



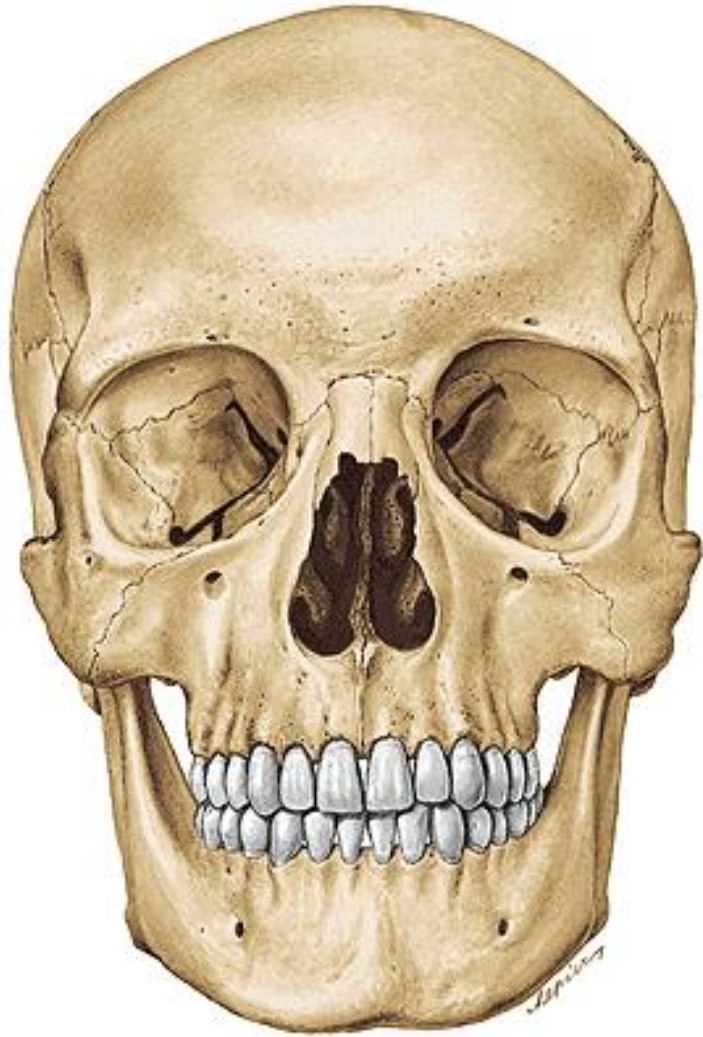
Skull - neurocranium

LECTURE 4

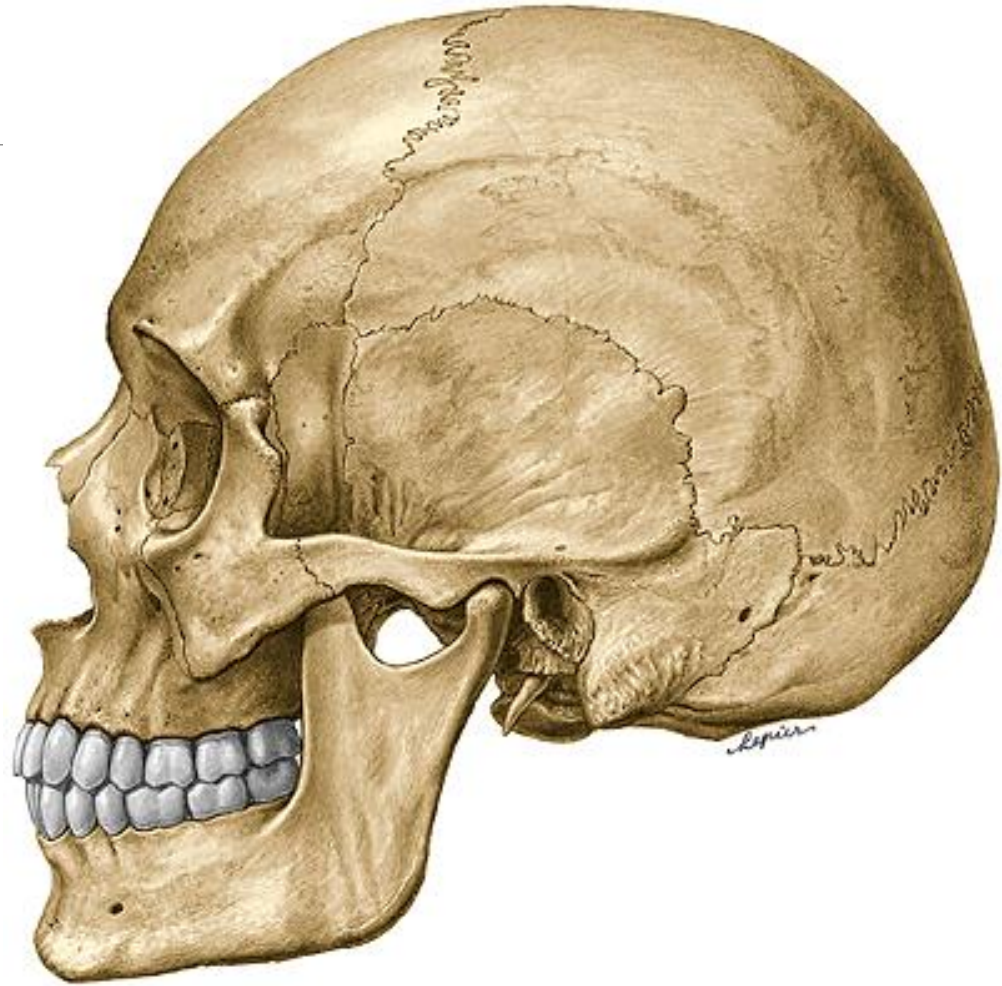
DENTISTRY, AUTUMN 2016

RNDr. Michaela Račanská, Ph.D.

