Practice 3

Tonsils

Introduction to teeth

Tonsils – Waldeyer's ring

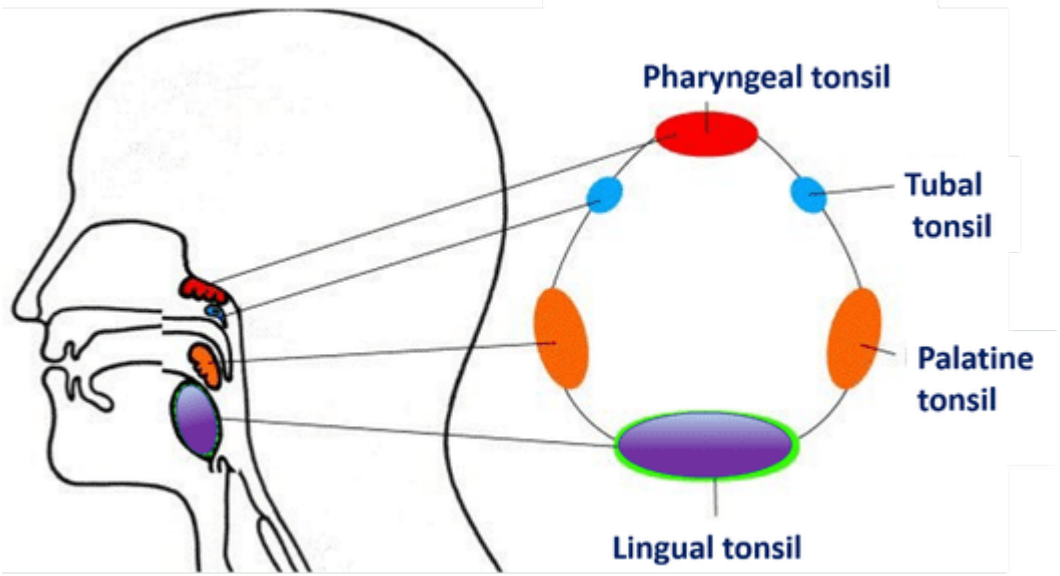
Group of peripheral lymphoid organs positioned at the entrance into naso- and oropharynx

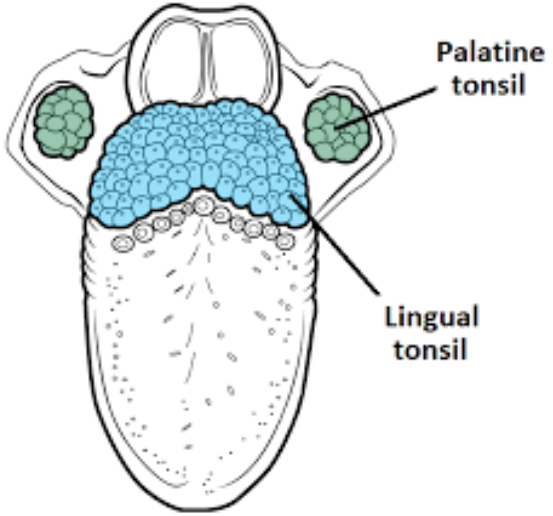
Total 6 (*tonsillae palatinae, tonsillae tubariae, tonsilla lingualis, tonsilla pharyngea*)

Mucosal organs – accumulation of lymphoid tissue in lamina propria

B - dependent areas - secondary lymph follicles

T - dependent regions - interfollicular zones





Palatine tonsils

Positioned on the right and left side between glossopalatal and pharyngopalatal arches, ovoid shape, deep and branched tonsillar crypts, there are usually up to 35 (contain detritus), tonsil separated by fibrous capsula – can have septs.

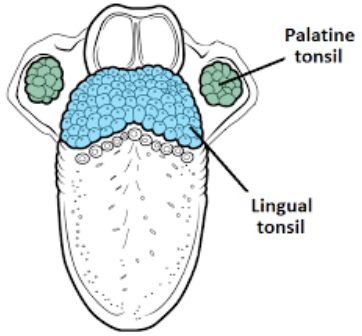
The surface of the tonsil is covered by a <u>stratified squamous epithelium</u>

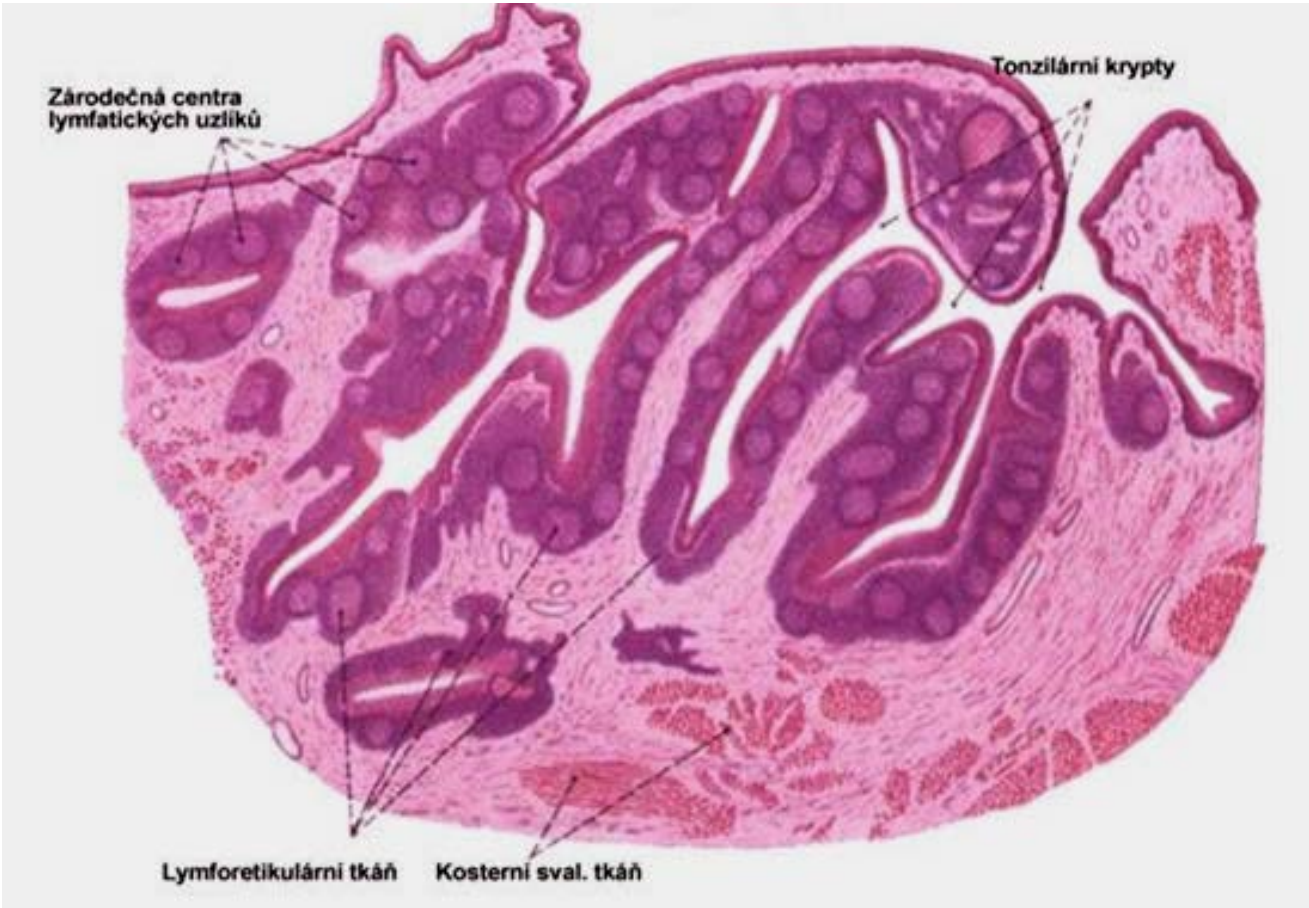
In lamina propria are large lymphatic follicles with light germinal centers

Brighter center - contains centroblasts

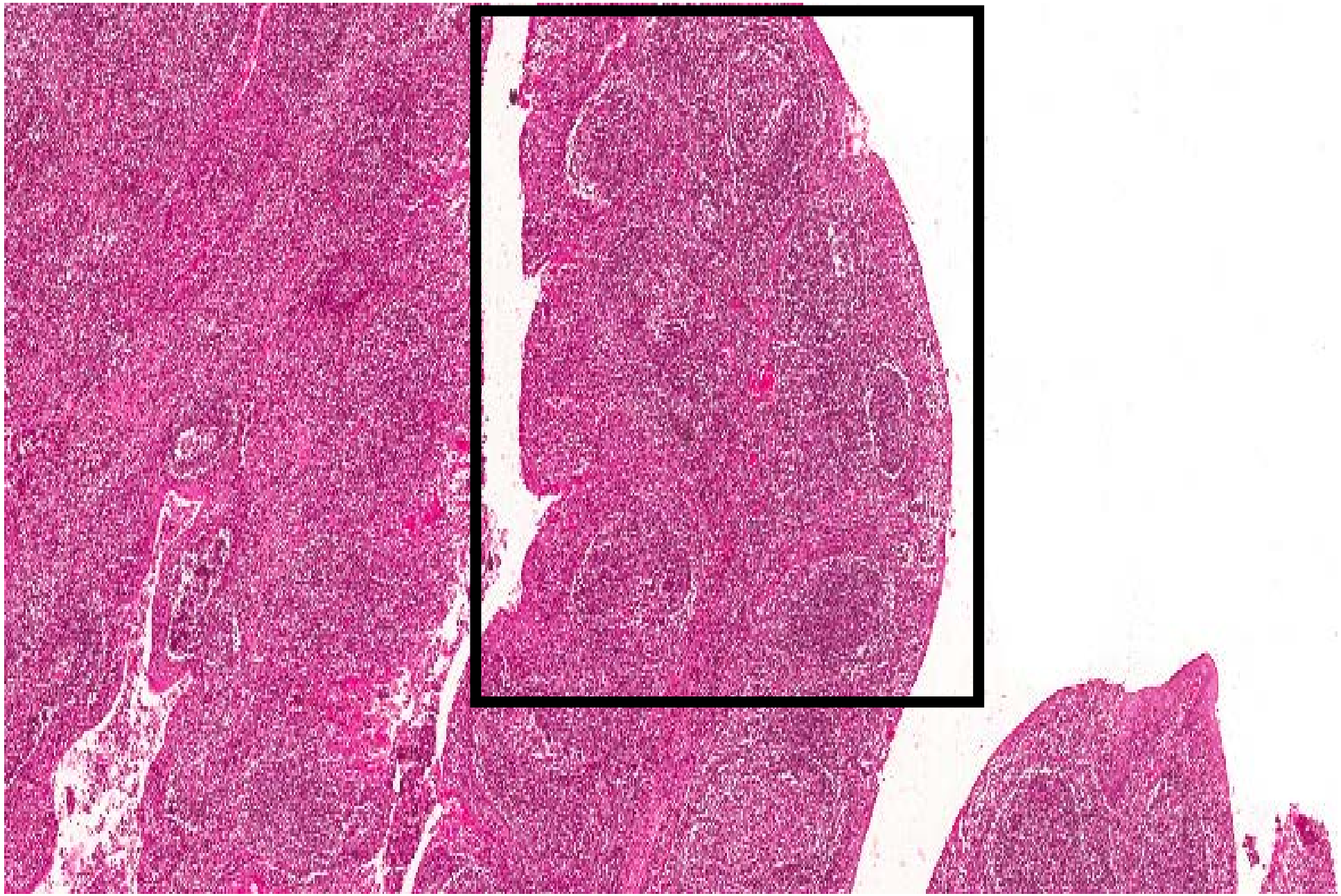
Epithelium above nodules (differences): The structure of the epithelium and the contacts between the cells are very loose, caused by infiltration by lymphocytes, macrophages, dendritic cells, discontinuous basement membrane

