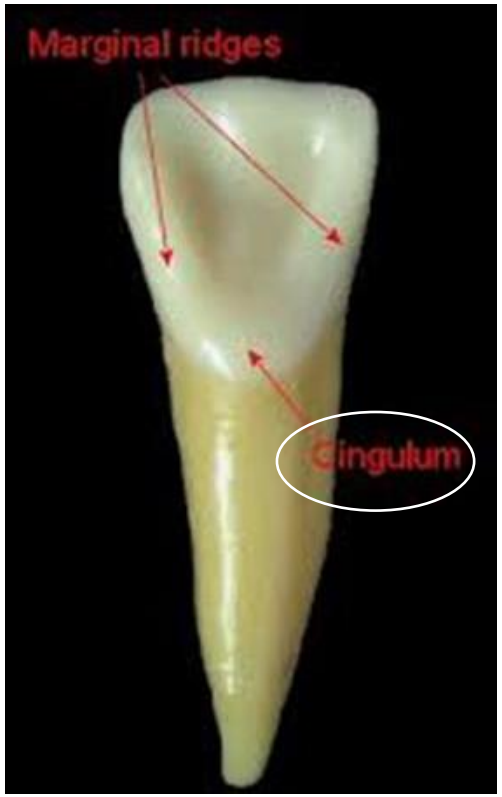
Temporary dentition (deciduous teeth) $\frac{\text{iii c opppoo0}}{\text{iii c opppooo}}$ = (7+7) x 2 = 28 deciduous teeth

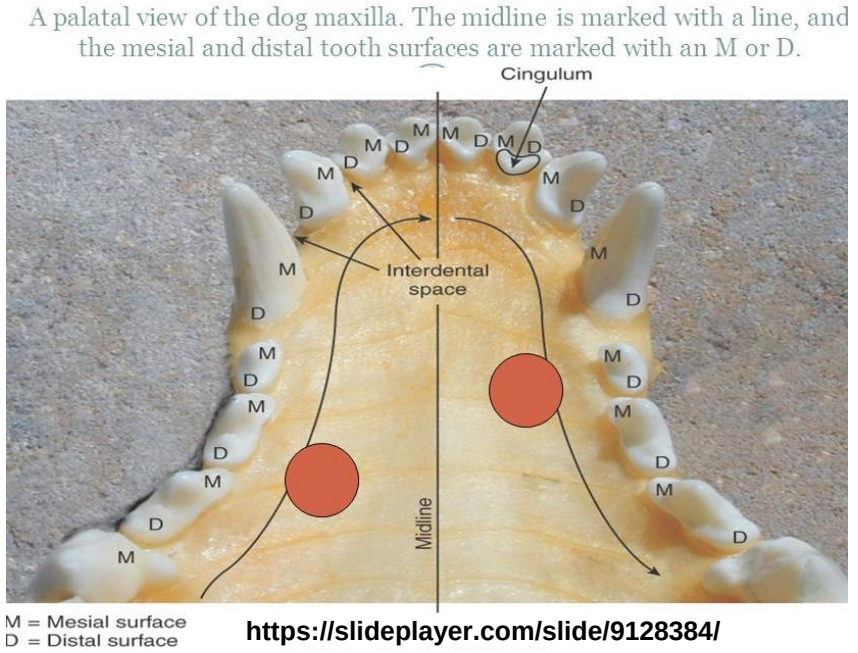
Permanent dentition (permanent teeth) $\frac{\text{III C LPPPMM0}}{\text{III C LPPPMMM}}$ = (10+11) x 2 = 42 permanent teeth

THE TEETH OF THE CARNIVORES

CINGULUM:

- **ridge on the lingual surface of the crown near the neck**
- **connects the cristae marginalis**
- **on incisors**





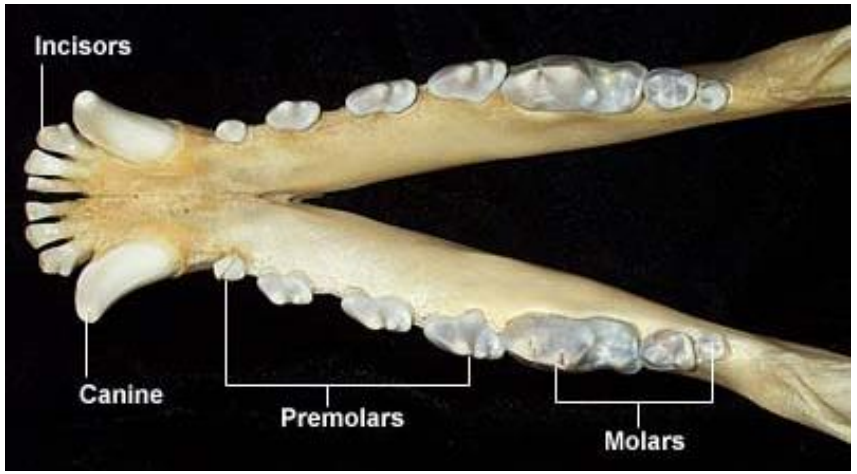
https://slideplayer.com/slide/9128384/

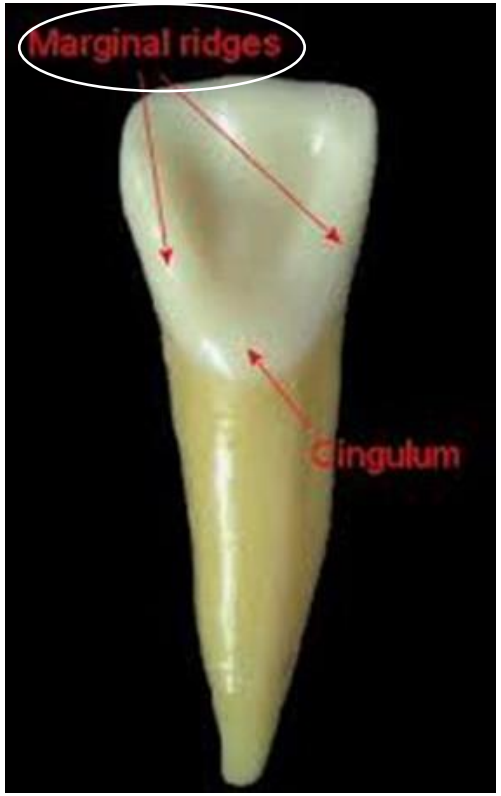
http://intranet.tdmu.edu.ua/data/kafedra/internal/stomat_ter_dit/classes_stud/en/stomat/ptn/propaedeutics%20of%20child%20therapeutic%20dentistry/2/02.%20topographic%20anatomy%20of%20deciduous%20teeth%20at%20various%20.htm

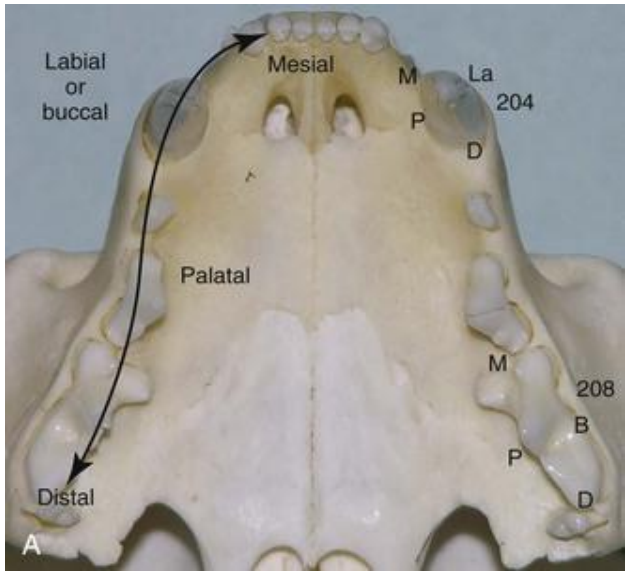
THE TEETH OF THE CARNIVORES

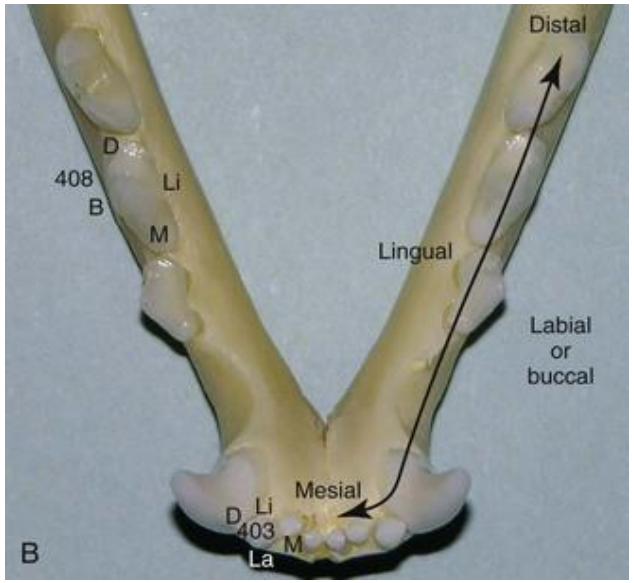
CRISTA MARGINALIS:

- **marginal crest**
- **ridge on each contact border of the lingual surface of the crown of incisors**









B, **buccal;** ***D,*** **distal;** ***P,*** **palatal;** ***Li,*** **lingual.**

https://veteriankey.com/dental-and-oral-diseases/

THE TEETH OF THE CARNIVORES

PREMOLARS:

- **P2, P3, P4 have two roots, tricuspid crowns**
- **upper P4 known as sectorial tooth (dens sectroius) – has one lingual and two vestibular roots**

Fig 7-34. Sagittal section of the maxillary and mandibular teeth of a dog, lateral aspect.

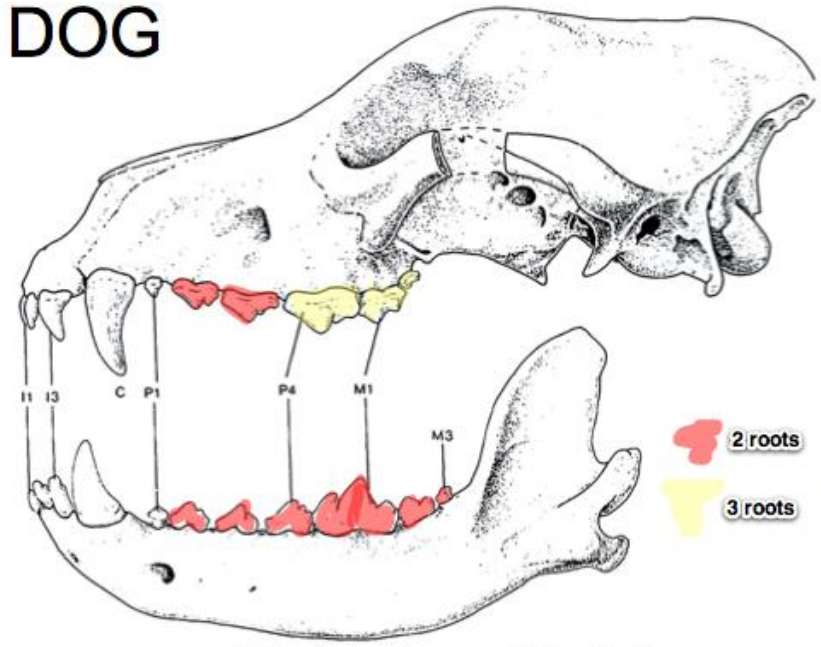


FIGURE 3–18. Lateral view of the permanent dentition of the dog.

http://bvetmed1.blogspot.com/2013/02/more-teeth-lecture-133.html

THE TEETH OF THE CARNIVORES

MOLARS:

- **lower M1 and M2 have two roots**
- **lower M3 has one root**
- **upper M1 and M2 have three roots**

Fig 7-34. Sagittal section of the maxillary and mandibular teeth of a dog, lateral aspect.