Neurocranium et splanchnocranium



Frontal view



Lateral view

Skull (22)

neurocranium x splanchnocranium

Desmocranium (intramembranous formation)

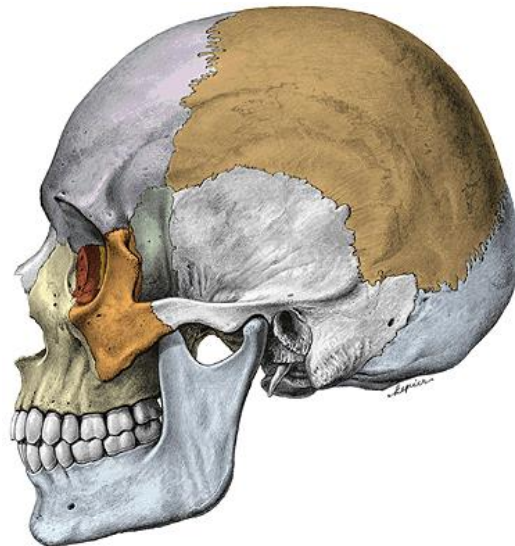
8

protective case around the brain and the sense organ

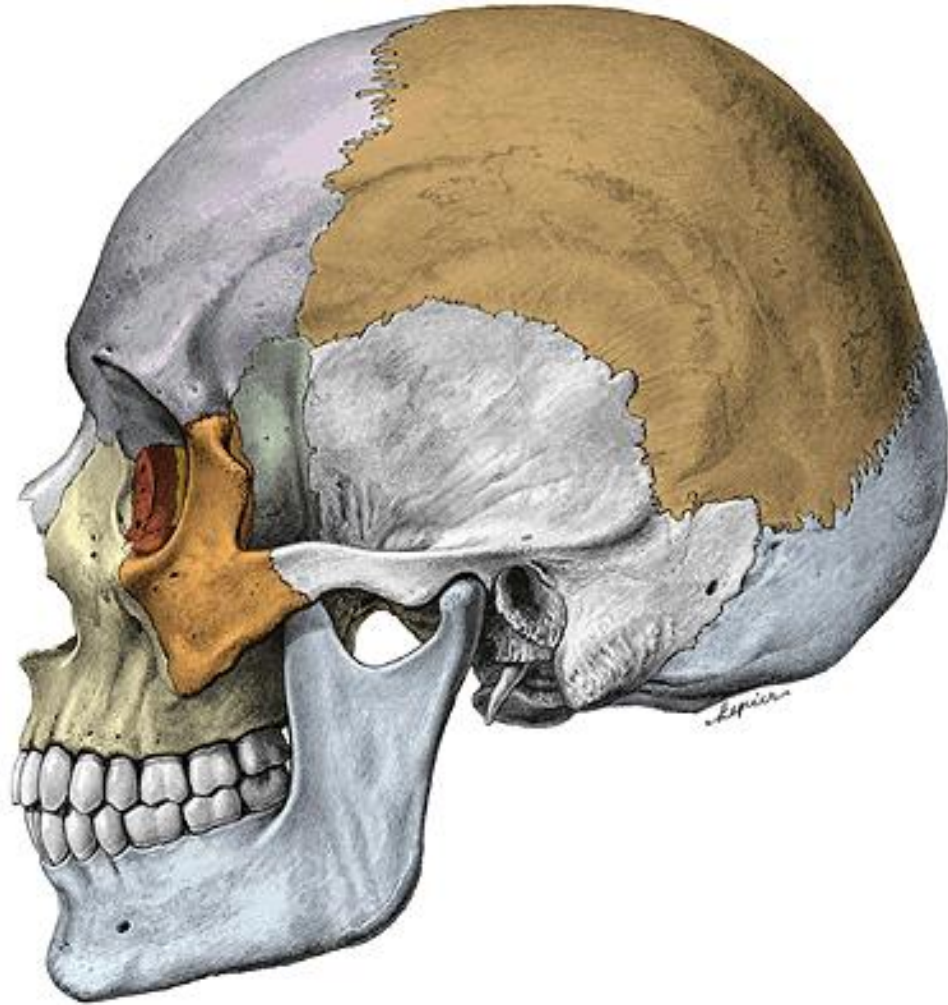
Chondrocranium (endochondral ossification)

14

contains the initial portions of the gastrointestinal and respiratory tracts, facial skeleton



Neurocranium (calvarium et basis cranii)



os frontale (frontal bone)

ossa parietalia (parietal bone)

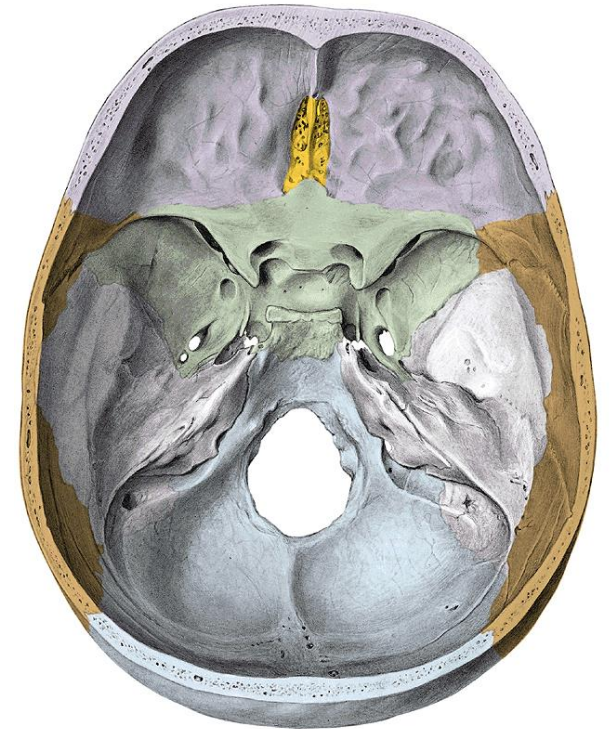
os occipitale (occipital bone)

os sphenoidale (sphenoid)

ossa temporalia (temporal bone)

os ethmoidale (ethmoid)