FAE – (follicle associated epithelium)





Palatine tonsils



Palatine tonsils

Lymphocytes which penetrate into the oral cavity are referred to as **salivary bodies**

A

Tonsilla palatina (H.E.)

1 – stratified squamous epithelium

2 – lymphocytes infiltrated epithelium (FAE)

3 – secondary lymph nodules or follicles

4 – detritus in tonsilar crypt

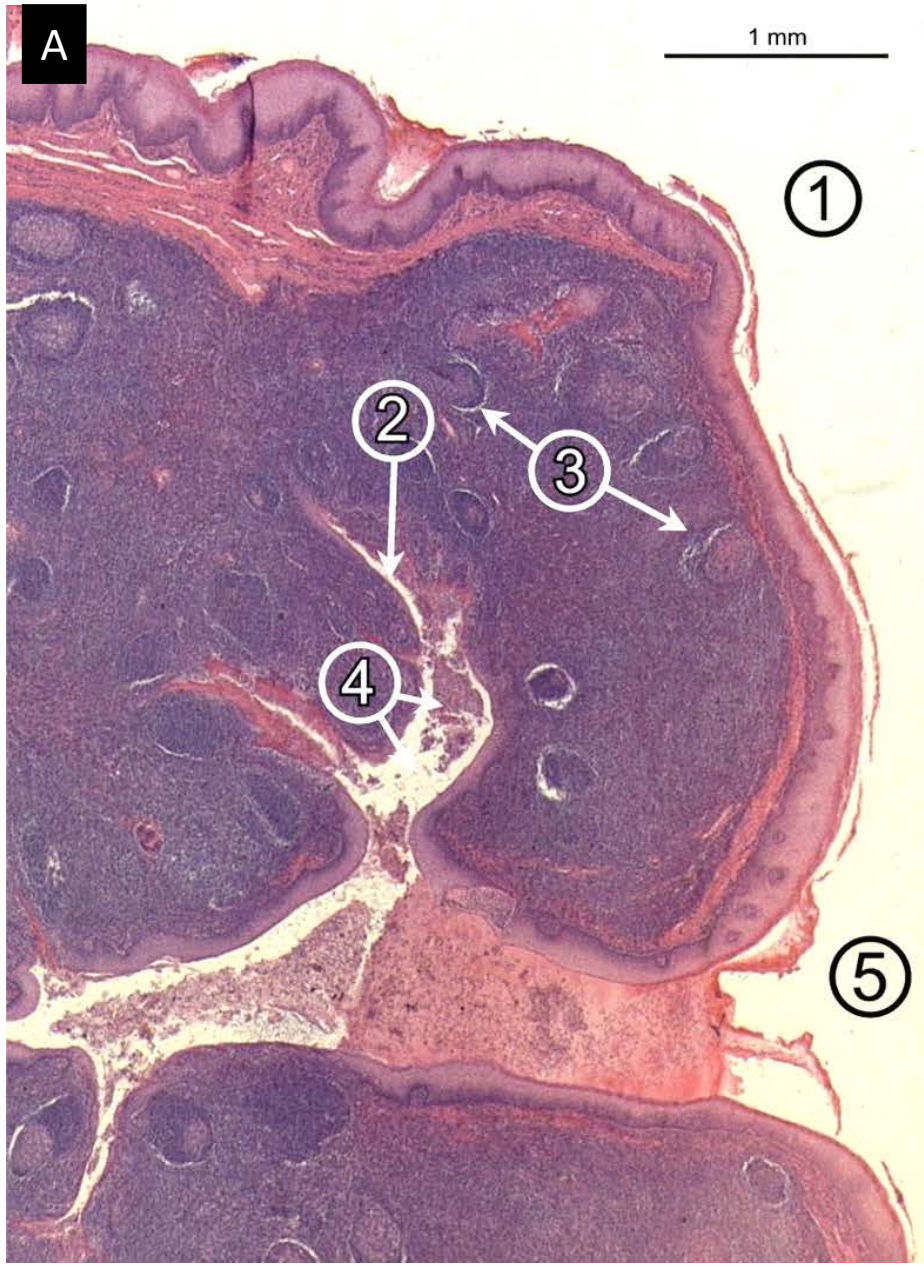
B

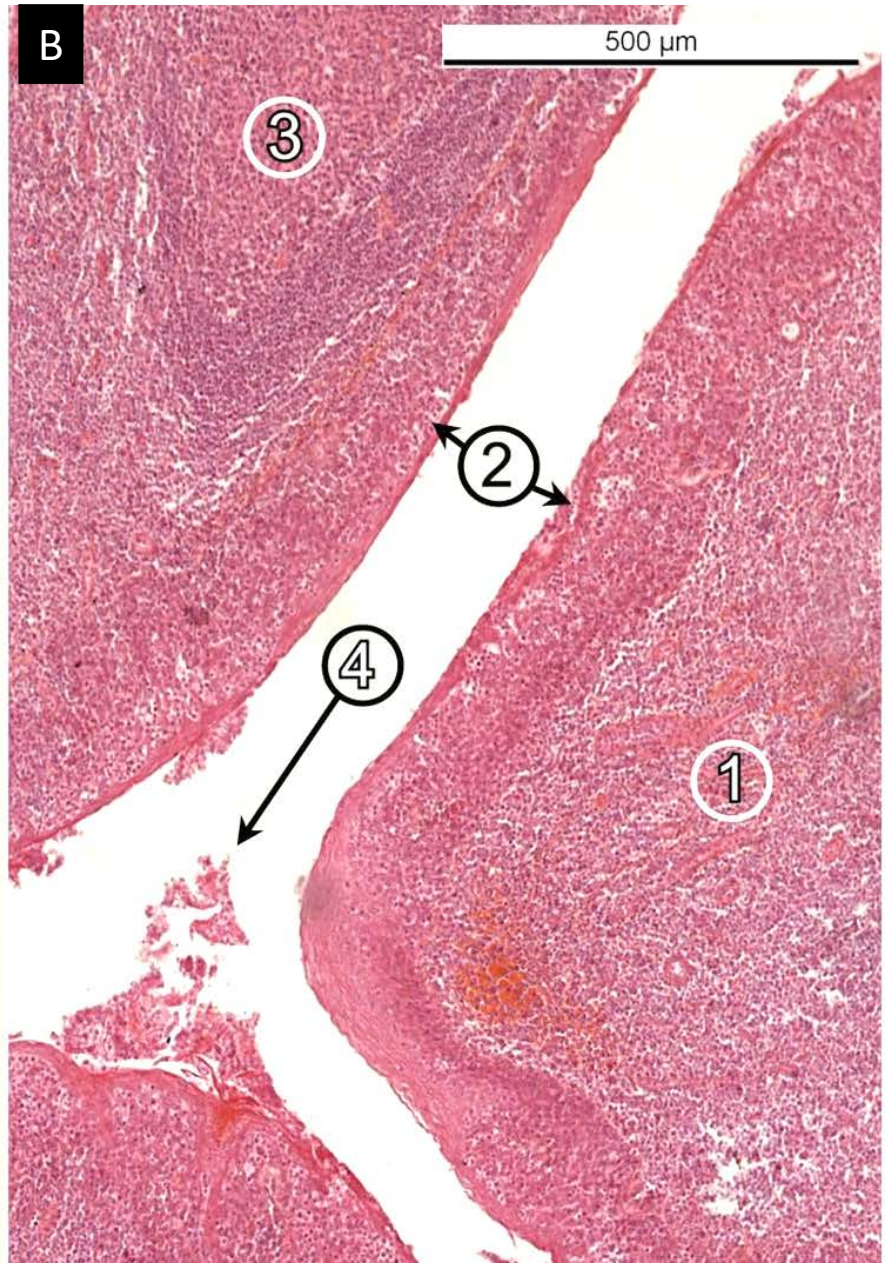
Tonsilar crypt in detail (H.E.)