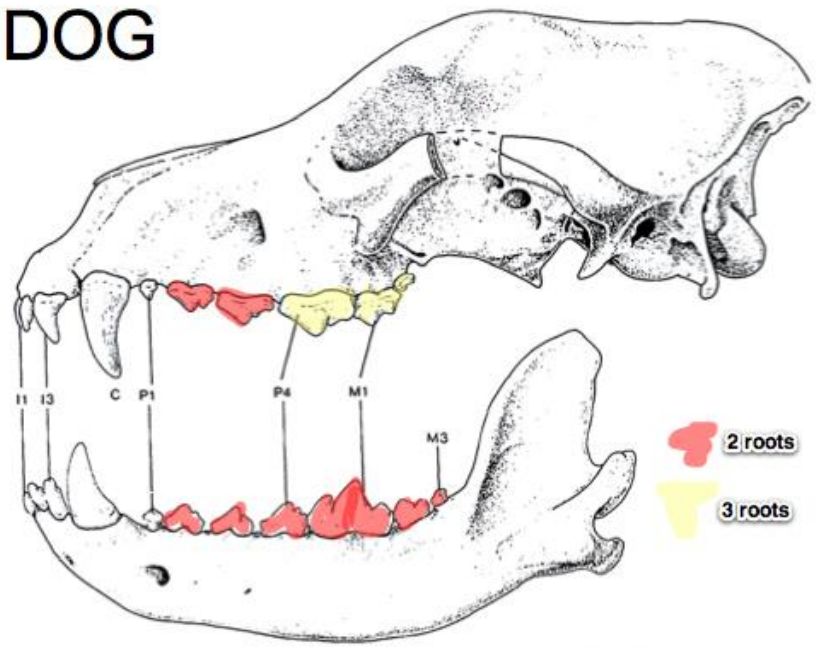


FIGURE 3–18. Lateral view of the permanent dentition of the dog.

THE TEETH OF THE CARNIVORES

DECIDUOUS DENTITION:

- **for the first three week of life there are no teeth**

FORMULA OF THE DECIDUOUS DENTITION:

2 (Di 3/3, Dc 1/1, Dp 2/3) = 23

- **complete within one and a half months, with the exception of upper and lower P1**
- **upper and lower P1 appear between three and a half to six months**

Temporary dentition (deciduous teeth) $\frac{\text{iii c opppoo0}}{\text{iii c opppooo}}$ = (7+7) x 2 = 28 deciduous teeth

Permanent dentition (permanent teeth) $\frac{\text{III C LPPPMM0}}{\text{III C LPPPMMM}}$ = (10+11) x 2 = 42 permanent teeth

Dental formulae

	Deciduous Dentition	Permanent Dentition
Horse	3 1 3 3 1 3	3 1 3 (4) 3 3 1 3 3
Ruminant	– – 3 3 1 3	– – 3 3 3 1 3 3
Pig	3 1 3 3 1 3	3 1 4 3 3 1 4 3
Dog	3 1 3 3 1 3	3 1 4 2 3 1 4 3
Cat	3 1 3 3 1 2	3 1 3 1 3 1 2 1

Tooth Eruption

	Deciduous	Permanent
Incisors	4 - 6 weeks	3 - 5 months
Canine	5 - 6 weeks	4 - 6 months
Premolars	6 weeks	4 - 5 months
Molars		5 - 7 months

Deciduous teeth: 2(I 3/3 C1/1 P3/3)=28 Permanent teeth: 2(I 3/3 C1/1 P4/4 M2/3)=42

LEFT DECIDUOUS TEETH
6 WEEKS OLD DOG

LEFT ADULT TEETH

THE TEETH OF THE RUMINANTS

FORMULA FOR THE PERMANENT DENTITION:

- **2 x I (incisors) 0/4, C (canines) 0/0, P (premolars) 3/3, M (molars) 3/3= 32**

DENTITION.

The **formula** for the **permanent teeth** is:

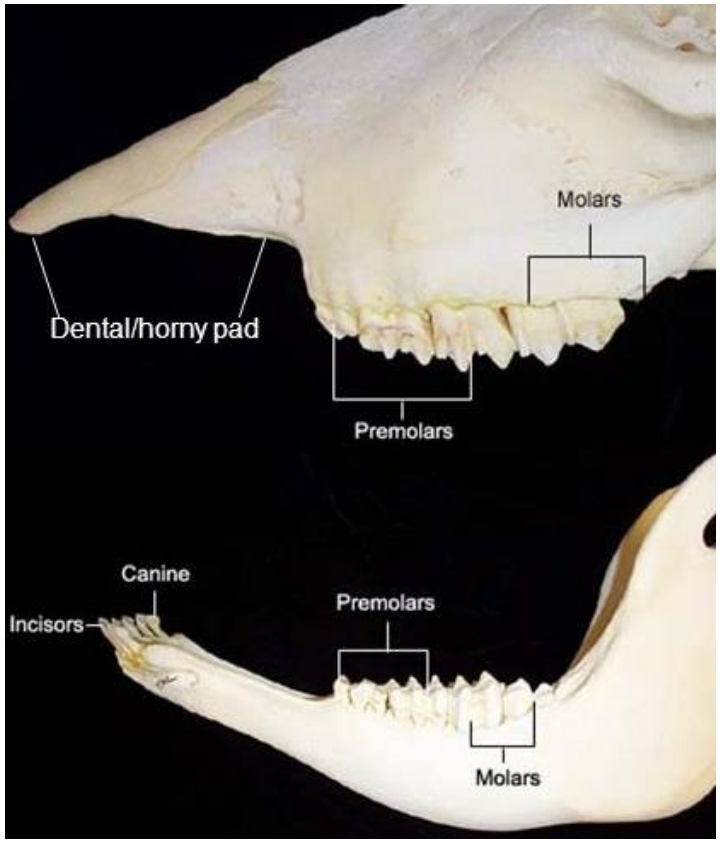
$$2\left(I\frac{0}{3}\,C\frac{0}{1}\,P\frac{3}{3}M\frac{3}{3}\right)=32$$

where I = incisor, C = canine, P = premolar, and M = molar.

The **formula** for the **deciduous teeth (milk teeth)** is:

$$2\left(Di\frac{0}{3}\,Dc\frac{0}{1}\,Dp\frac{3}{3}\right)=20$$

where Di = deciduous incisor, Dc = deciduous canine, and Dp = deciduous premolar.



https://slideplayer.com/slide/6397356/

THE TEETH OF THE RUMINATS

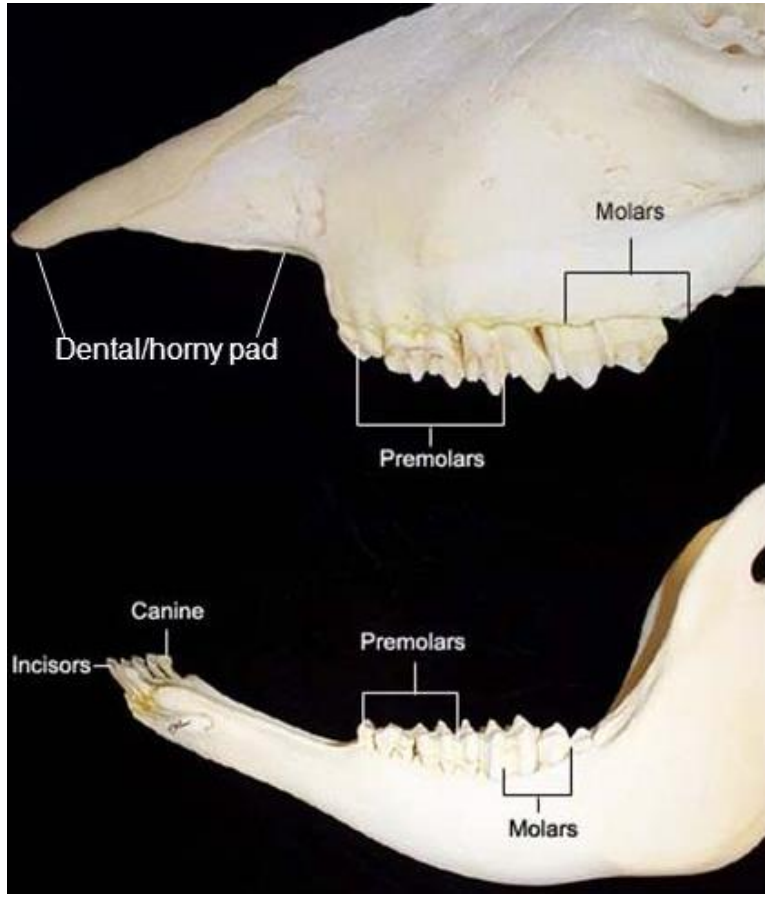
BOTH INCISORS and CANINES:

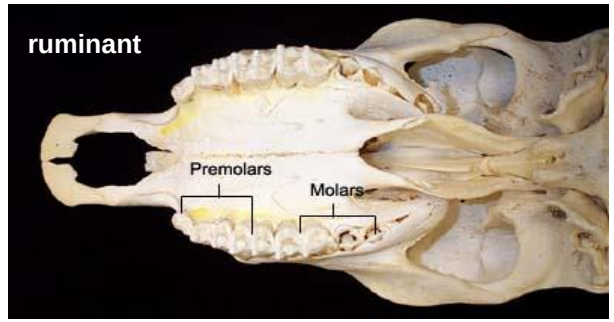
- **absent from the upper jaw**

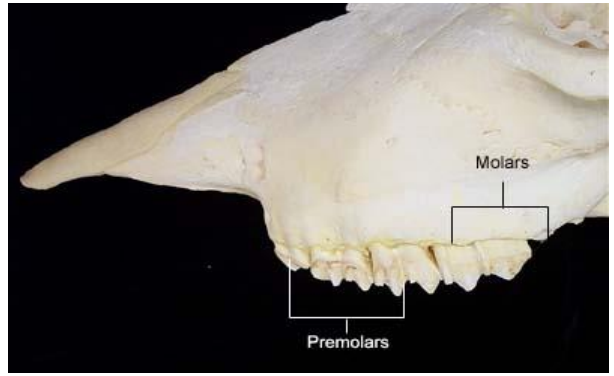
DENTAL PAD (pulvinus dentalis):

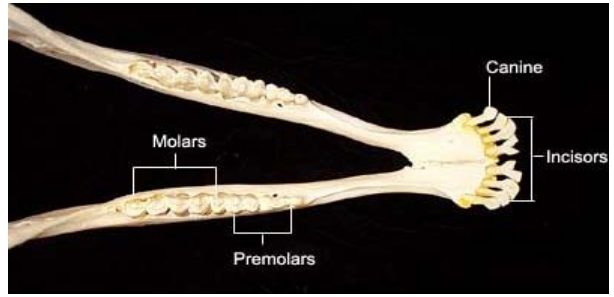
– takes the place of the missing teeth

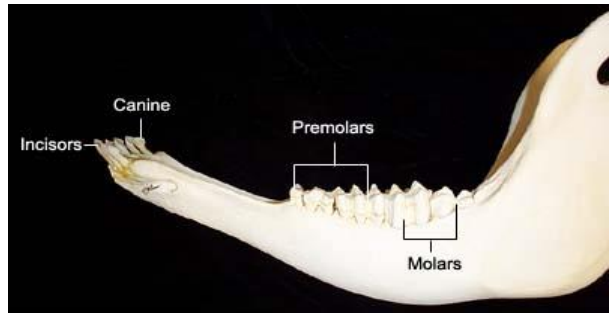
- acts as antagonist to lower incisors











http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/dogpage.html

THE TEETH OF THE RUMINATS

LOWER INCISORS:

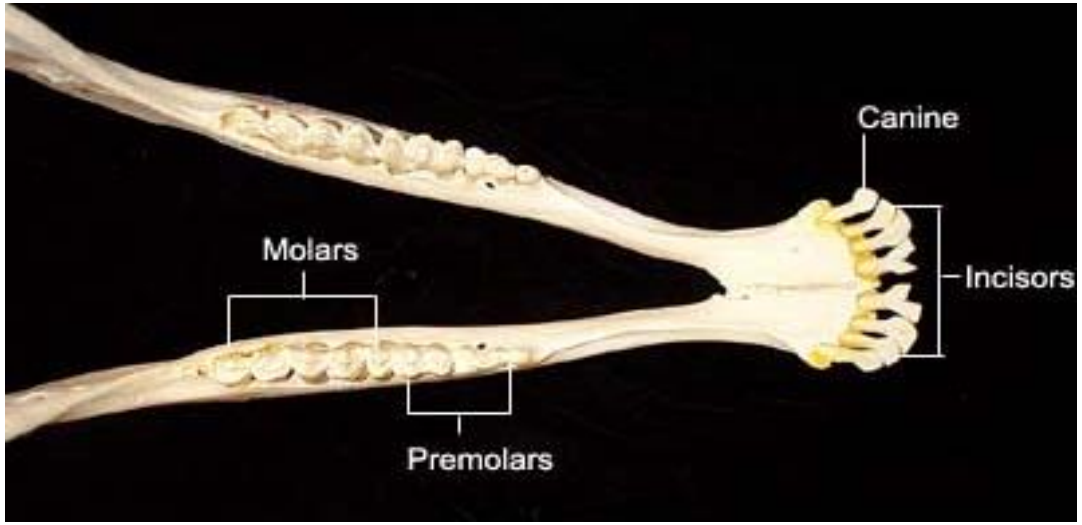
- **I1 – I4**

known as:

1. **central (I1)**
2. **first intermediate (I2)**
3. **second intermediate (I3)**
4. **corner incisors (C)**

Fig 7-39. Occlusal surface of the mandibular incisors in a 4.5 year old ox, lingual aspect.