8



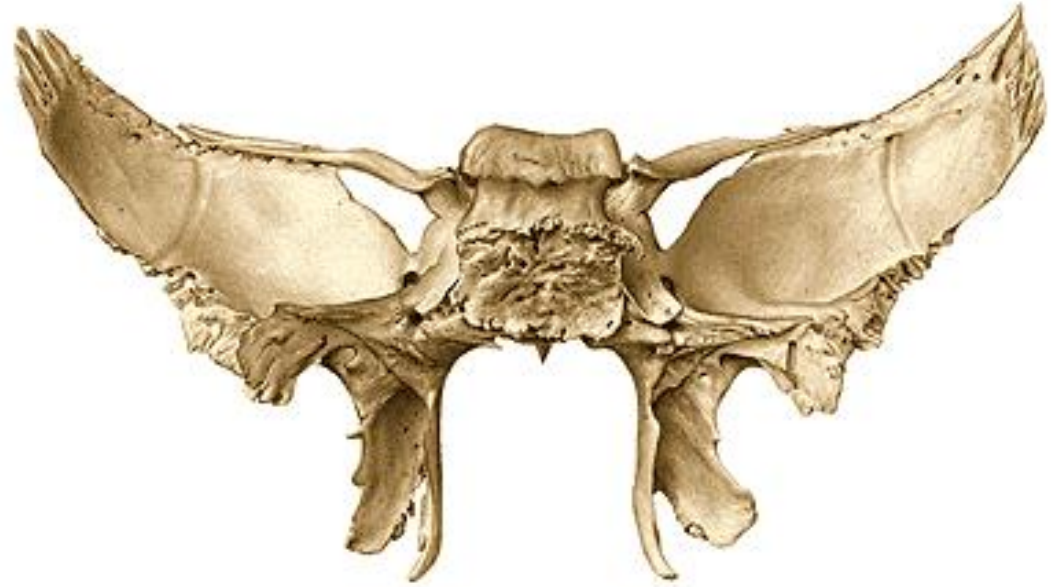
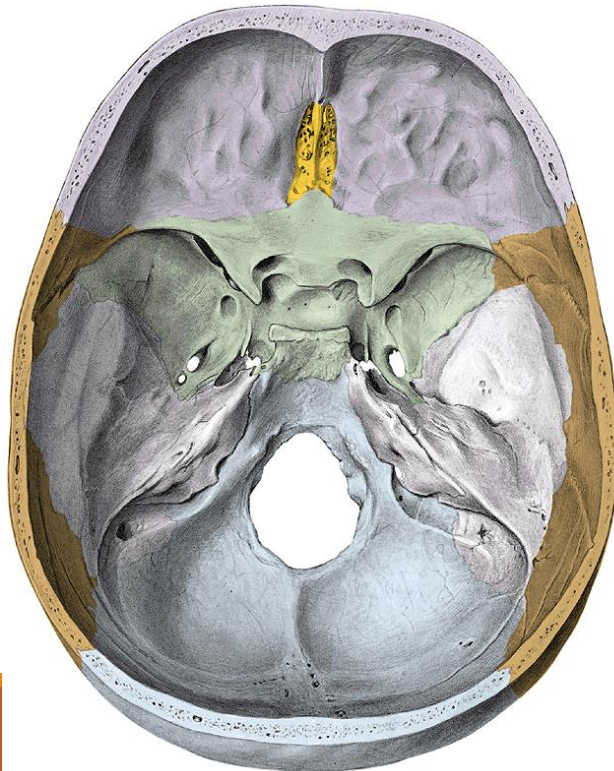
Os sphenoidale (sphenoid)

corpus ossis sphenoidalis

alae minores

alae majores

processus pterygoidei



Corpus ossis sphenoidalis (body)



Ventral wall:

sinus sphenoidalis

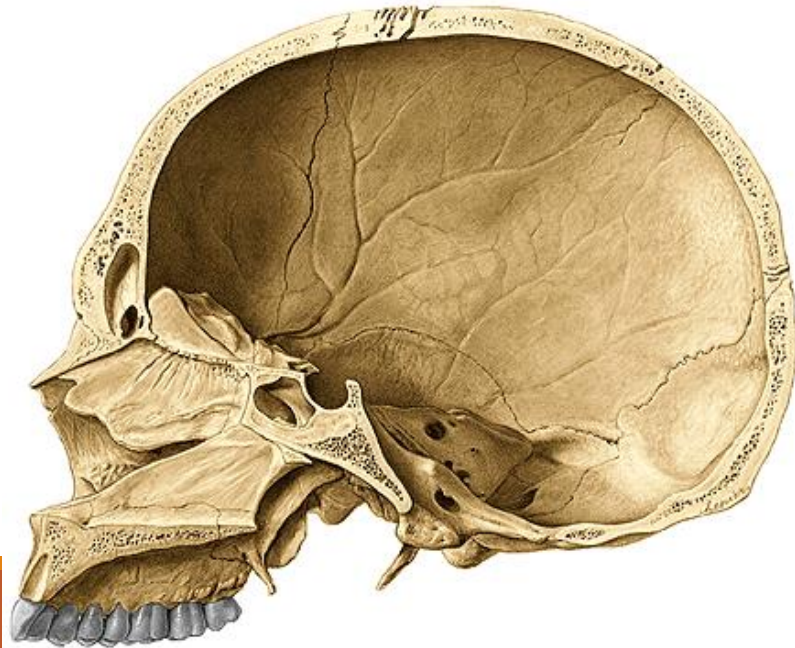
septum sinuum sphenoidalium

apertura sinus sphenoidalis

conchae sphenoidales

crista sphenoidalis

rostrum sphenoidale



Corpus ossis sphenoidalis

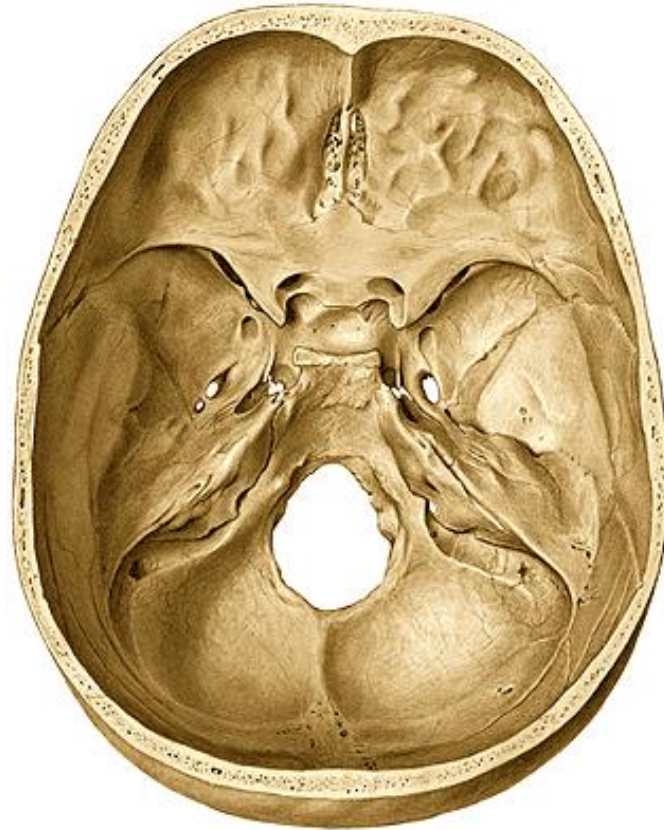
sella turcica

fossa hypophysialis

dorsum sellae (processus clinoidei posteriores)