2 – with lymphocytes infiltrated epithelium

3 – germinal centre of a secondary nodule

4 – detritus





Lingual tonsil

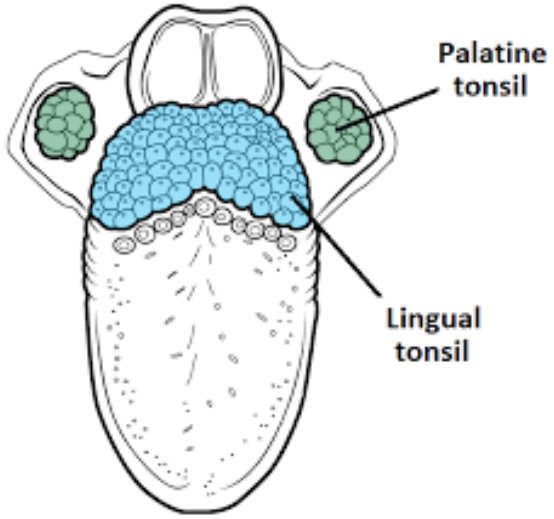
Group of lymph nodules (*folliculi linguales*) in the mucosa of **lamina propria** on the dorsal side of radix linguae behind the circumvallate papillae

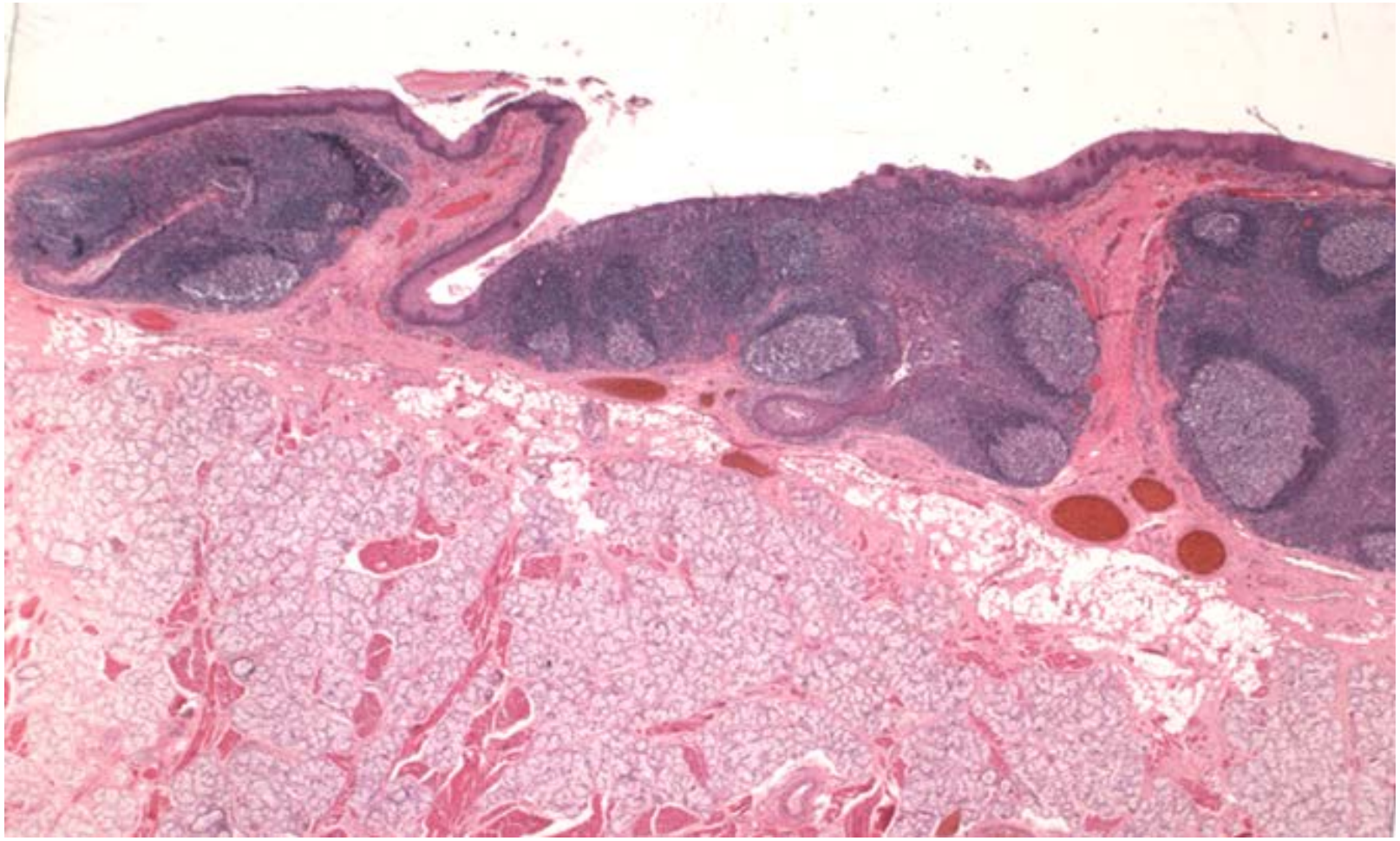
Surface covered by **stratified squamous epithelium**

At the bottom of shallow crypts are openings of purely mucinous Webers glands (*gll. Linguales posteriores*)

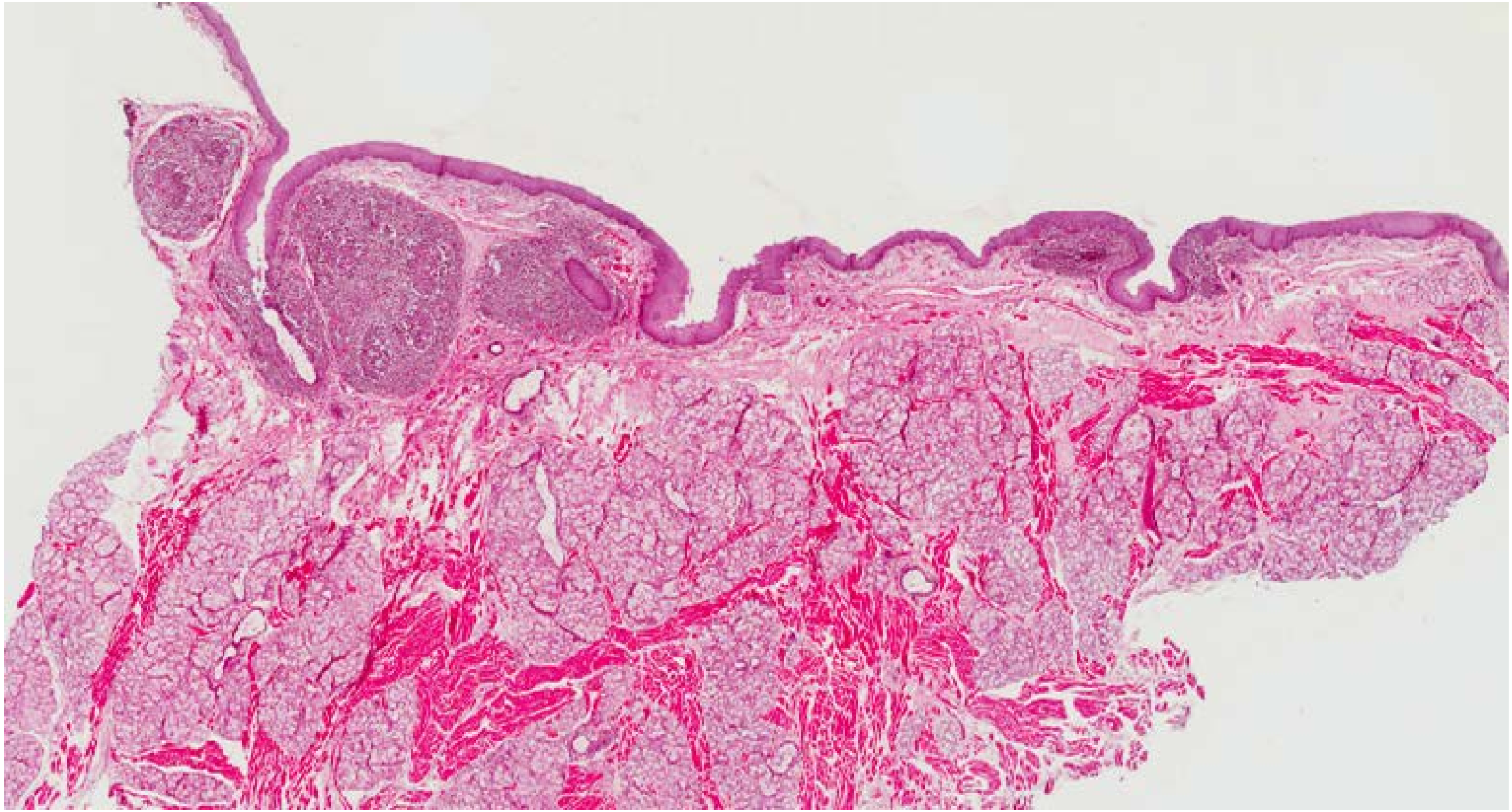
Crypts are perpetually washed outs – no detritus.

No obvious capsula.





Lingual tonsil



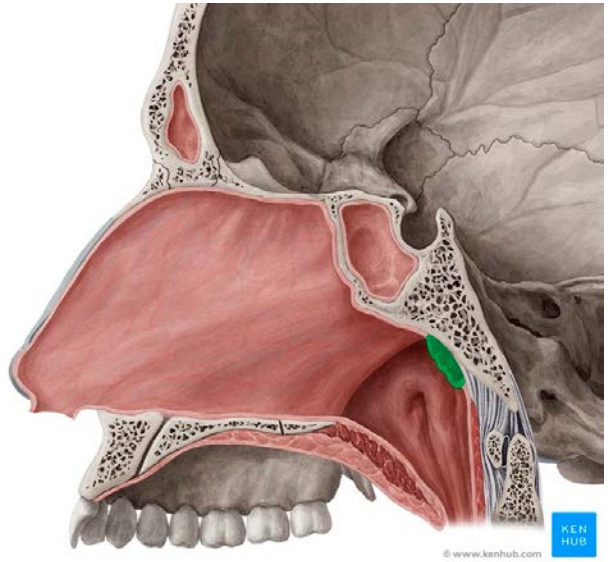
Pharyngeal tonsil (Adenoid)

Located on the top of pharynx (*fornix pharyngis*)

From the other it differs by the surface covered by pseudostratified columnar epithelium which might contain goblet cells