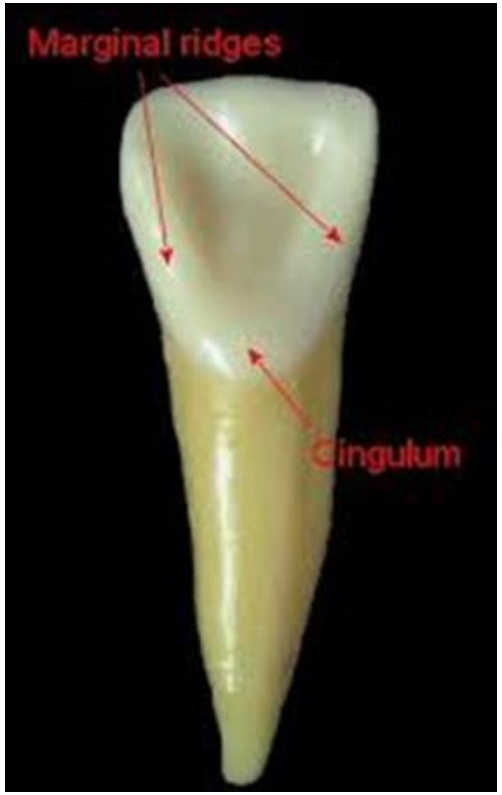
Fig 7-40. Occlusal surface of the mandibular incisors in a 5.5 year old ox, lingual aspect.



THE TEETH OF THE RUMINATS

INCISORS:

- **Cingulum**
- **Crista marginalis**



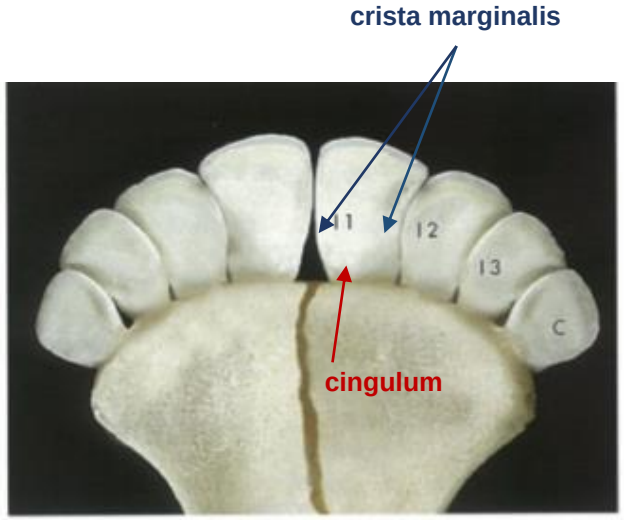


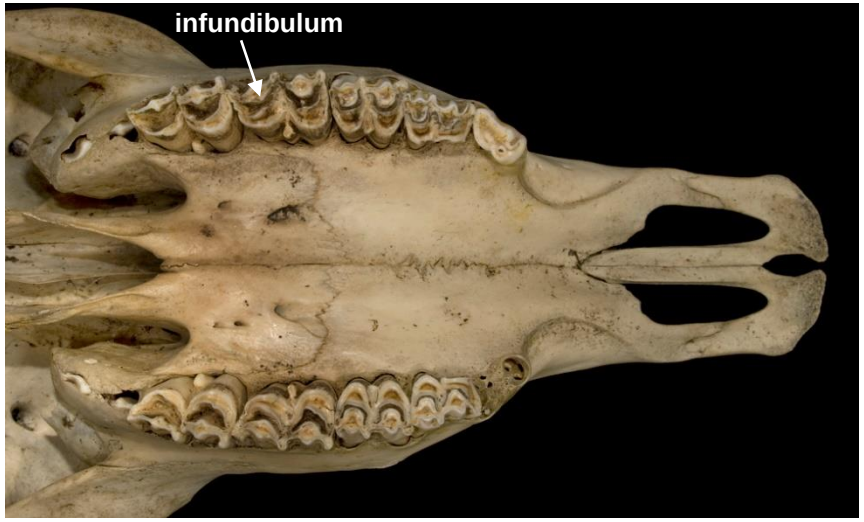
Fig 7-39. Occlusal surface of the mandibular incisors in a 4.5 year old ox, lingual aspect.

Fig 7-40. Occlusal surface of the mandibular incisors in a 5.5 year old ox, lingual aspect.

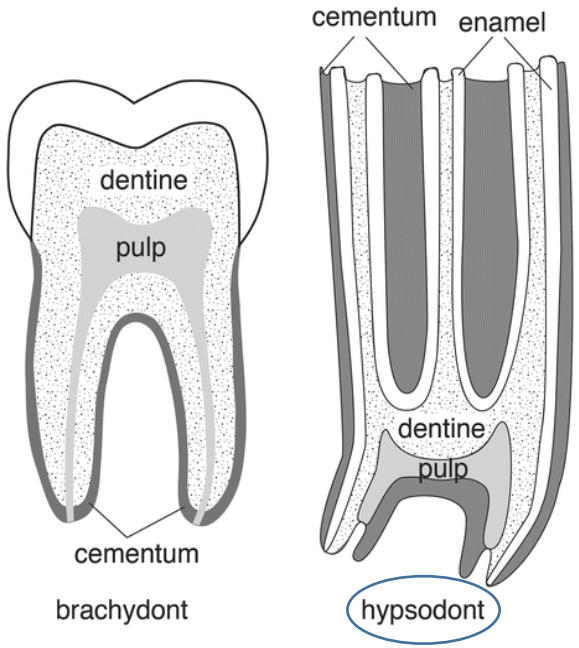
THE TEETH OF THE RUMINATS

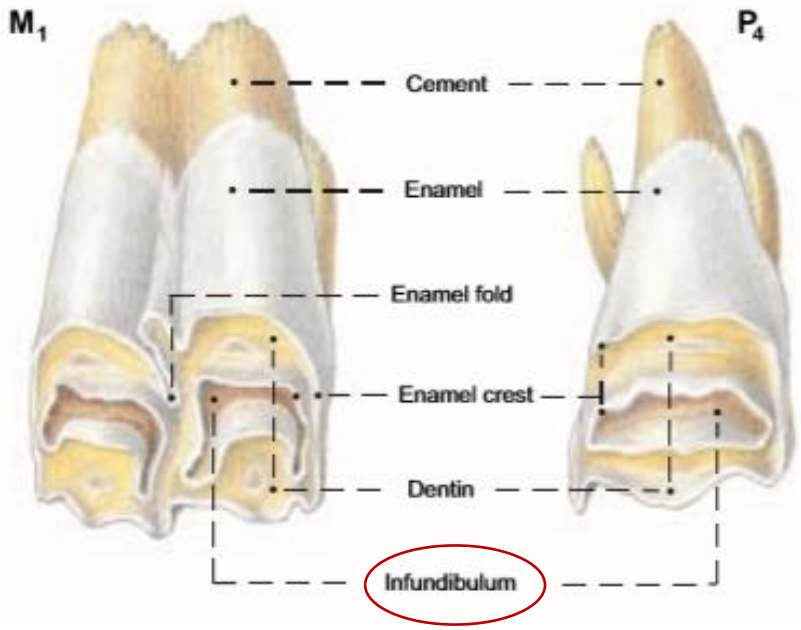
CHEEK TEETH:

- **hypsodont type**
- **upper cheek teeth – increase in size from rostral to caudal**
- **the upper premolars have one infundibulum**
- **the upper molars have three roots, two infundibula**



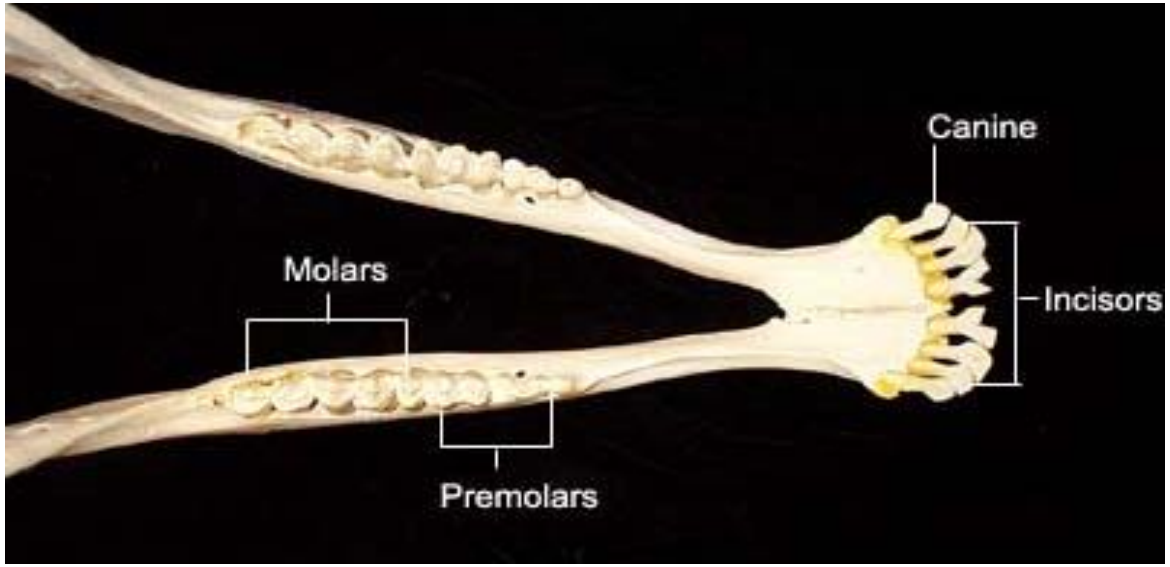
http://m.yukle.mobi/sekil-yukle/?q=the+bos+gaurus&page=8