sulcus caroticus

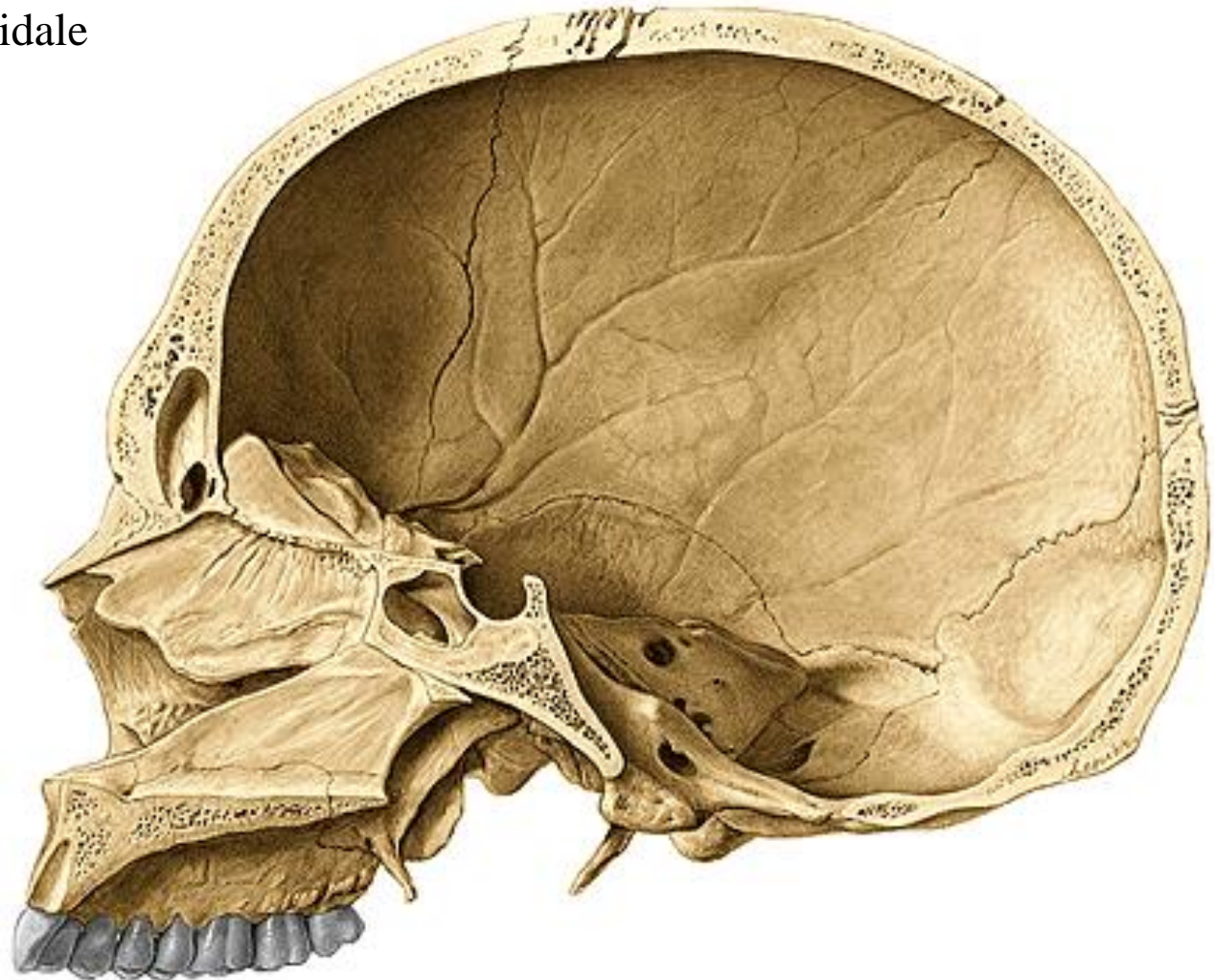
lingula sphenoidalis



Corpus ossis sphenoidalis

synostosis sphenoccipitalis - clivus
(synchondrosis sphenoccipitalis)

rostrum sphenoidale

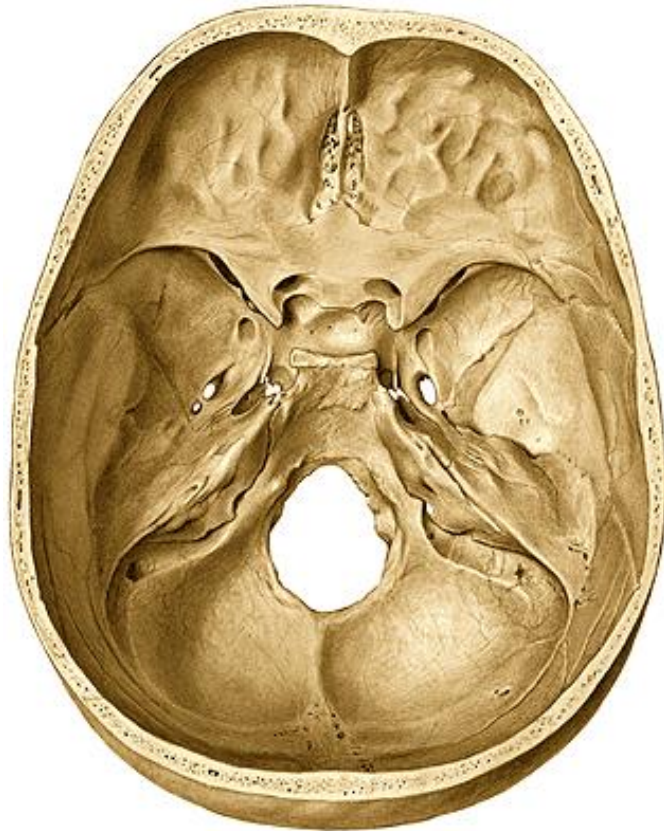


Alae minores ossis sphenoidalis

processus clinoidi anteriores (fissura orbitalis superior)