Shallow crypts

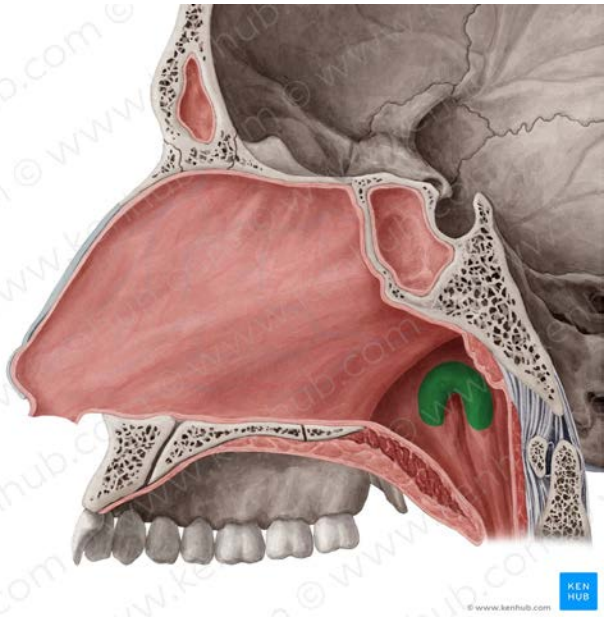
In childhood tonsilla pharyngea can often be hypertrophic which cause problems with nose breathing



Tubal tonsils (Gerlach tonsils)

Paired tonsil

Group of small lymphoid tissue in lamina propria of mucosa in the pharyngeal opening of the eustachian tube (*ostium pharyngeum tubae auditivae*)

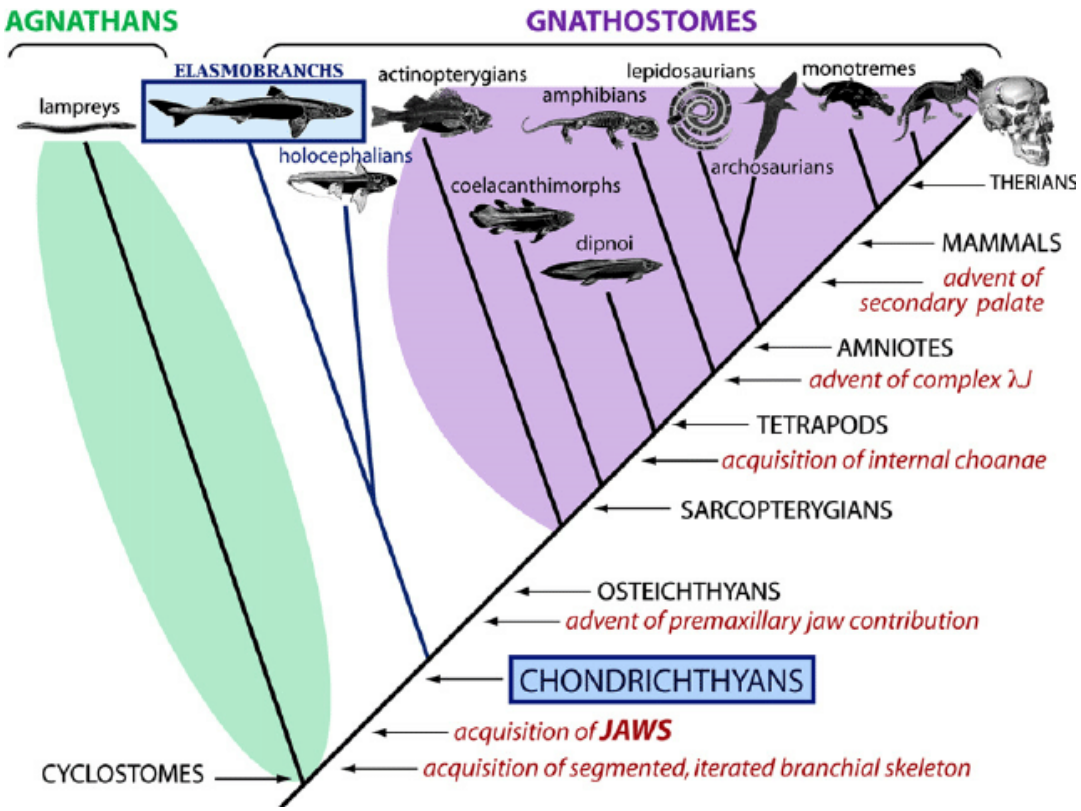


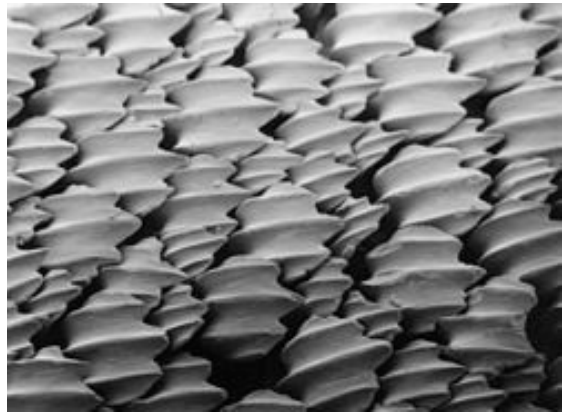
Basics in the phylogenesis and comparative tooth anatomy

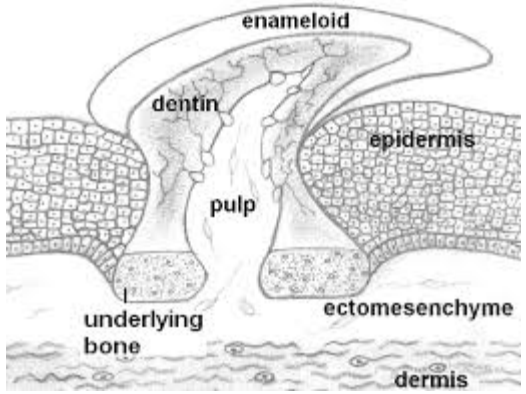
Teeth - calcified structures that derive from the ectoderm and ectomezenchyme (neural crest)

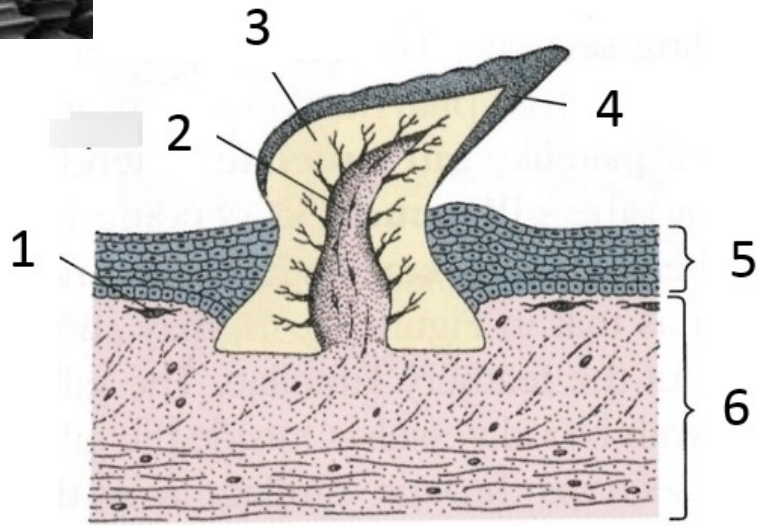
Evolutionarily in phylogeny, they appear only in **the jawed vertebrates – Gnathostomata**

Ancestor of teeth - **placoid scales** in fishes that covered the surface of the body and the oral cavity