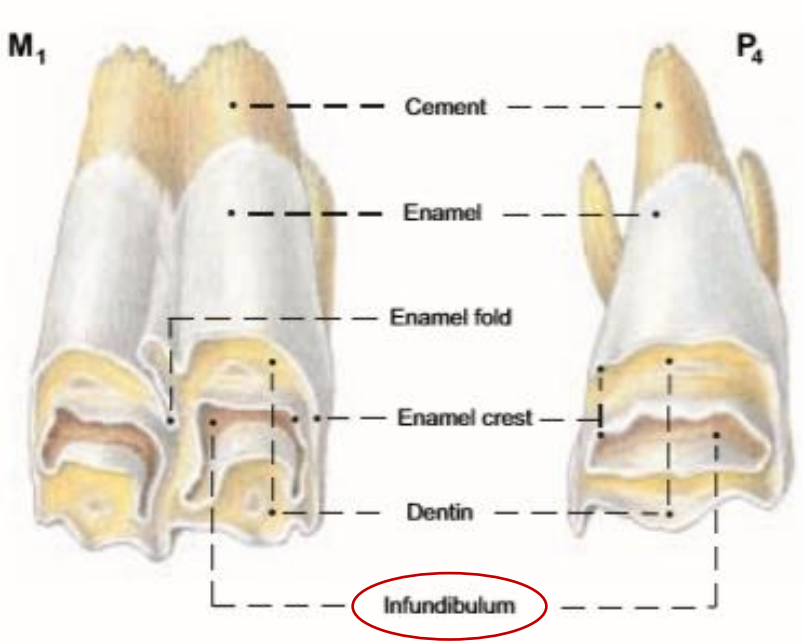
https://link.springer.com/protocol/10.1007/978-1-4939-3185-9_13

THE TEETH OF THE RUMINATS



CHEEK TEETH:

- **the lower premolars have two roots**
- **the lower molars have two roots**



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THE TEETH OF THE RUMINANTS

DECIDUOUS DENTITION:

FORMULA OF THE DECIDUOUS DENTITION:

2 (Di 0/4, Dc 0/0, Dp 3/3) = 20

- deciduous incisors present at the birth

The **formula** for the **deciduous teeth** (**milk teeth**) is:

$$2\left(\mathrm{Di}\,\frac{0}{3}\,\mathrm{Dc}\,\frac{0}{1}\,\mathrm{Dp}\,\frac{3}{3}\right) = 20$$

where Di = deciduous incisor, Dc = deciduous canine, and Dp = deciduous premolar.

Fig 7-35. Occlusal surface of the deciduous mandibular incisors in a 1 year old ox, lingual aspect.

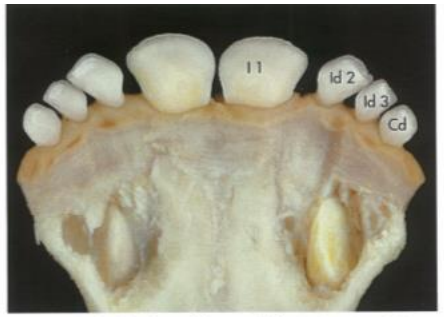


Fig 7-36. Occlusal surface of the mandibular incisors in a 1.5 year old ox, lingual aspect.

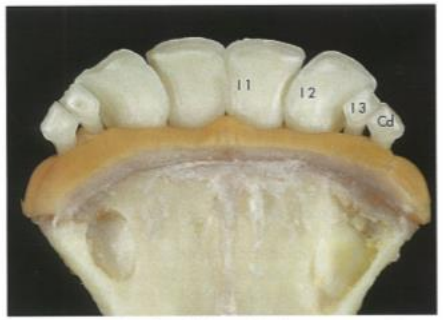
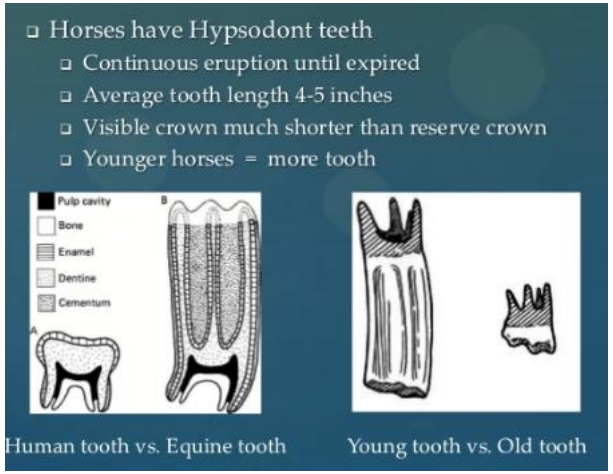


Fig 7-37. Occlusal surface of the mandibular incisors in a 2.5 year old ox, lingual aspect.

Fig 7-38. Occlusal surface of the mandibular incisors in a 3.5 year old ox, lingual aspect.

THE TEETH OF THE HORSE



https://www.slideshare.net/Eqdent/dentistry-how-it-can-improve-your-driving-horse

FORMULA FOR THE PERMANENT DENTITION:

- **2 x I (incisors) 3/3, C (canines) 1/1, P (premolars) 3(4)/3, M (molars) 3/3= 40 (42)**
- **hypsodont type**

The **dental formula** for the deciduous teeth is

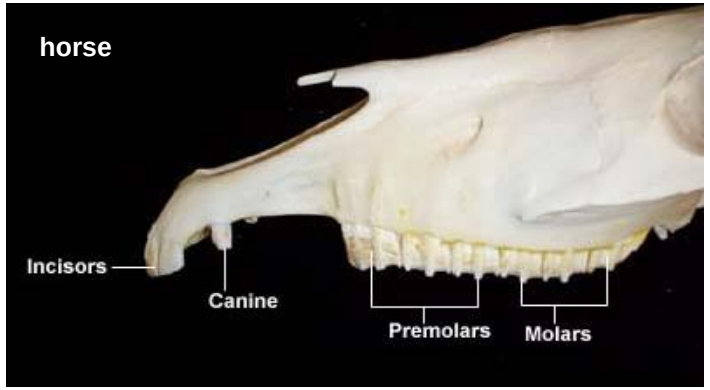
$$2\left(\mathrm{Di}\ \frac{3}{3}\ \mathrm{Dc}\ \frac{0}{0}\ \mathrm{Dp}\ \frac{3}{3}\right) = 24$$

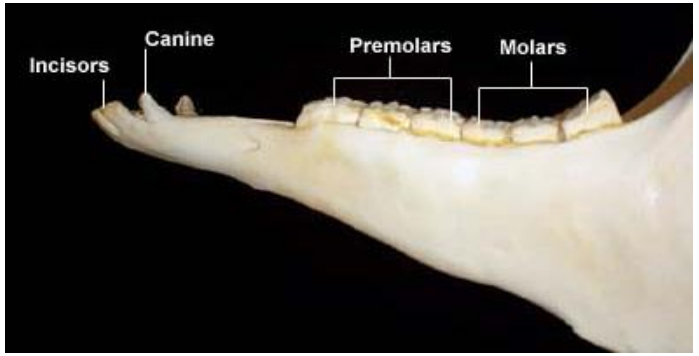
or more simply $\frac{3\text{–}0\text{–}3}{3\text{–}0\text{–}3}$

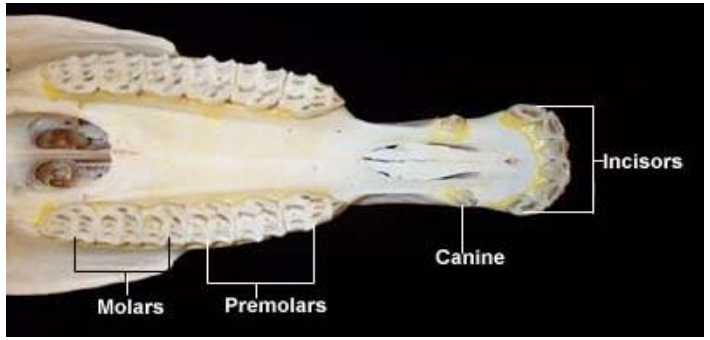
That for the permanent teeth is

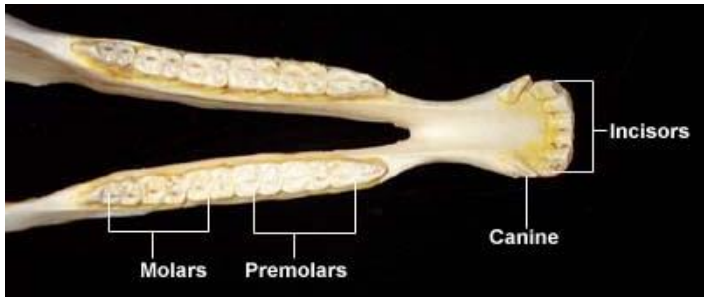
$$2\left(\mathrm{I}\ \frac{3}{3}\ \mathrm{C}\ \frac{1}{1}\ \mathrm{p}\ \frac{3 \text{ or } 4}{3}\ \mathrm{M}\ \frac{3}{3}\right) = 40 \text{ or } 42$$

or again more simply $\frac{3\text{–}1\text{–}3\ (4)\ \text{–}3}{3\text{–}1\text{–}3\quad\ \text{–}3}$









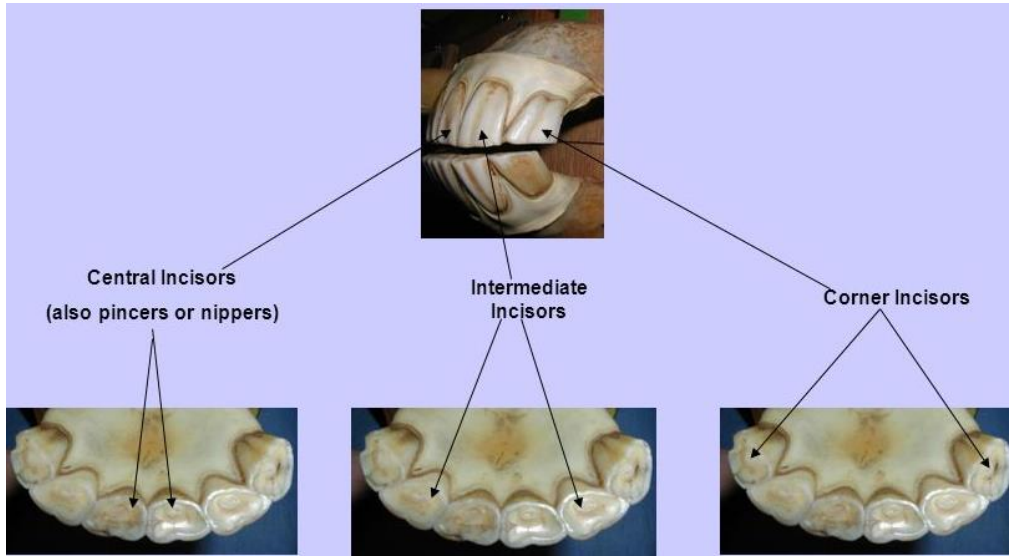
THE TEETH OF THE HORSE

Incisors:

- I1, I2, I3

known as:

1. **central (I1)**
2. **intermediate (I2)**
3. **corner incisors (I3)**



https://slideplayer.com/slide/1701576/

Fig 7-24. Occlusal surface of the mandibular incisors in a 3.5 year old horse, lingual aspect.

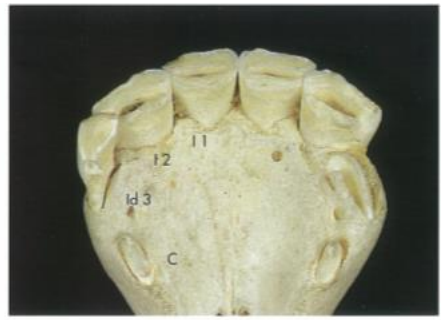


Fig 7-25. Occlusal surface of the mandibular incisors in a 4.5 year old horse, lingual aspect.

Fig 7-26. Occlusal surface of the mandibular incisors in a 6 year old horse, lingual aspect.

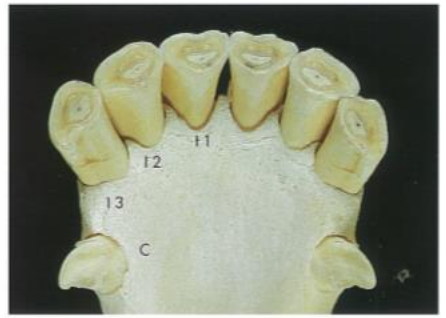


Fig 7-27. Occlusal surface of the mandibular incisors in a 10 year old horse, lingual aspect.