canalis opticus

sulcus praechiasmaticus



Alae majores ossis sphenoidalis

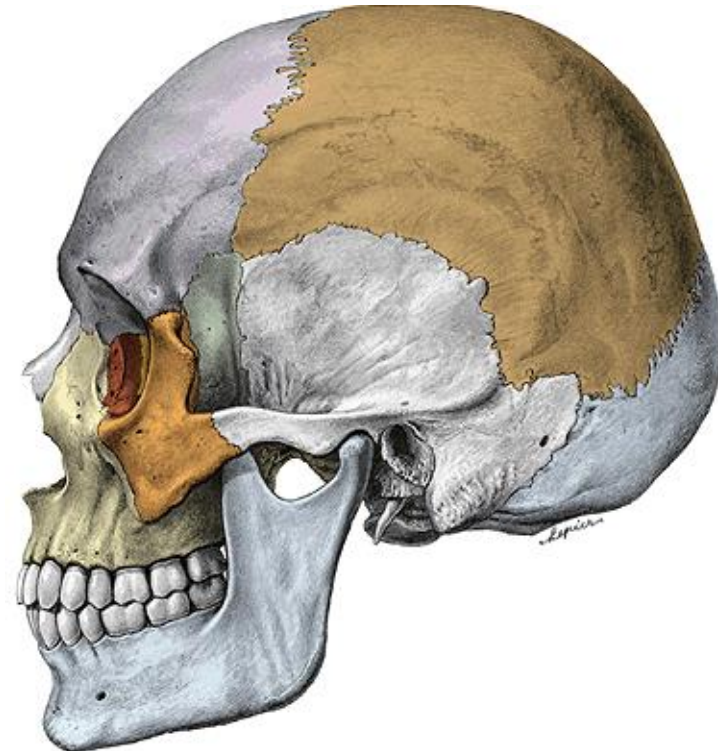
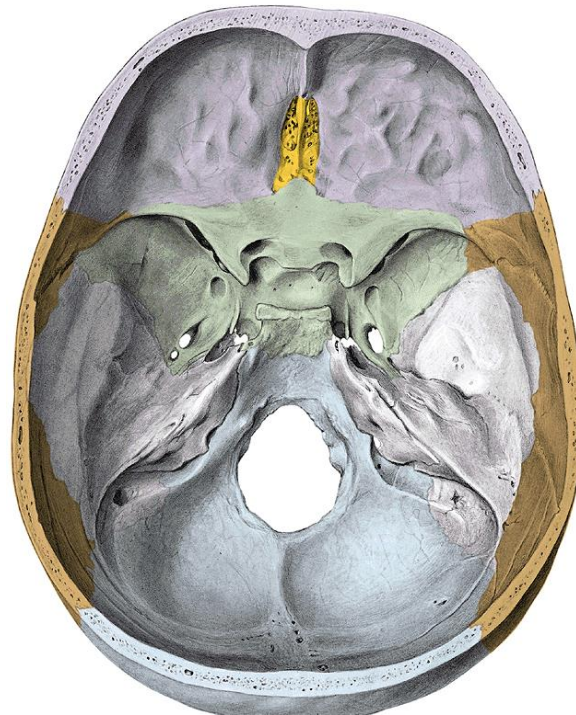
Facies cerebralis

Facies orbitalis

Facies temporalis (crista infratemporalis)

Facies infratemporalis

Facies maxillaris



Facies cerebralis alae majoris

Foramen rotundum

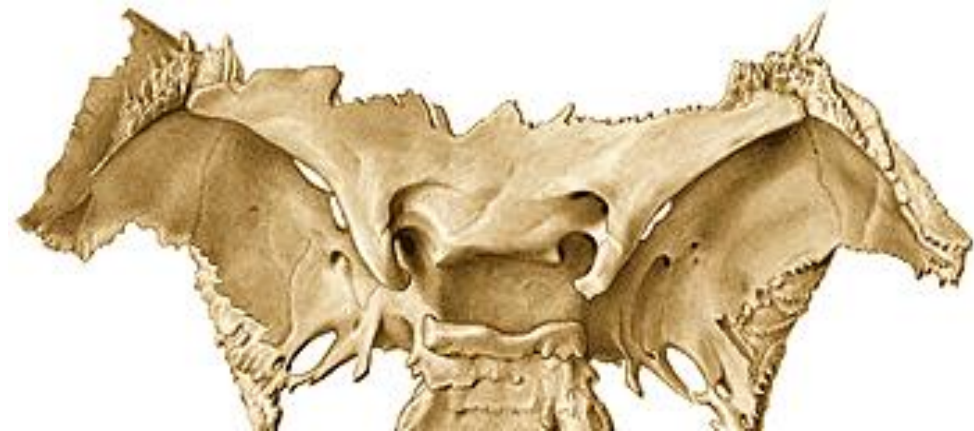
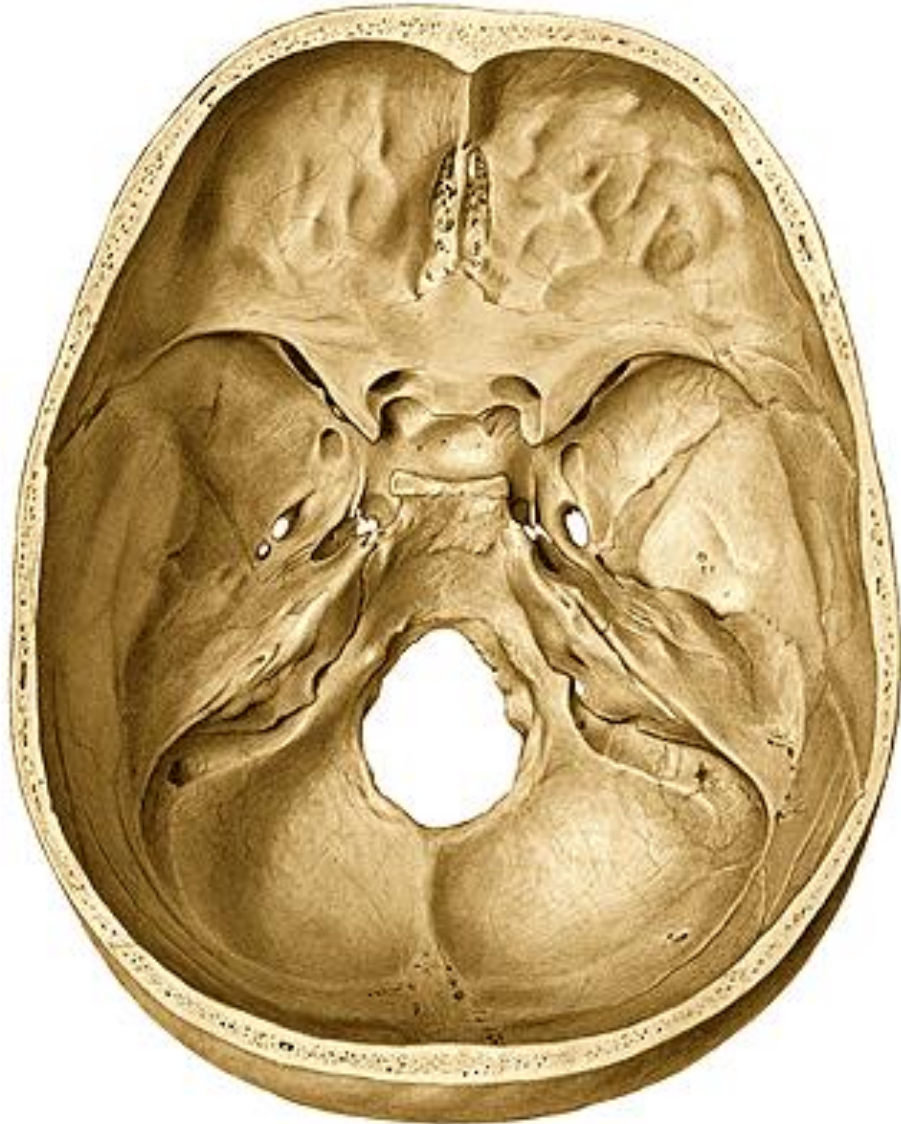
Foramen ovale