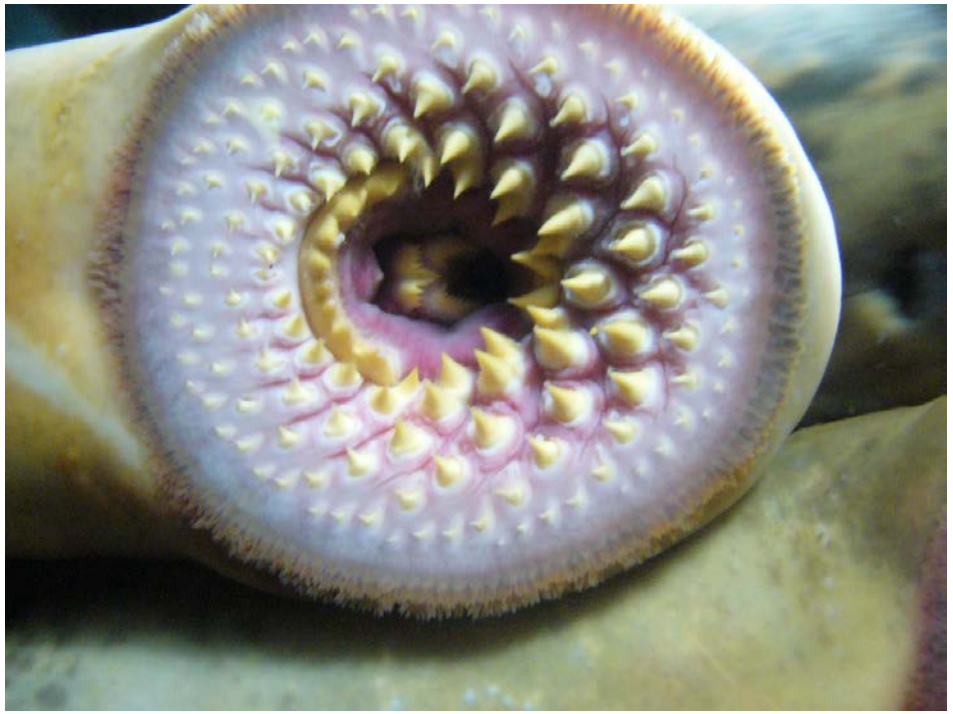




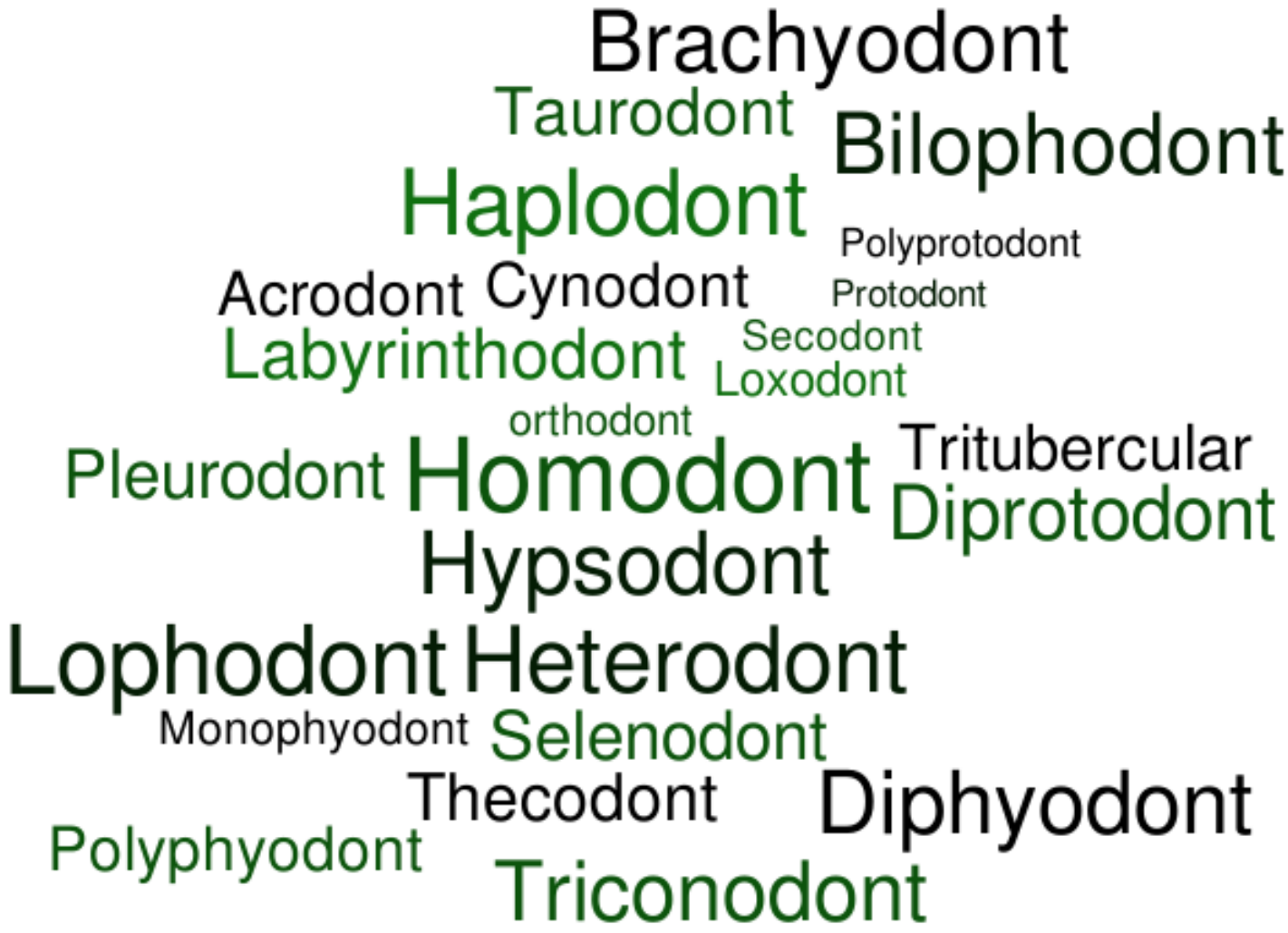




Lampres, cyclostomata



Set of all teeth = dentition



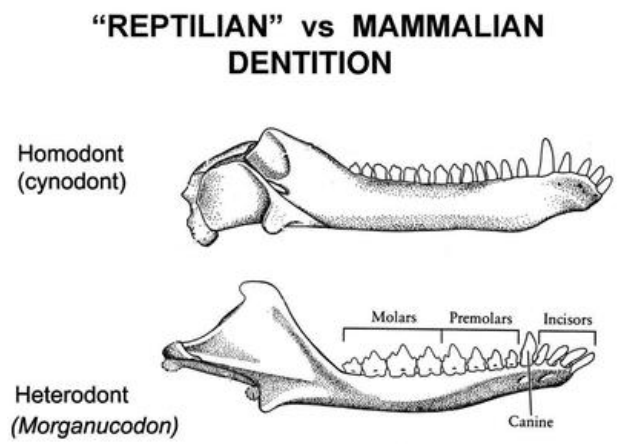
Set of all teeth = **dentition**

Types of dentition

Shape of teeth: **homodont** - identical in shape

heterodont - different in shape

(in mammals dentes incisivi, canini, praemolares and molares)

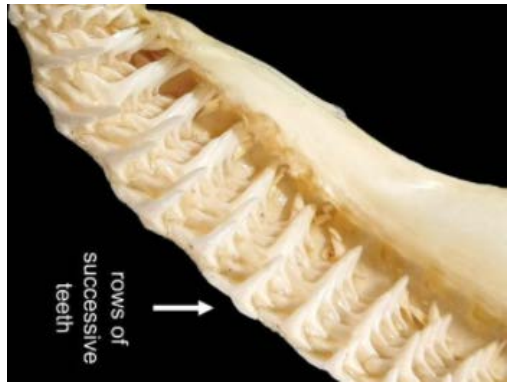


According to the **number of replacements** (sets of teeth) during life:

monofyodont - e.g., Holocephala - chimeras)

difyodont (dentes decidui, dentes permanentes) – e.g. mammals

polyphyodont - e.g., fish, lower amphibians



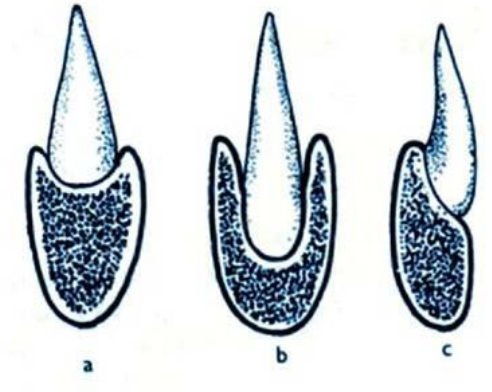
According to the **attachment** of the teeth to the jaw:

acrodont - attach to the jaw from above (bony fish, amphibians)

pleurodont - on the jaw from the side (for reptiles)

thecodont - inserted into dental sockets –

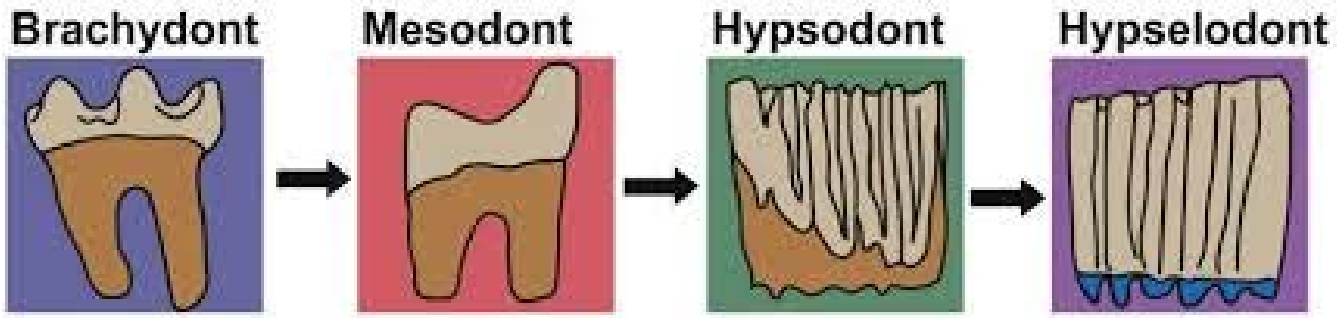
recent mammals (dinosaurs, crocodiles)

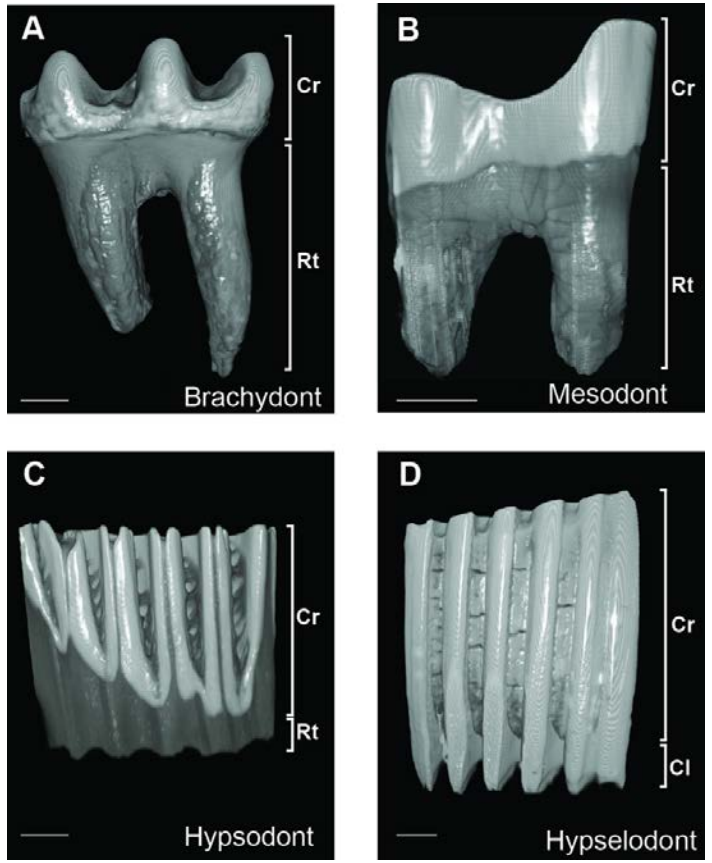


Set of all teeth = **dentition**

Podle **typu růstu** zubů:

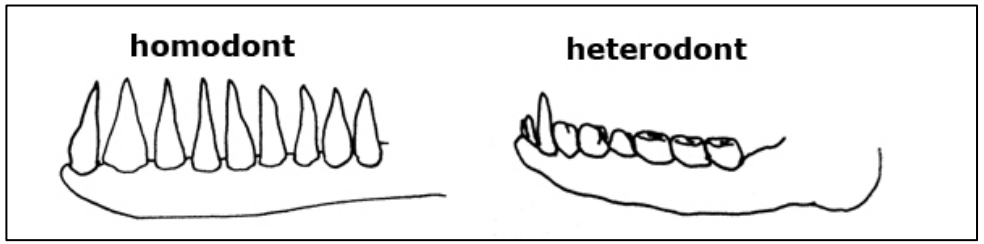
Brachyodont - Long root
Hypselodont - No root – continuously-growing
Hypsodont - High crown
Mesodont