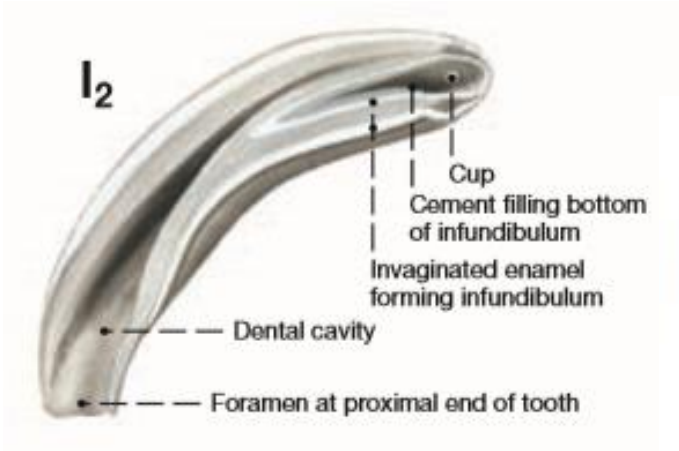
Fig 7-28. Occlusal surface of the mandibular incisors in a 12 year old horse, lingual aspect.

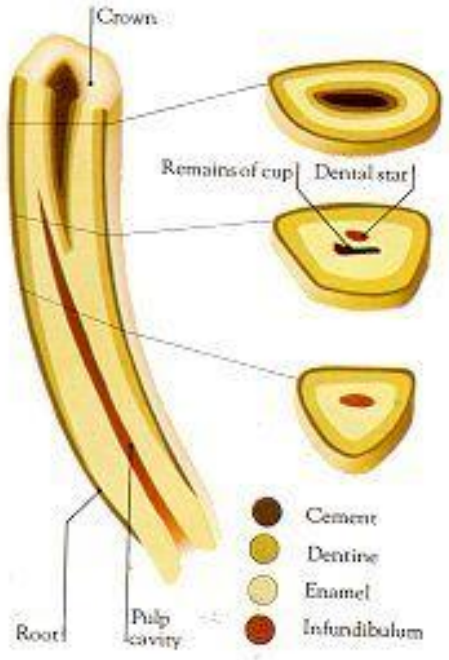
Fig 7-29. Occlusal surface of the mandibular incisors in a 17 year old horse, lingual aspect.

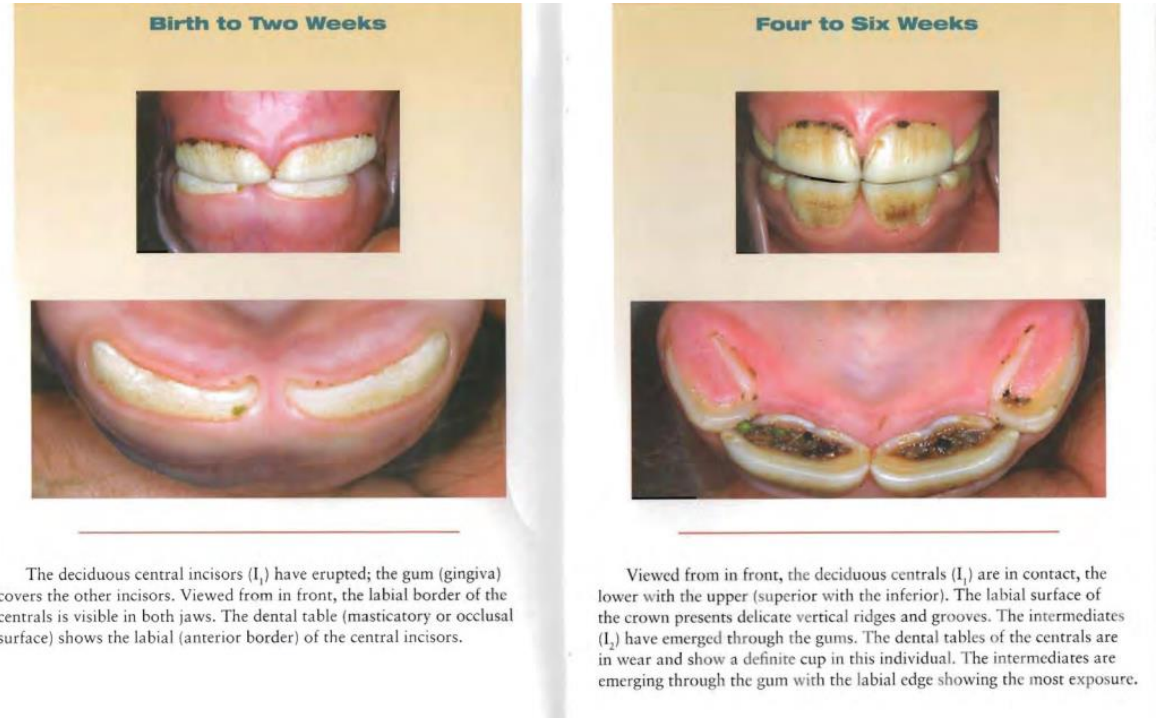
THE TEETH OF THE HORSE

Incisors:

- **the general shape is three - sided, slender, curved pyramid**
- **the base of the pyramid in young animal flattened retrocaudally, the apex is flattened from side to side**
- **the body of the pyramid is roundish in cross section distally and more triangular proximally**







https://www.aphis.usda.gov/animal_health/vet_accreditation/downloads/appendix-g-aging-horse.pdf

THE TEETH OF THE HORSE

Incisors:

- **each incisor has a centrally placed infundibulum (cup)**

Before the tooth in wear:

- **the enamel of the infundibulum continous with the external enamel**
- **an annular fold is present on the occlusal surface**

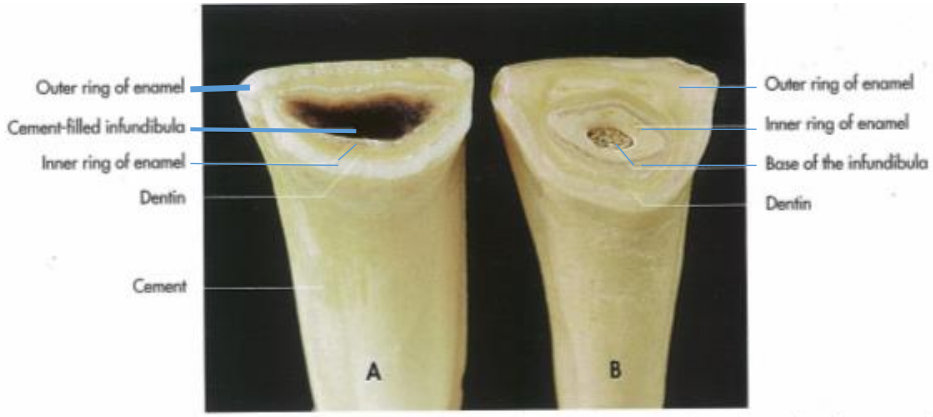
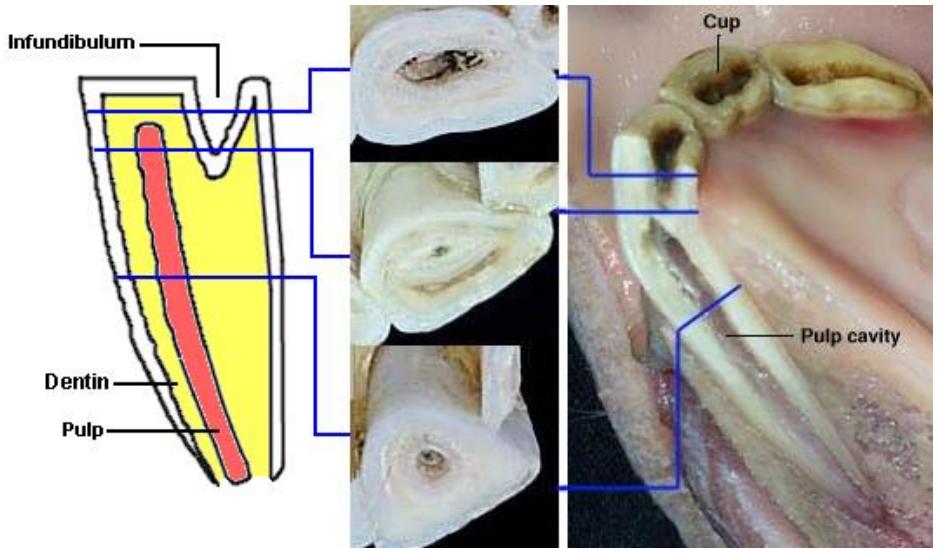
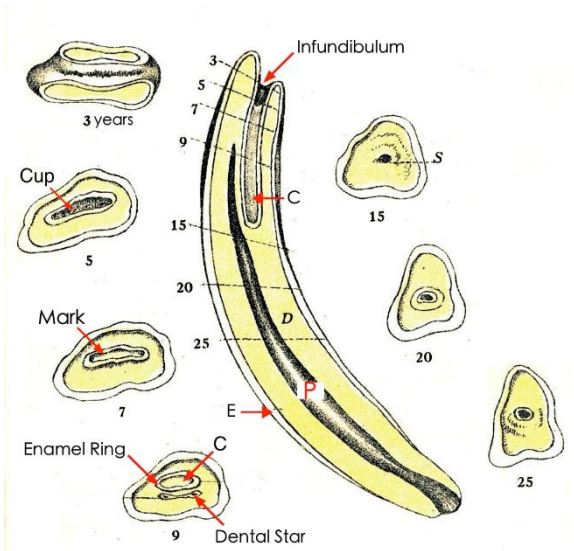
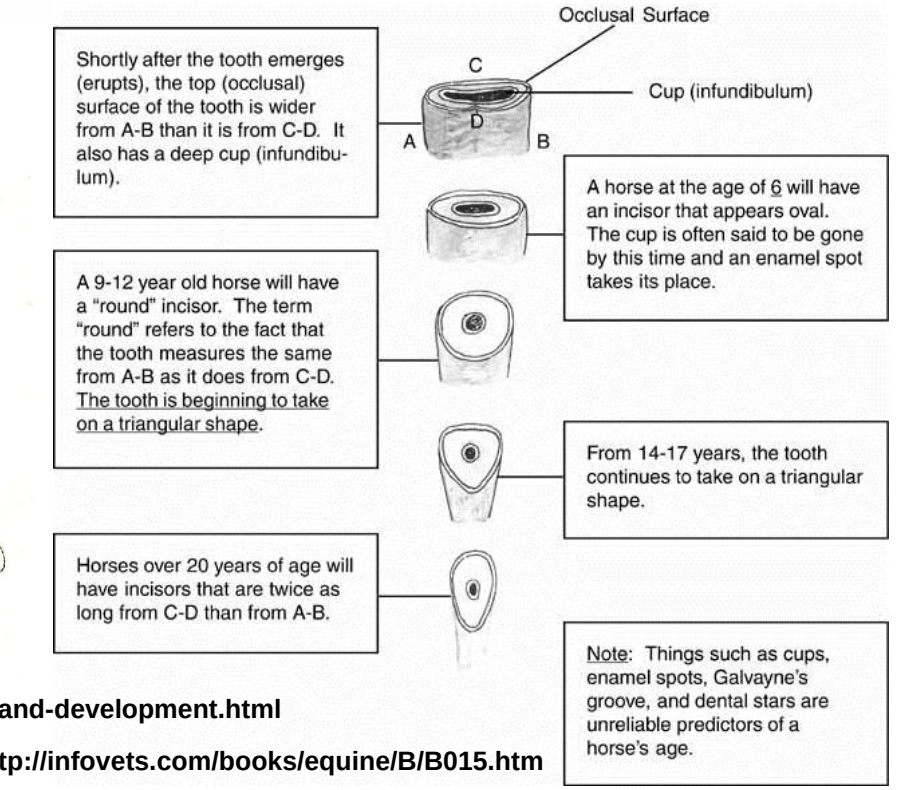