Foramen spinosum

Fissura orbitalis superior

Fissura sphenopetrosa

Foramen lacerum (fibrocartilago basilaris)



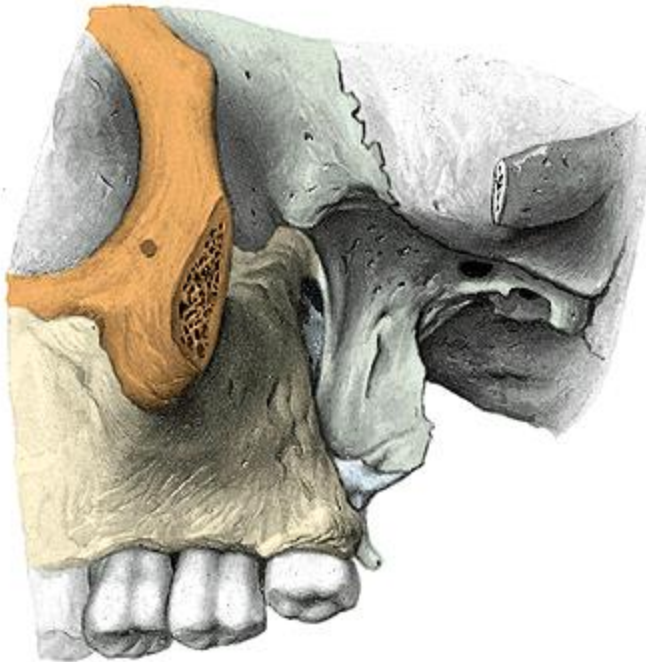
Facies temporalis at infratemporalis alae majoris

Foramen ovale

Foramen spinosum

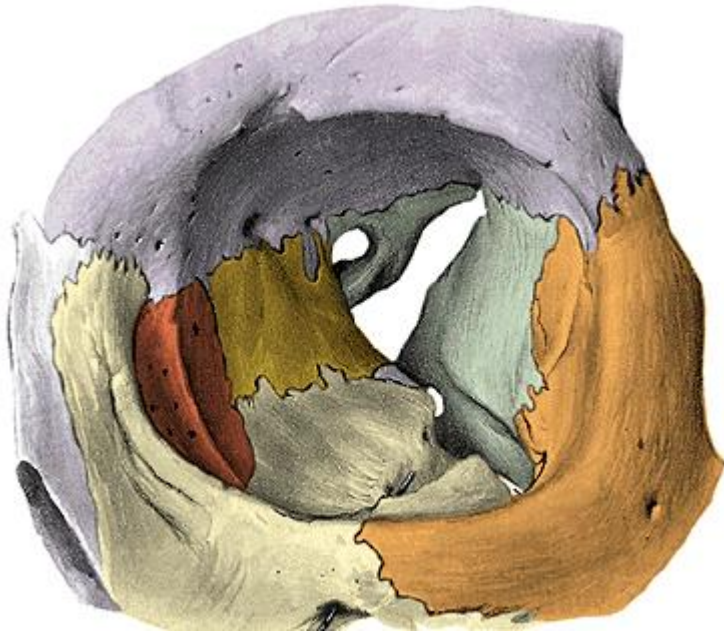
Spina ossis sphenoidalis

crista infratemporalis



Facies orbitalis alae majoris

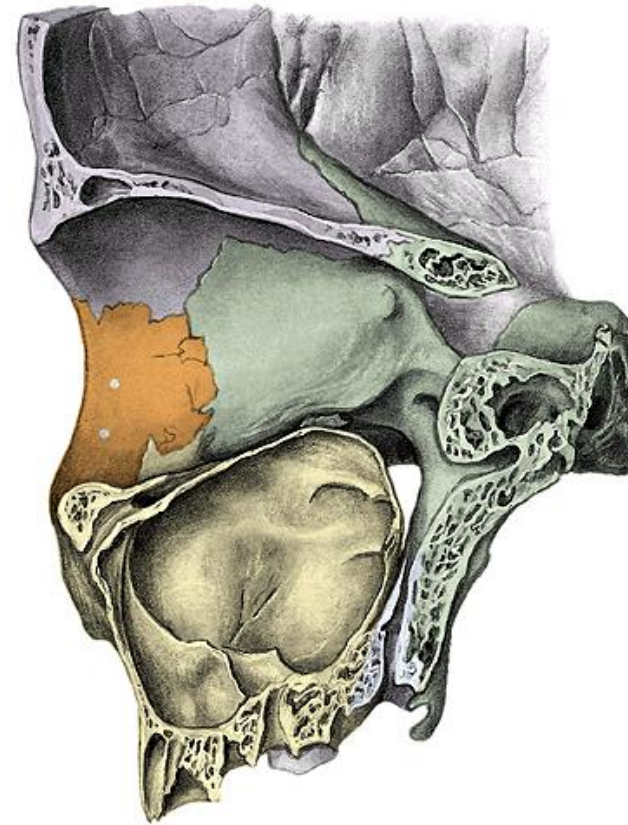
fissura orbitalis superior et inferior



Facies maxillaris alae majoris

foramen rotundum

fossa pterygopalatina



Processus pterygoideus ossis sphenoidalis

lamina medialis processus pterygoidei (hamulus pterygoideus)