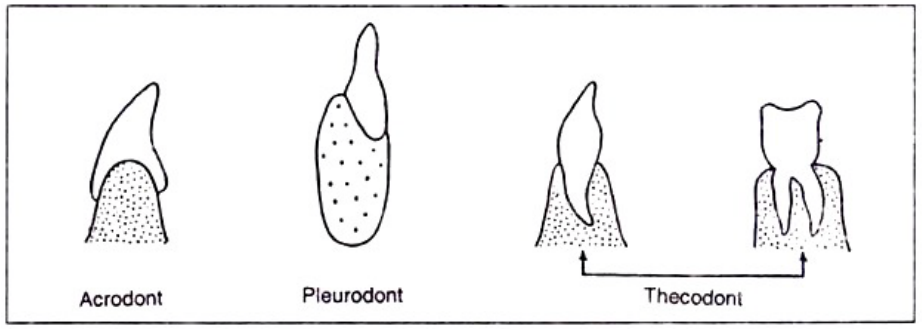


Human dentition is:

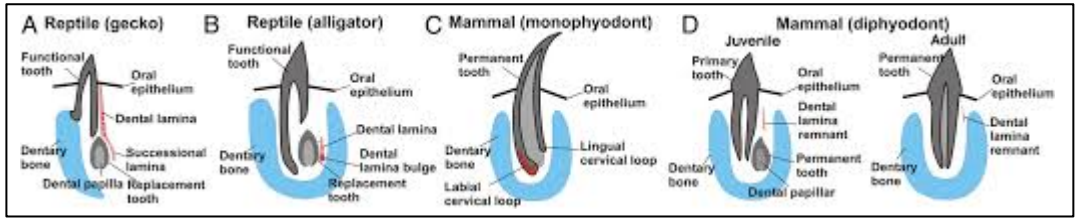
Heterodont



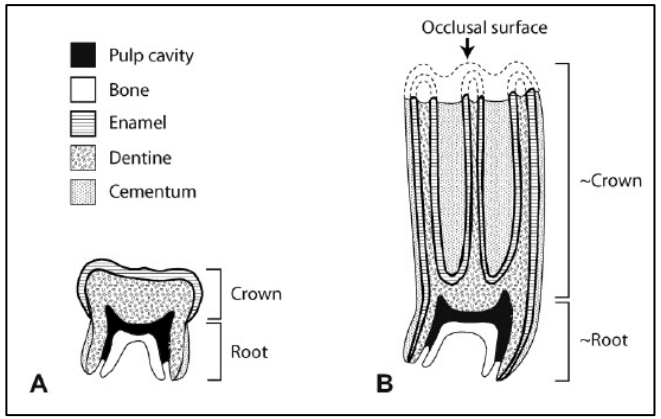
Thecodont



Diphyodont



Brachydont



Tooth numbering

Several possibilities

Beginning letter

incisors – dentes incisivi	I_1, I_2/ i_1 , i_2
canines – dens caninus	C / c
premolars – dentes premolares	P_1, P_2 / p_1, p_2
molars – dentes molares	M_1, M_2, M_3 / m_1, m_2, m_3

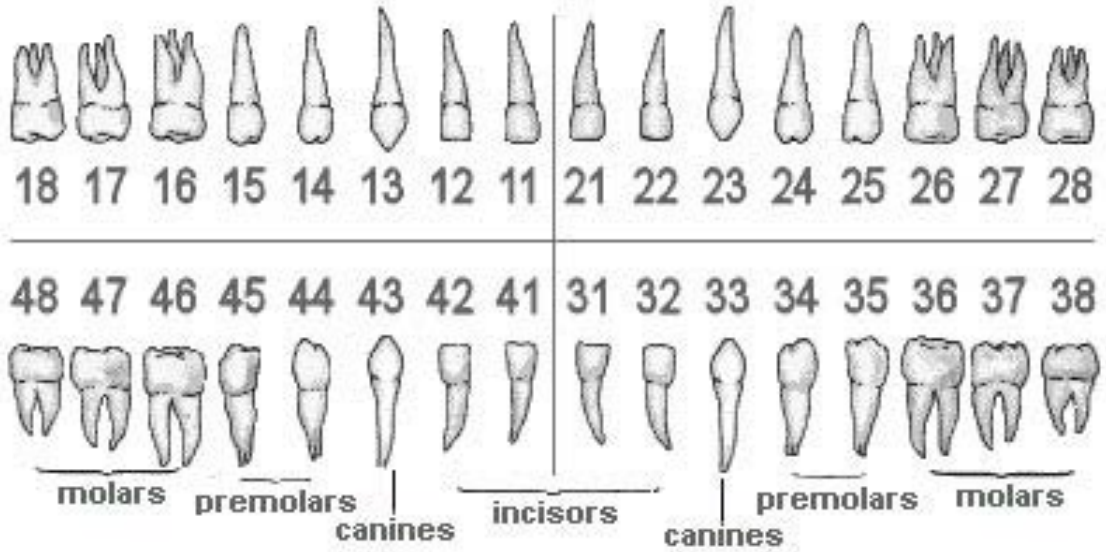
Number

international marking using "two-digit code"

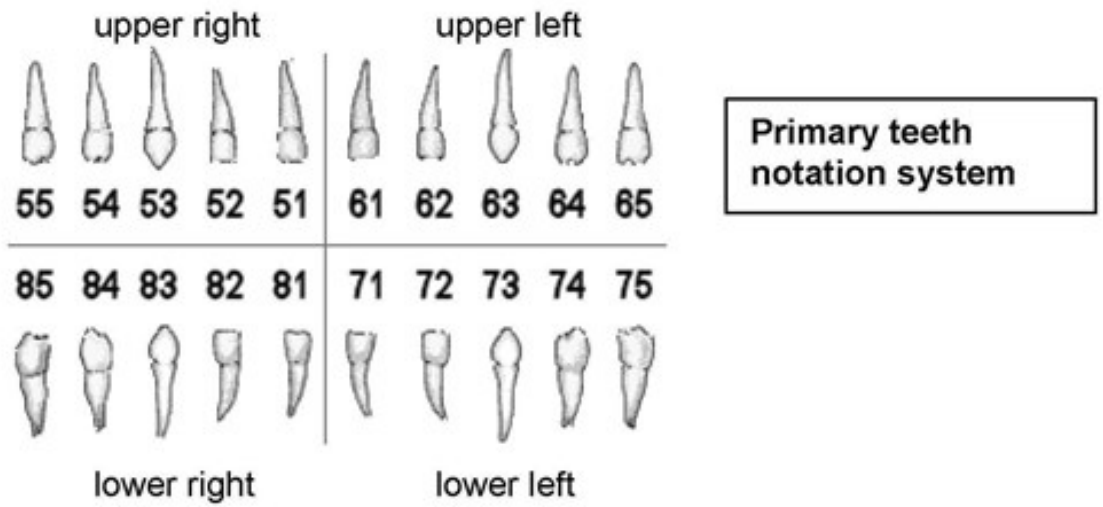
(ISO System - International Standards Organization Designation system: teeth divided into quadrants (clockwise):