Fig 7-30. Occlusal surface of a younger horse **(A)** with a visible cup and of an older horse **(B)**, where the cup has disappeared, but the dental star is visible.







http://www.mitchellplainfarm.com/dental-care-and-development.html

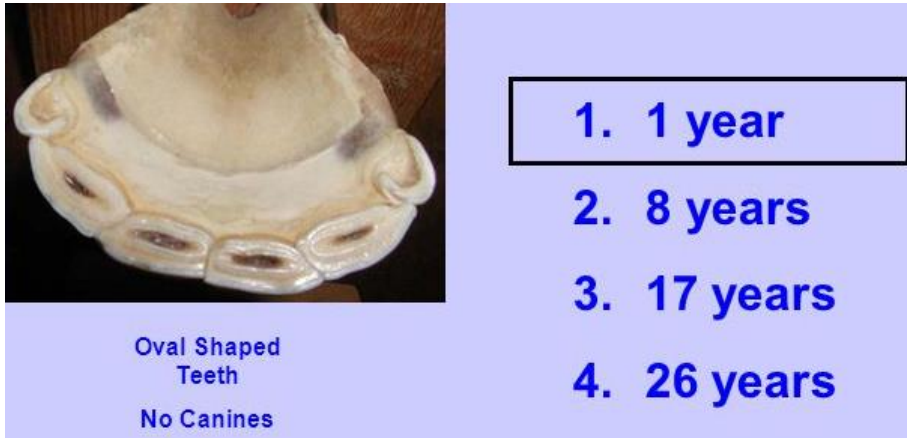
http://infovets.com/books/equine/B/B015.htm

THE TEETH OF THE HORSE

Incisors:

As the tooth is abraded through wear:

- **the connection between the infundibular and external enamel losts**
- **two annular enamel crests result**
- **two annular crests separated by a circular layer of dentine**
- **when the two enamel crests are visibel – the horse's incisors said to be level**



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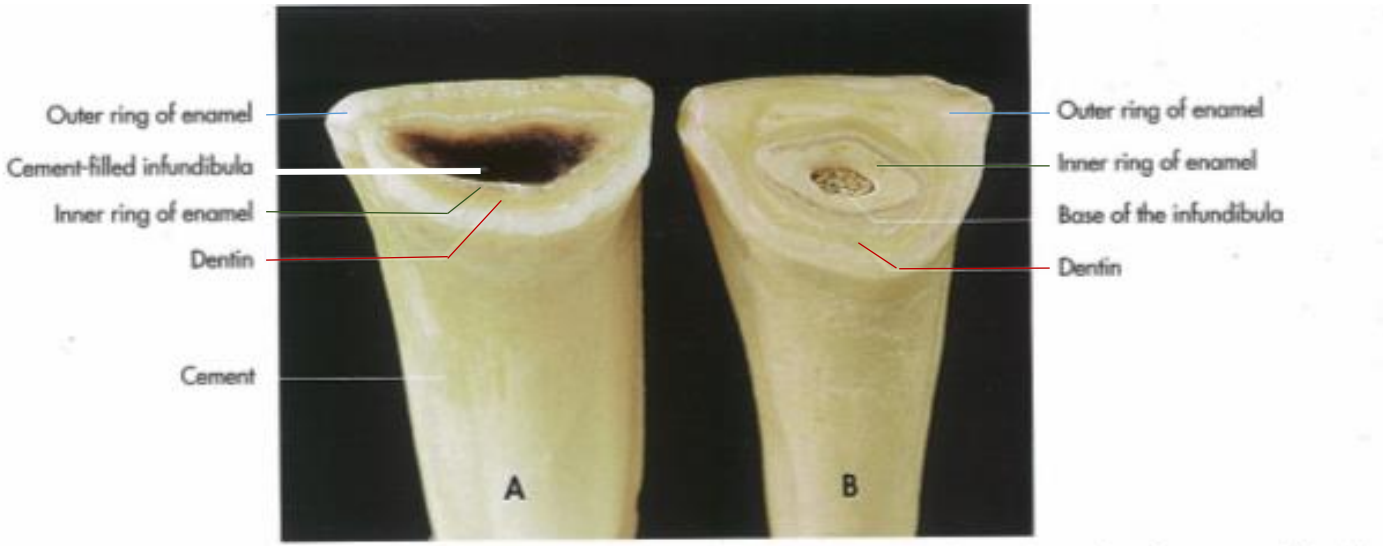
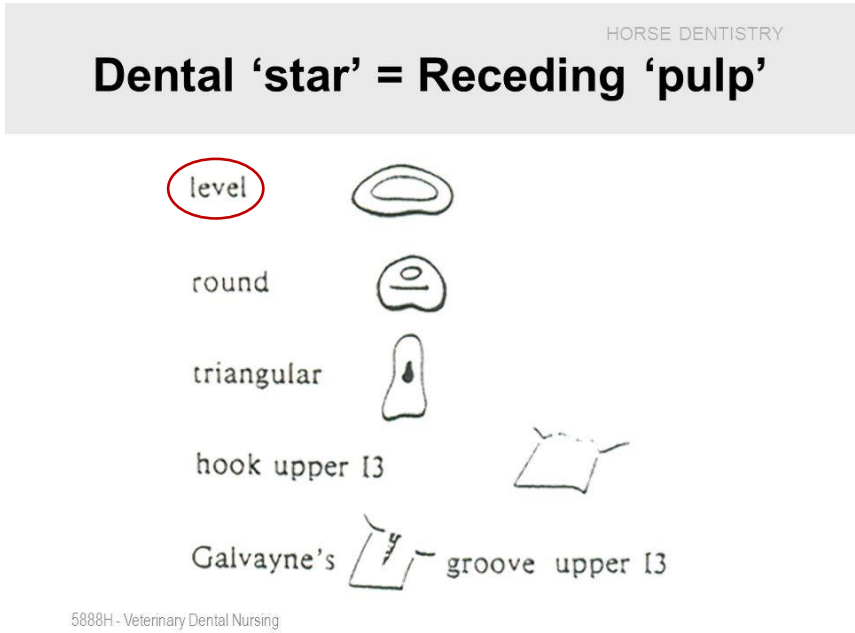


Fig 7-30. Occlusal surface of a younger horse (A) with a visible cup and of an older horse (B), where the cup has disappeared, but the dental star is visible.



https://www.imagenesmy.com/imagenes/dental-star-c9.html

THE TEETH OF THE HORSE

http://www.r-vets.org/Dentistry-Basics.html

Viewed from in front, the deciduous centrals (I_1) are in contact, the lower with the upper (superior with the inferior). The labial surface of the crown presents delicate vertical ridges and grooves. The intermediates (I_2) have emerged through the gums. The dental tables of the centrals are in wear and show a definite cup in this individual. The intermediates are emerging through the gum with the labial edge showing the most exposure.

Incisors:

As the tooth is abraded through wear:

- **the infundibulum is lined with a layer of cement**
- **the remaining lumen of infundibulum filled with decomposing food particles – giving black appearance**
- **the balck cavity of infundibulum known as the CUP**

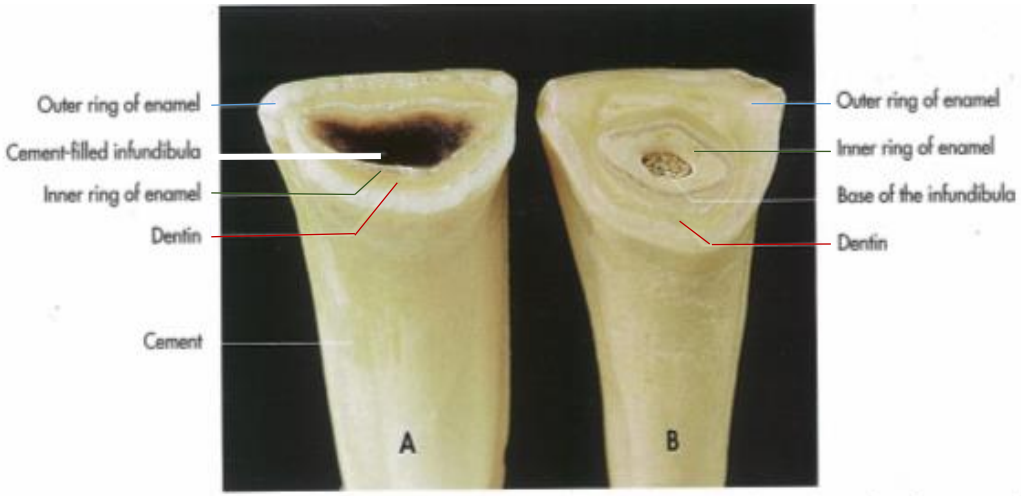
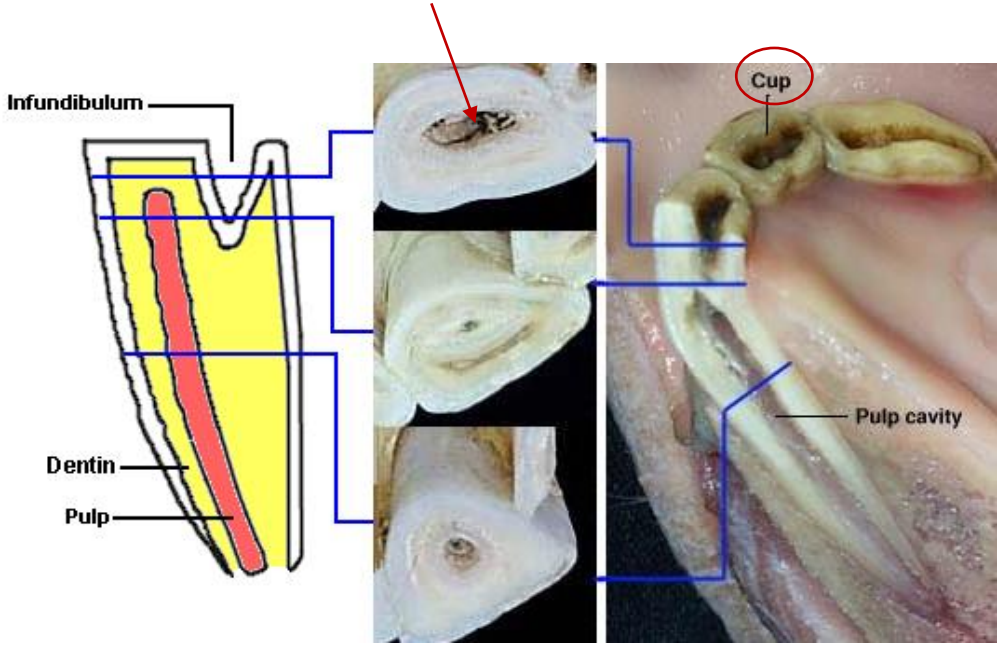


Fig 7-30. Occlusal surface of a younger horse **(A)** with a visible cup and of an older horse **(B)**, where the cup has disappeared, but the dental star is visible.