lamina lateralis processus pterygoidei

fossa pterygoidea

fossa scaphoidea

incisura pterygoidea

canalis pterygoideus



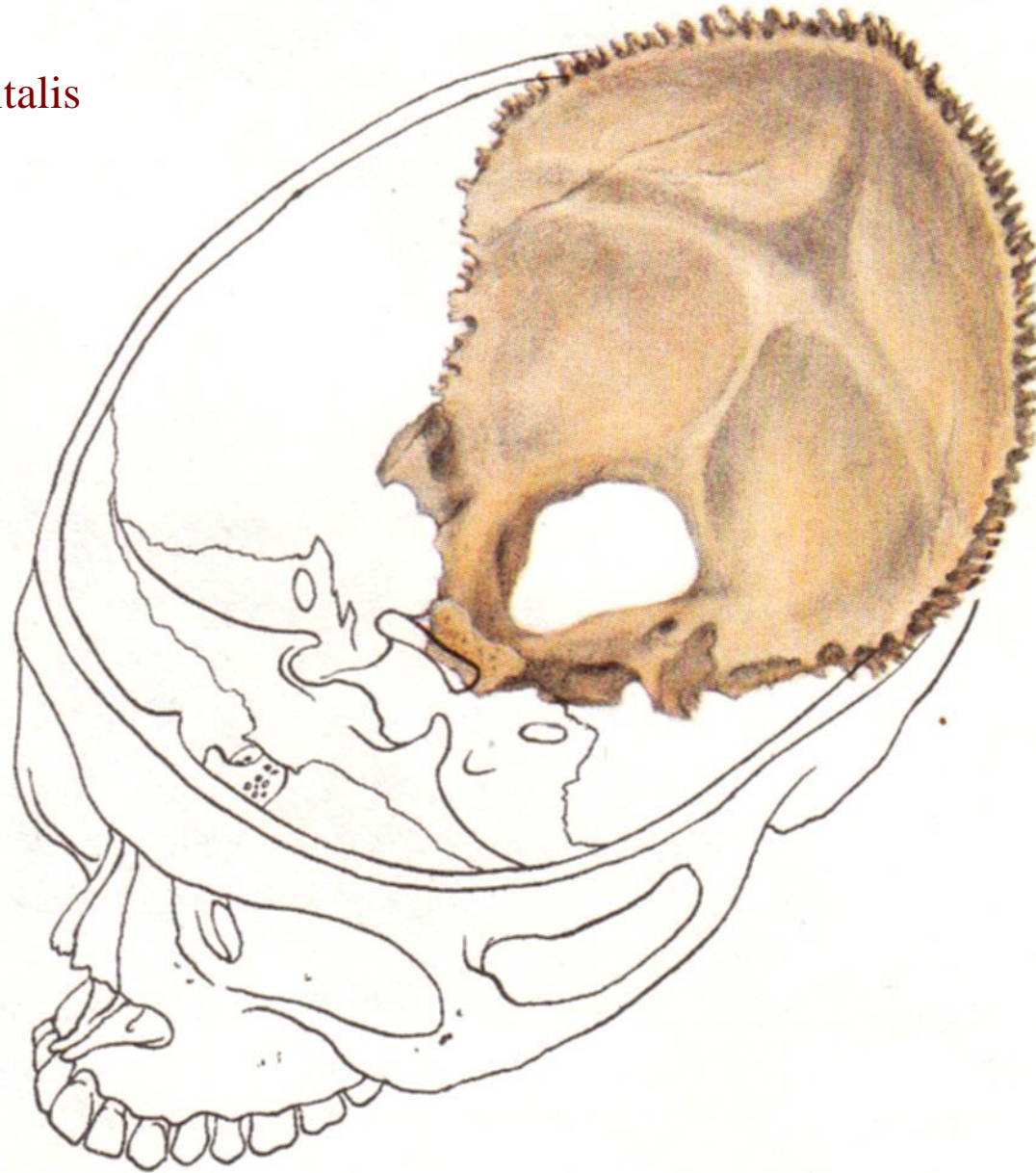
Os occipitale

Partes laterales ossis occipitalis

Pars basilaris

Squama occipitalis

Foramen magnum



Pars basilaris ossis occipitalis

synostosis (synchondrosis) sphenoccipitalis

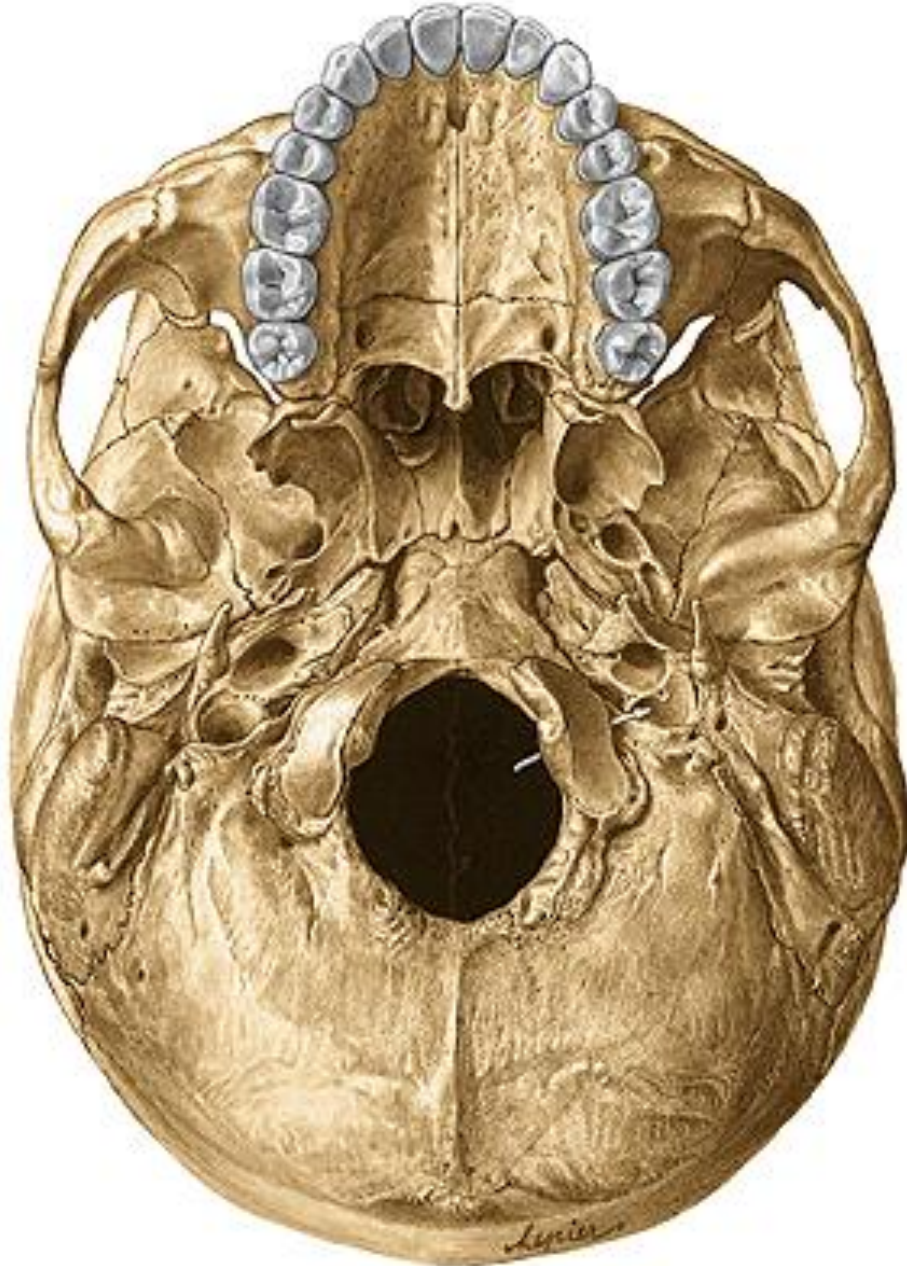
clivus

tuberculum pharyngeum

fissura petrooccipitalis



Partes laterales ossis occipitalis



condyli occipitales

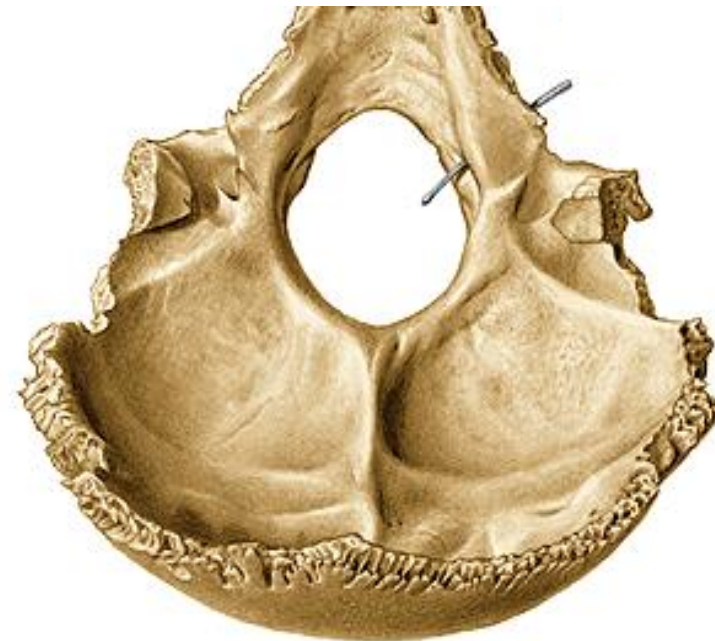
canalis hypoglossalis

fossa condylaris