1 - 4	dentes permanentes
5 - 8	dentes decidui

Dentes permanentes



Dentes decidui



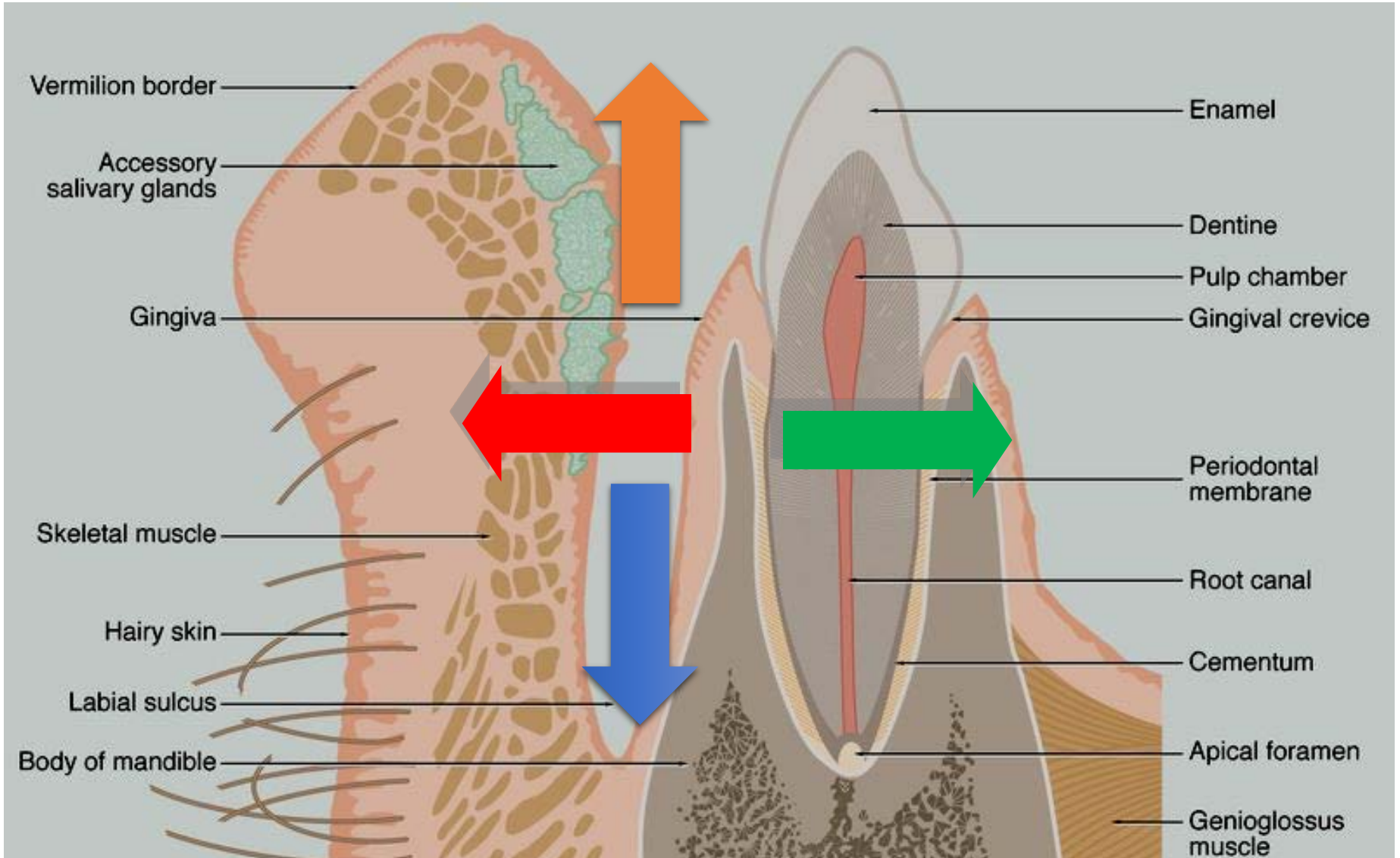
Directions

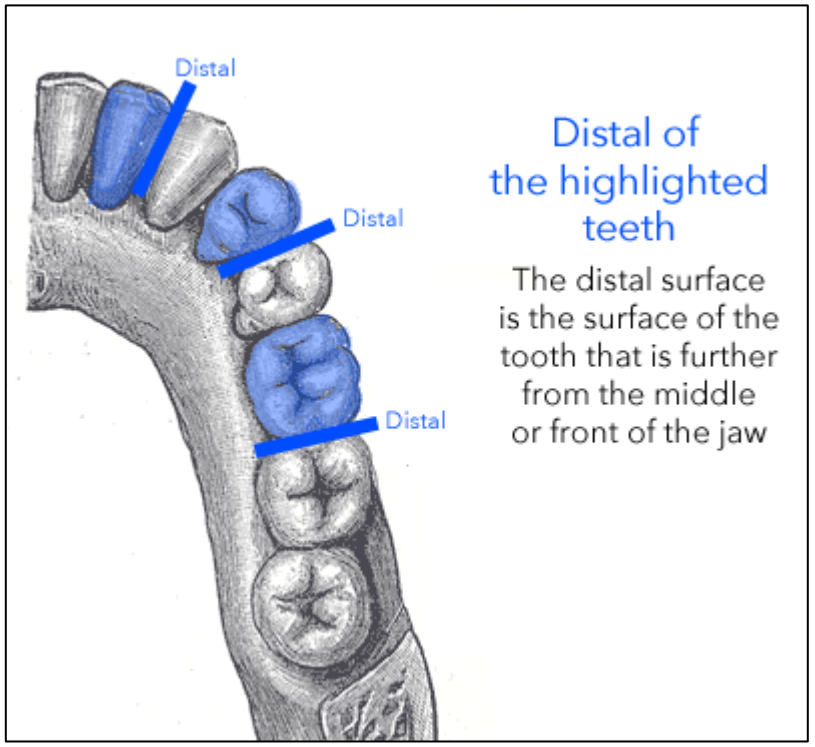
coronal

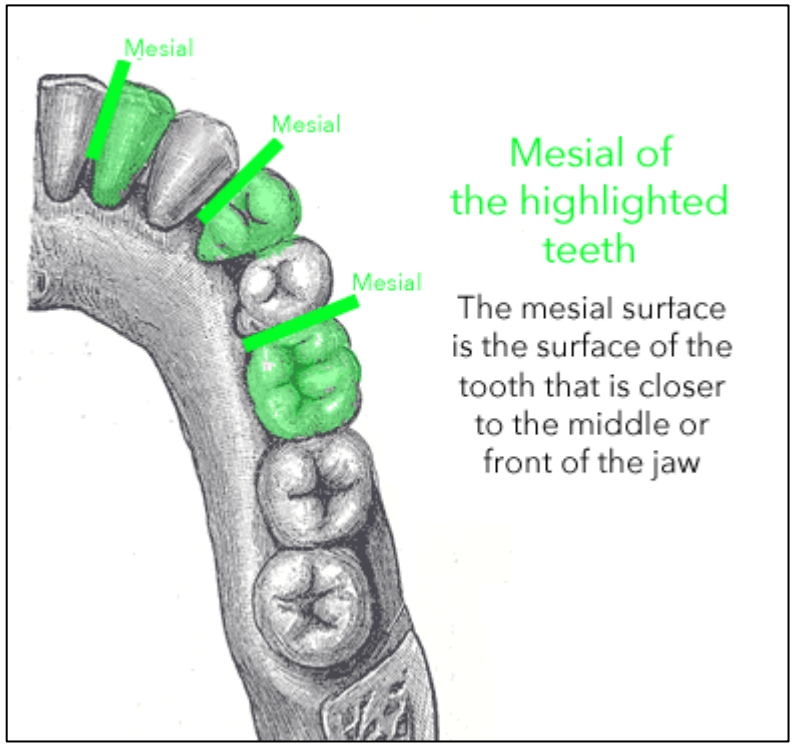
apical

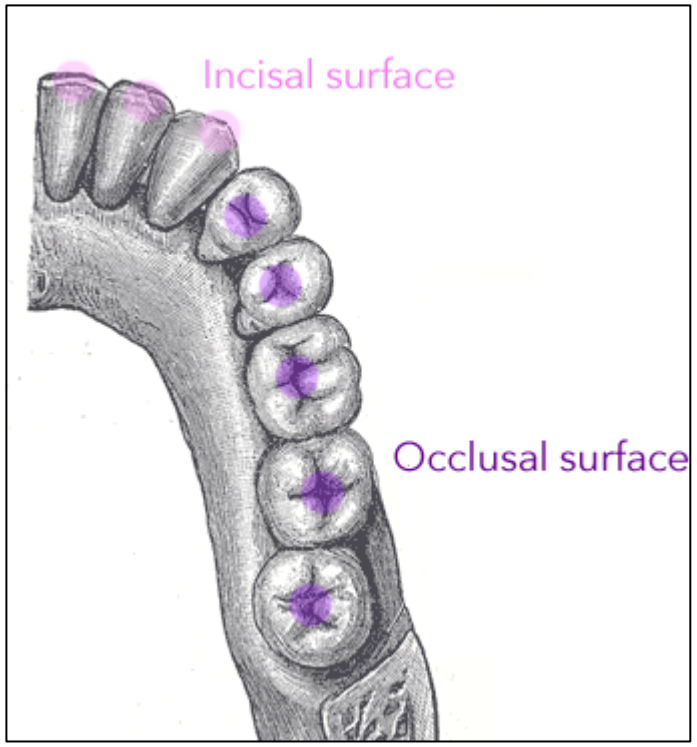
vestibular (labial, bucal)

lingual (palatinal)

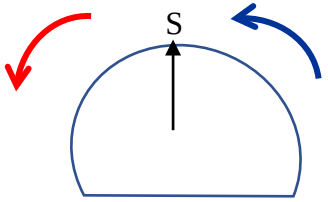






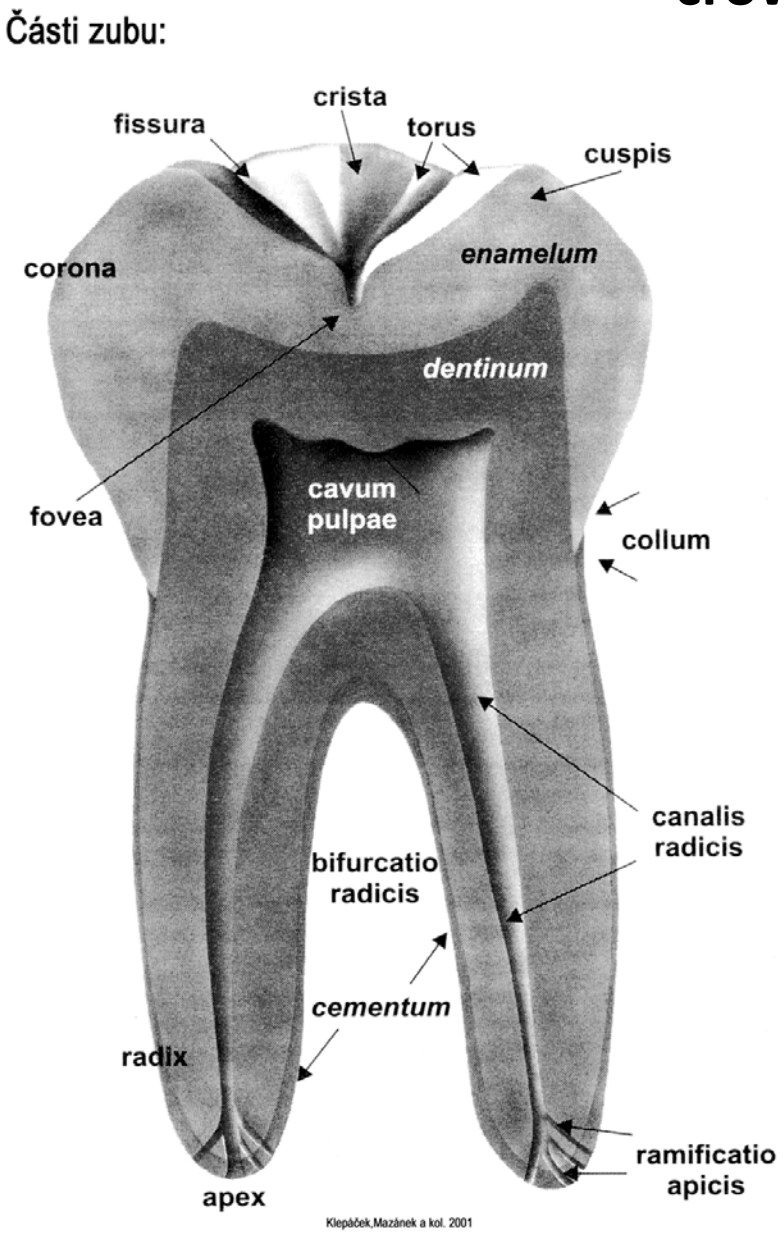


Distal
(towards the last molar)