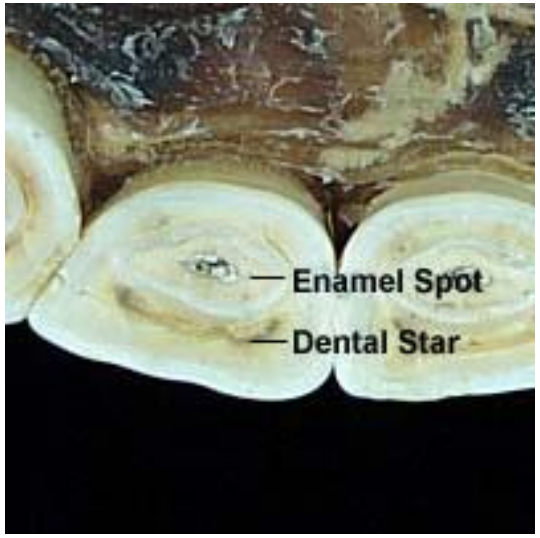


THE TEETH OF THE HORSE

Incisors:

As the tooth is abraded through wear:

- **the bottom of the infundibulum remains as a raised ENAMEL SPOT**
- **the CUP disappears – the DENTAL STAR appears on the occlusal surface between the infundibulum and the vestibular surface**
- **DENTAL STAR – darker, secondary dentine, fills the dental cavity**



http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/aginghorses.html

http://www.r-vets.org/Dentistry-Basics.html

http://www.mitchellplainfarm.com/dental-care-and-development.html

THE TEETH OF THE HORSE

Incisors:

Almost 3 years. The central incisors are permanent, but not yet in wear

Almost 5 years. All incisors are permanent, and almost in full wear

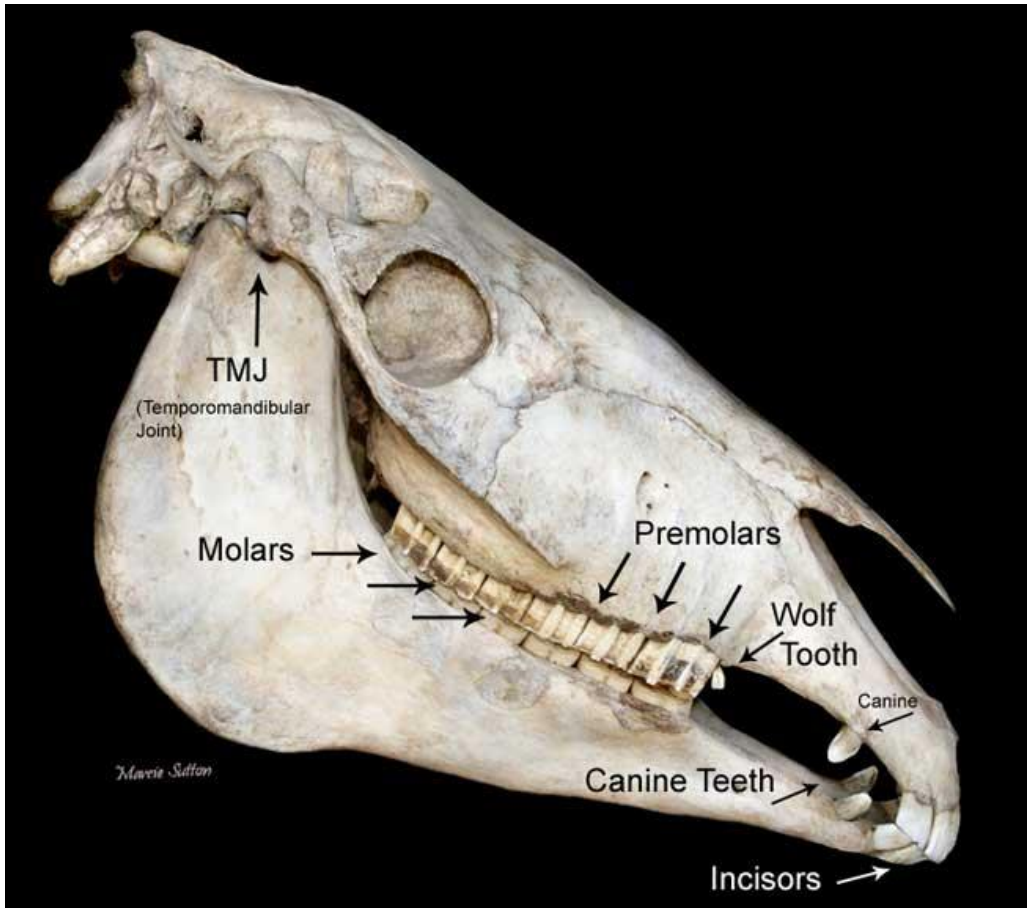
As the horse ages, the cups disappear and the shape of the incisor's table surface changes. The Cups are replaced by the "mark" seen in the photo on the far right. The shape of the mark changes from oval to round between the ages of 5 and 12 and disappears between the ages of 12 and 18.

http://www.r-vets.org/Dentistry-Basics.html

THE TEETH OF THE HORSE

CANINUS:

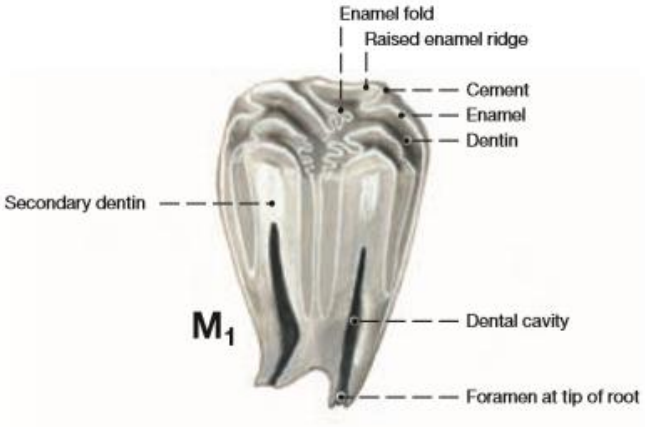
- **develop only in the males**
- **diastema - between the canines and the cheek teeth**



THE TEETH OF THE HORSE

UPPER PREMOLARS, MOLARS:

- **present two infundibula**
- **tree roots**



http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/horsepage.html

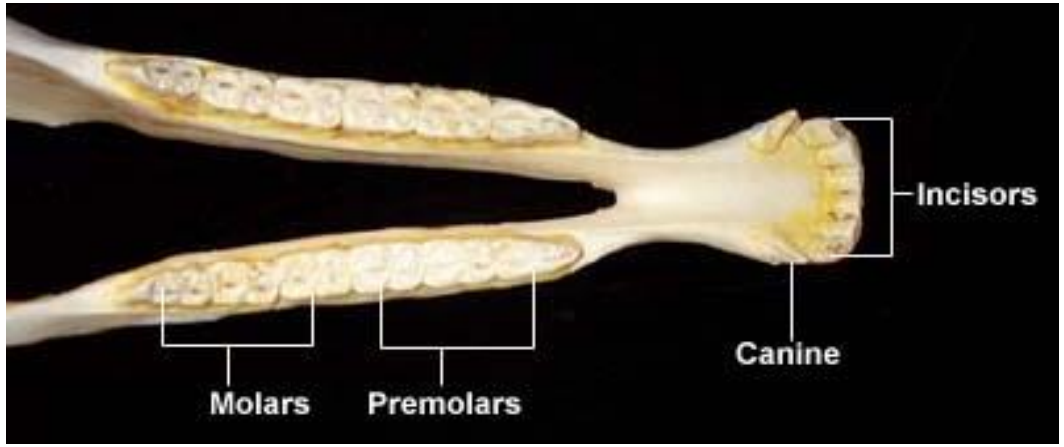
http://courses.washington.edu/chordate/453photos/teeth_photos/specialized_teeth.htm

THE TEETH OF THE HORSE

https://www.alamy.com/stock-photo-row-of-molar-teeth-in-lower-jaw-of-a-horse-equus-ferus-caballus-91440080.html

LOWER PREMOLARS, MOLARS:

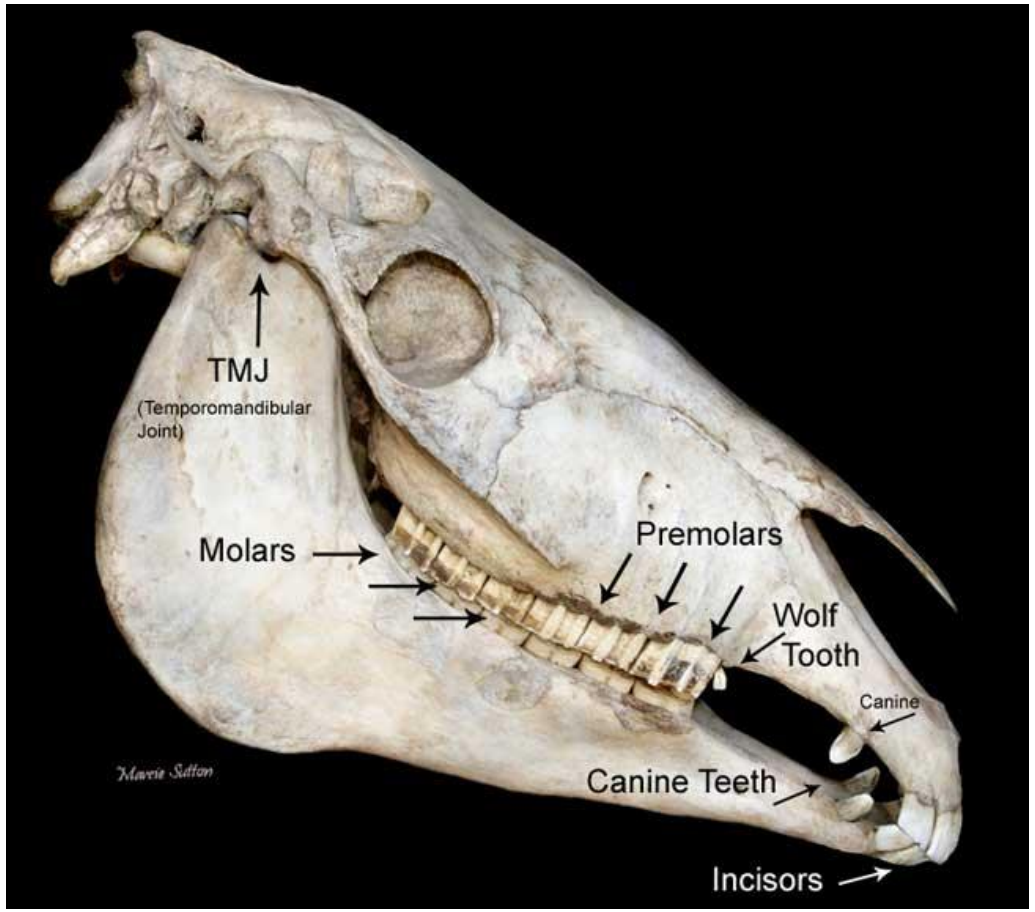
- **true infundibula are absent**
- **two roots**



TYPES OF THE TEETH (DENTES)

A. DENS LUPINUS:

- **in Eq**
- **wolf tooth**
- **the upper first premolar (P1)**
- **rudimentary, inconstant**
- **falls out when the animal still young**
- **not replaced**
- **it is present in the lower jaw, but does not erupt**



THE TEETH OF THE HORSE

DECIDUOUS DENTITION:

FORMULA OF THE DECIDUOUS DENTITION:

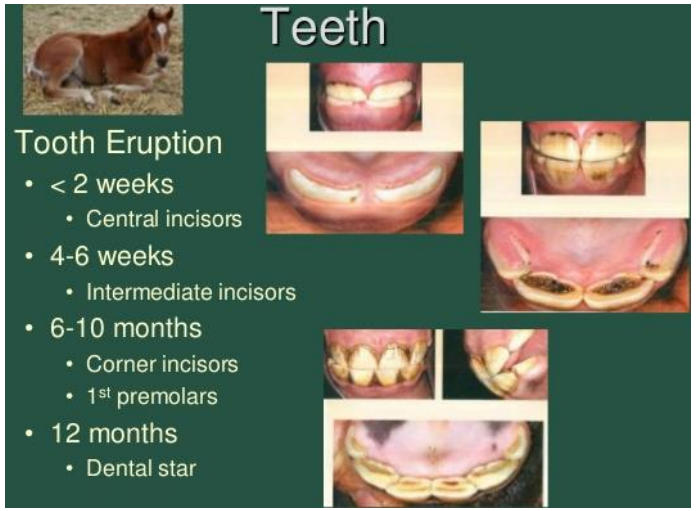
2 (Di 3/3, Dc 1/1, Dp 3/3) = 28

The **dental formula** for the deciduous teeth is

$$2\left(\text{Di}\ \frac{3}{3}\ \text{Dc}\ \frac{0}{0}\ \text{Dp}\ \frac{3}{3}\right) = 24$$

or more simply $\frac{3\text{–}0\text{–}3}{3\text{–}0\text{–}3}$

	Eruption	Disappearance of cup
Id1	6 days	10 months
Id2	6 weeks	12 months
Id3	6 months	18–24 months
Mandibular I1	2.5 years	6 years
Mandibular I2	3.5 years	7 years
Mandibular I3	4.5 years	8 years
Maxillary I1	2.5 years	9 years
Maxillary I2	3.5 years	10 years
Maxillary I3	4.5 years	11 years



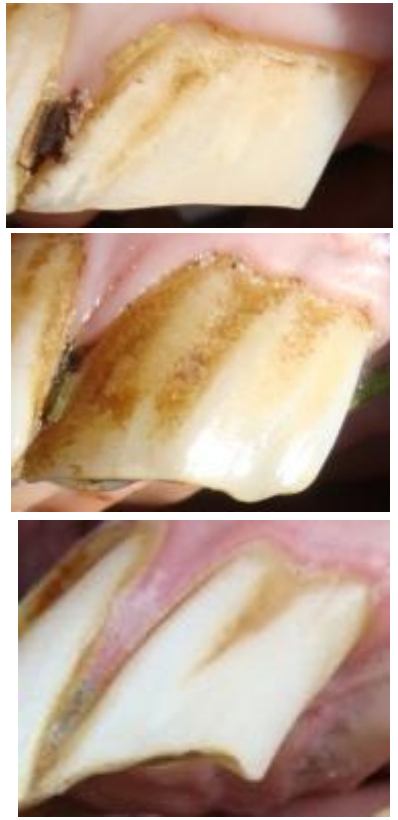
THE TEETH OF THE HORSE

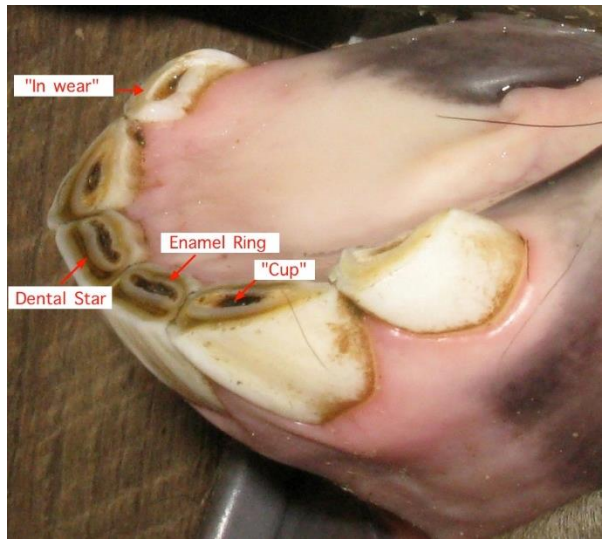
	I_1	I_2	I_3
Smooth (cups gone)	6 years	7 years	8 years
Stars	8 years	9 years	10 years
Round	9 years	10 years	11 years
Triangular	16 yrs	17 yrs	17-18 yrs
Rectangular	18-20+ yrs		

CRITERIA TO ESTIMATE THE AGE OF THE HORSE:

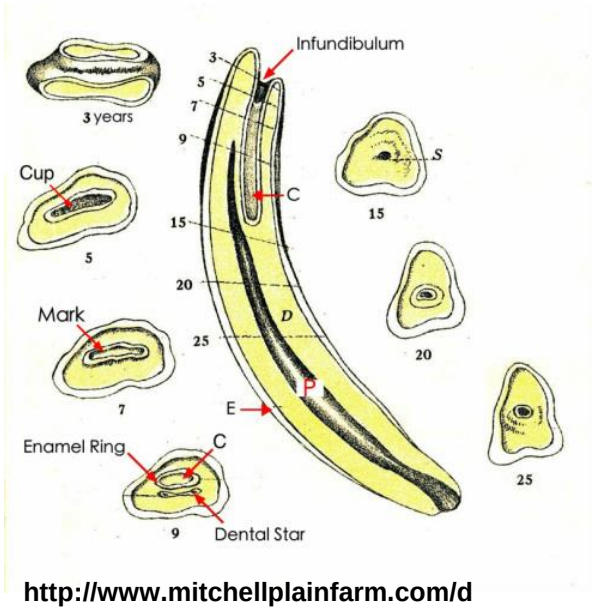
1. **eruption and wear of the deciduous incisors**
2. **eruption and wear of the permanent incisors**
3. **the shape of the occlusal surfaces of the permanent incisors**
4. **profile angle between the upper and lower incisors**

http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/aginghorses.html





http://www.mitchellplainfarm.com/uploads/3/4/2/4/34242802/incisors_morning_star_occlusal_surface_labeled_042111.jpg



http://www.mitchellplainfarm.com/dental-care-and-development.html

The angle of the upper incisors becomes more acute as the horse ages.

The profile of the corner incisor changes from shorter than it's width (< 9 years), to square (9-10 years) to taller than its width (> 10 years)

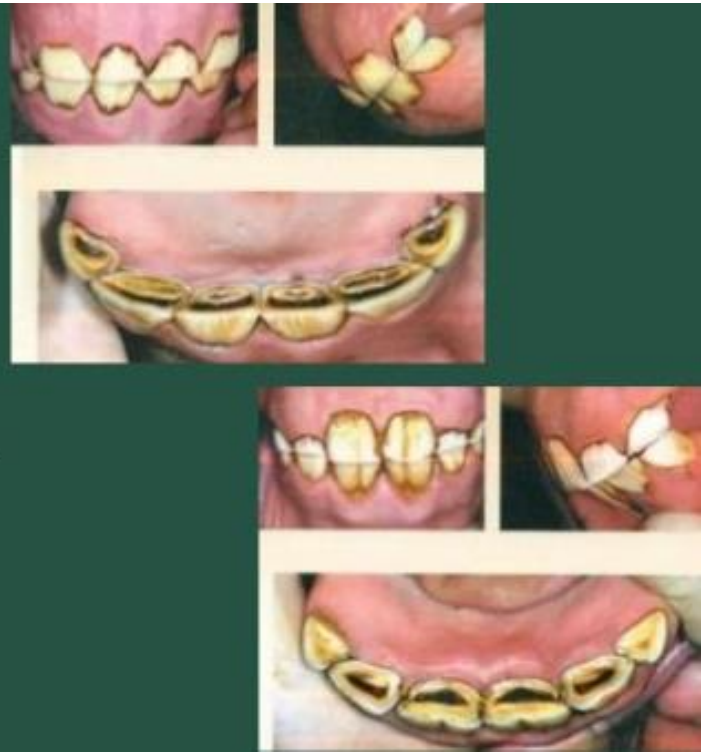
http://www.r-vets.org/Dentistry-Basics.html

Teeth

Tooth Eruption

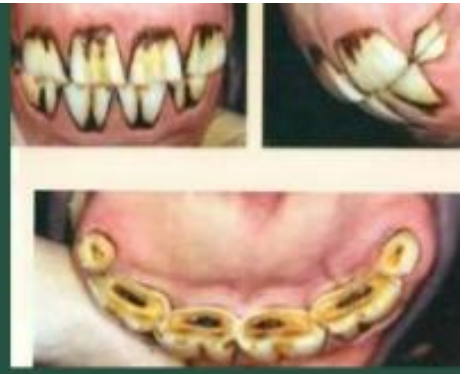
- < 2 weeks
  - Central incisors
- 4-6 weeks
  - Intermediate incisors
- 6-10 months
  - Corner incisors
  - 1st premolars
- 12 months
  - Dental star

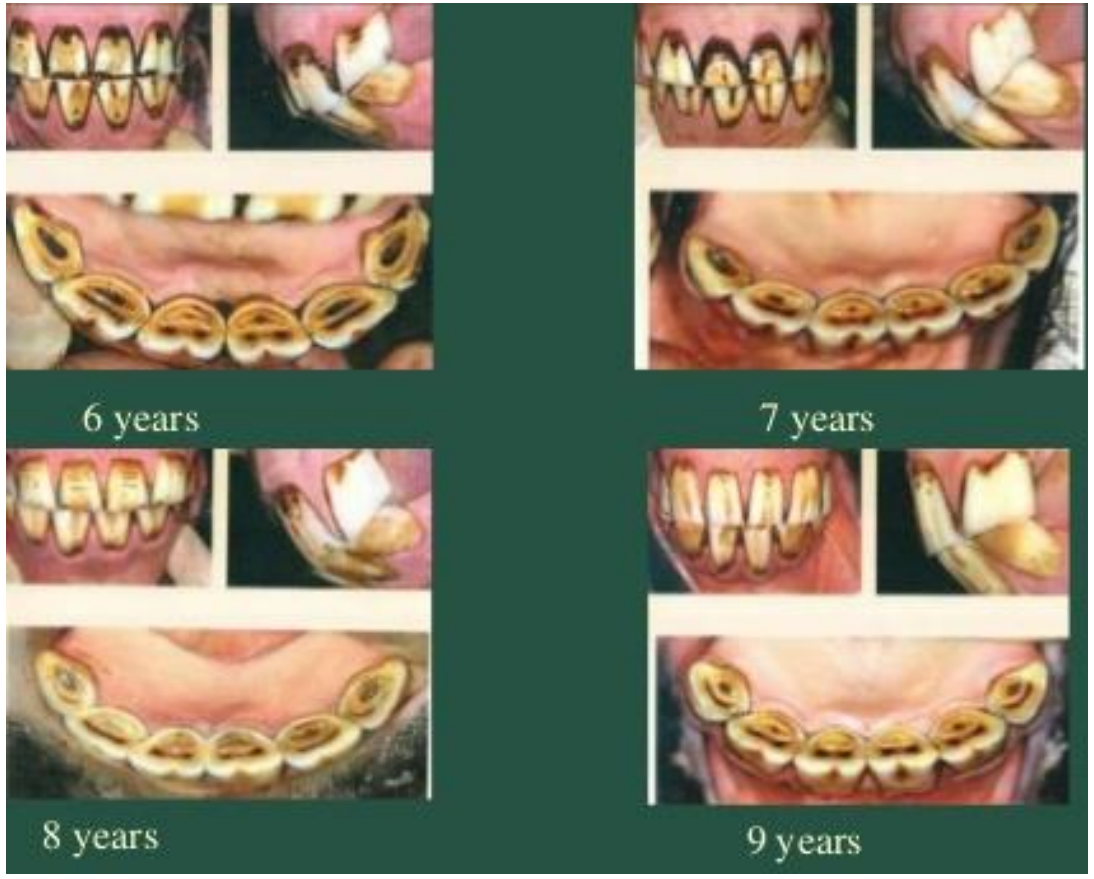
- 2 yrs
  - All incisors in wear
  - 2nd molar erupts
- 2 ½ yrs
  - Central molars permanent
- 3 yrs
  - Central molar in wear
  - 3rd premolar erupts
- 3 ½ yrs
  - Intermediate molars permanent



https://www.slideshare.net/clgarloffdvm/determining-age-height-and-weight

- 4 yrs
  - Canine teeth
  - 4th premolar eruption
  - 3rd molar eruption
- 4 ½ yrs
  - Corner incisor eruption
- 5 yrs
  - All incisors in wear





https://www.slideshare.net/clgarloffdvm/determining-age-height-and-weight

Teeth

10 years

11 years

12 years

13 years

14 years

15 years

- 10 yrs
  - Galvayne's groove
- 11 yrs
  - Incisor hook
- 12 yrs
  - Dental star-central
- 13 yrs
  - Elongation of teeth
- 15 yrs
  - Galvayne's groove ½ way down tooth

16 years

17 years

18 years

- 17 yrs
  - Lower incisors triangular
  - Angle increasing
- 20 yrs
  - Galvayne's groove entire length of tooth

https://www.slideshare.net/clgarloffdvm/determining-age-height-and-weight

http://www.vivo.colostate.edu/hbooks/pathphys/digestion/pregastric/aginghorses.html


THANK YOU FOR YOUR ATTENTION!

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