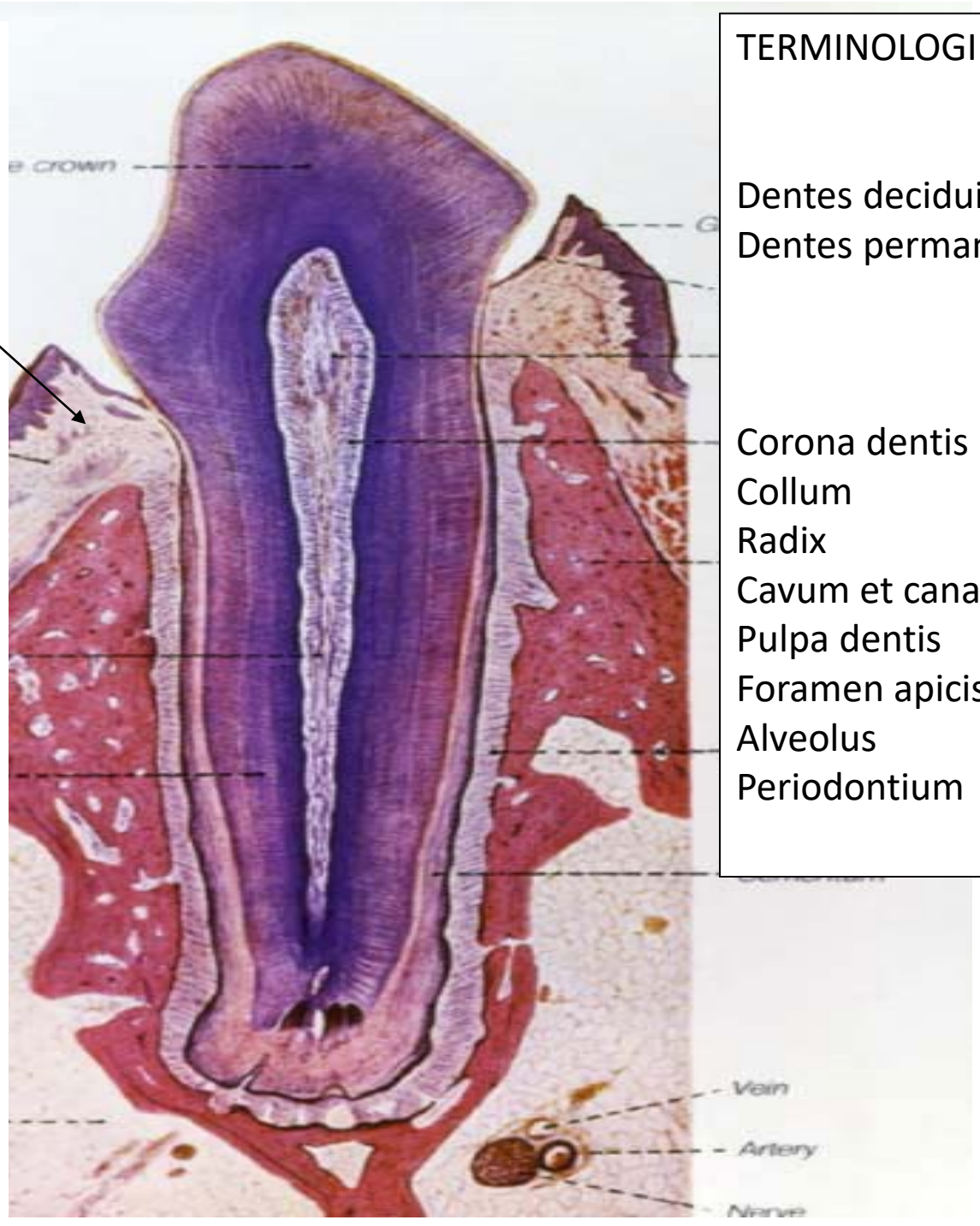
Mesial
(towards the midline)

Tooth and dental socket, periodontium, gingiva
crown, neck, root



Tooth (dens)

gingiva



TERMINOLOGIE:

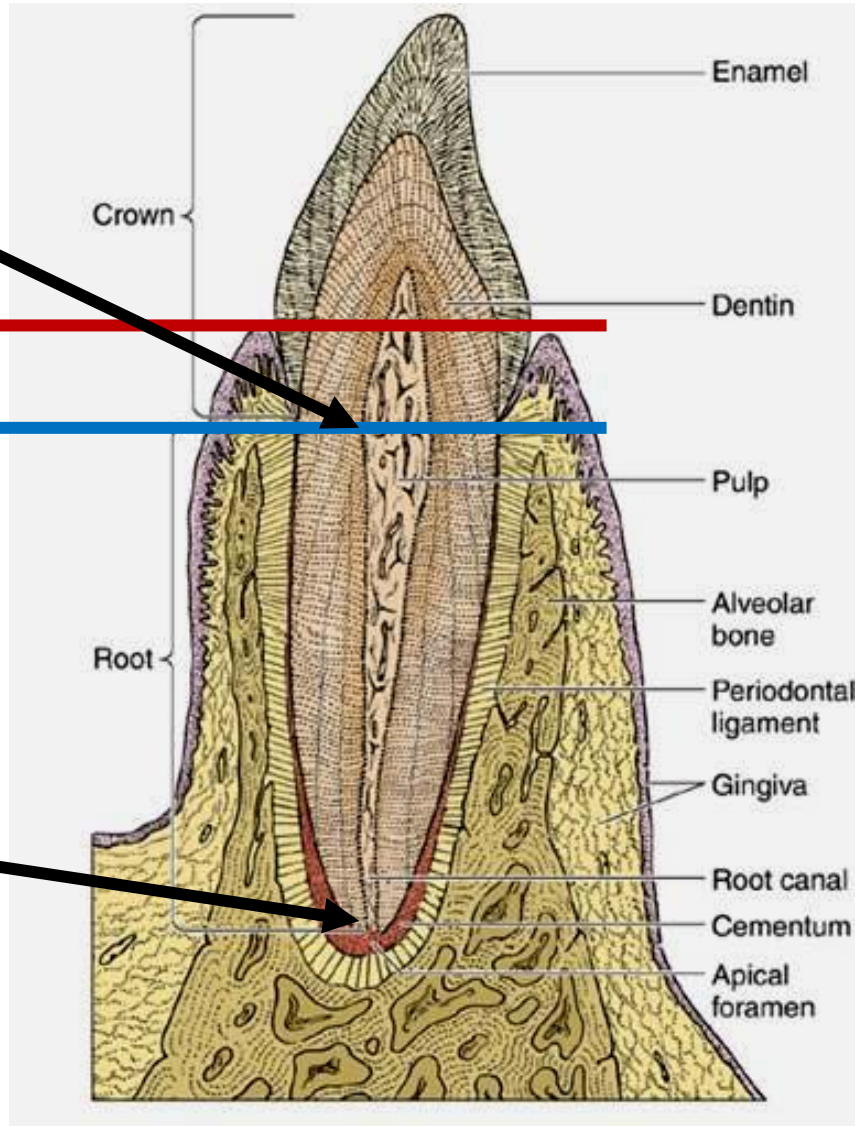
Dentes decidui (lactei)	20	
Dentes permanentes	28-32	
Corona dentis	(crown)	
Collum	(neck)	
Radix	(root)	1-3
Cavum et canalis radicis dentis (cavity and root canal)		
Pulpa dentis	(pulp)	
Foramen apicis radicis	(opening at the tip of the root)	
Alveolus		
Periodontium		

Cavitas dentis passing to **canalis radicis dentis**

Anatomical vs **clinical** crown

Anatomical vs **klinical** root

Foramen apicis radicis Dentis



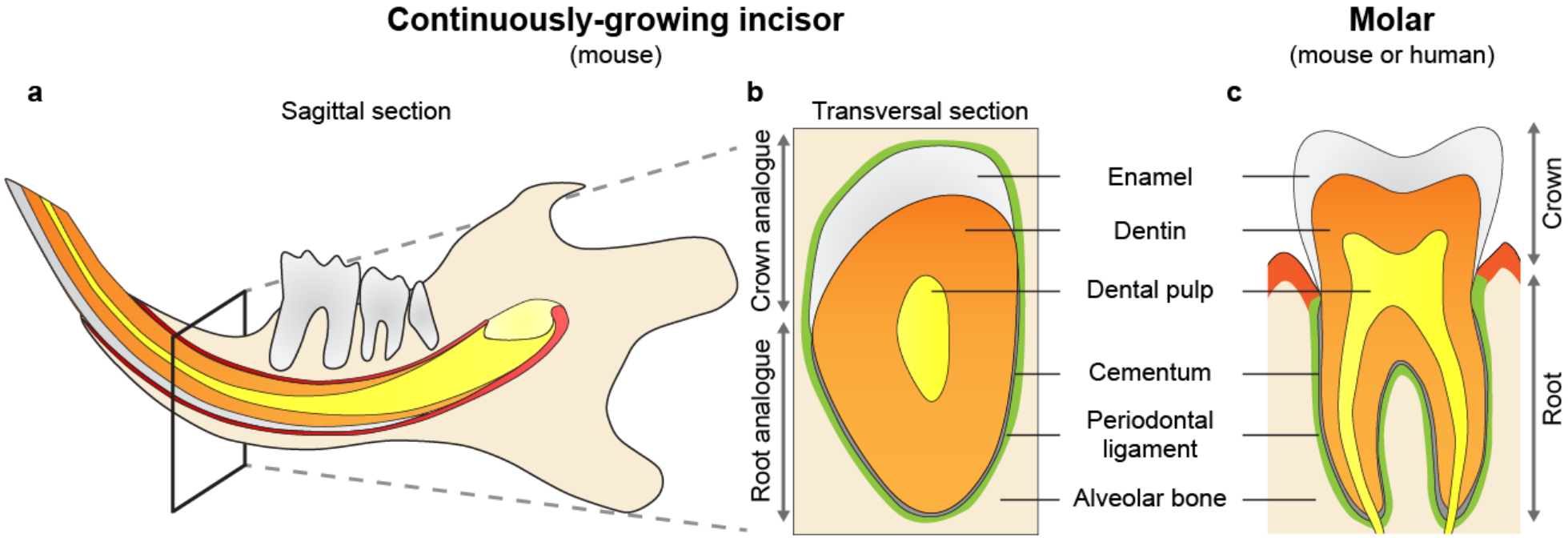
Tissues of tooth

Enamel - enamel, subst. adamantina (row adamas, adamantos = diamond steel), substantia vitrea (lat. vitrum = glass)

Dentin - dentin, substantia eburnea (l. Ebur = ivory)

Cementum - substantia ossea, crusta petrosa

Dental pulp - pulpa dentis



Babirusa

Tusks