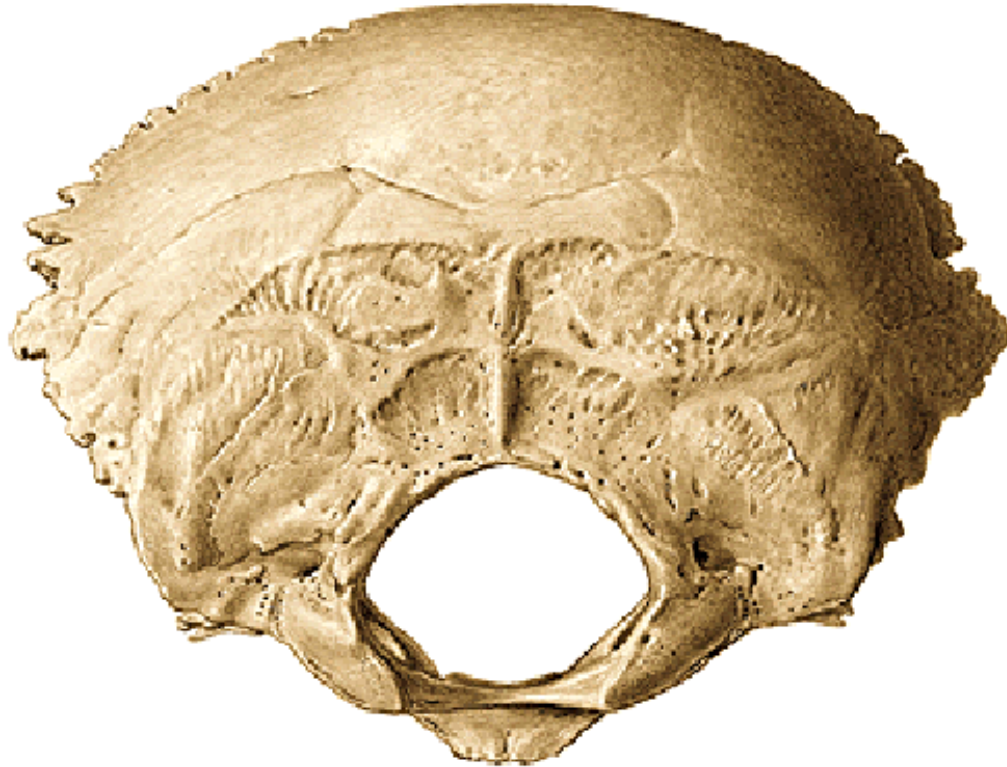
canalis condylaris

processus jugularis

incisura jugularis



Squama ossis occipitalis (exocranial surface)



protuberantia occipitalis externa

crista occipitalis externa

linea nuchae suprema

linea nuchae superior

linea nuchae inferior

Squama ossis occipitalis (intracranial surface)



protuberantia occipitalis interna

eminentia cruciformis

sulcus sinus sagittalis superioris

sulcus sinus transversi

sulcus sinus sigmoidei

crista occipitalis interna

fossae cerebrales

fossae cerebellares

Ossa parietalia

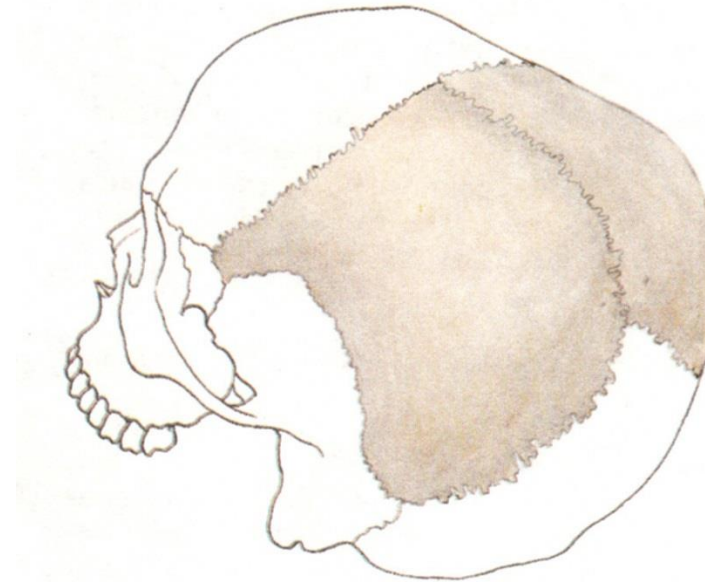


sutura coronalis

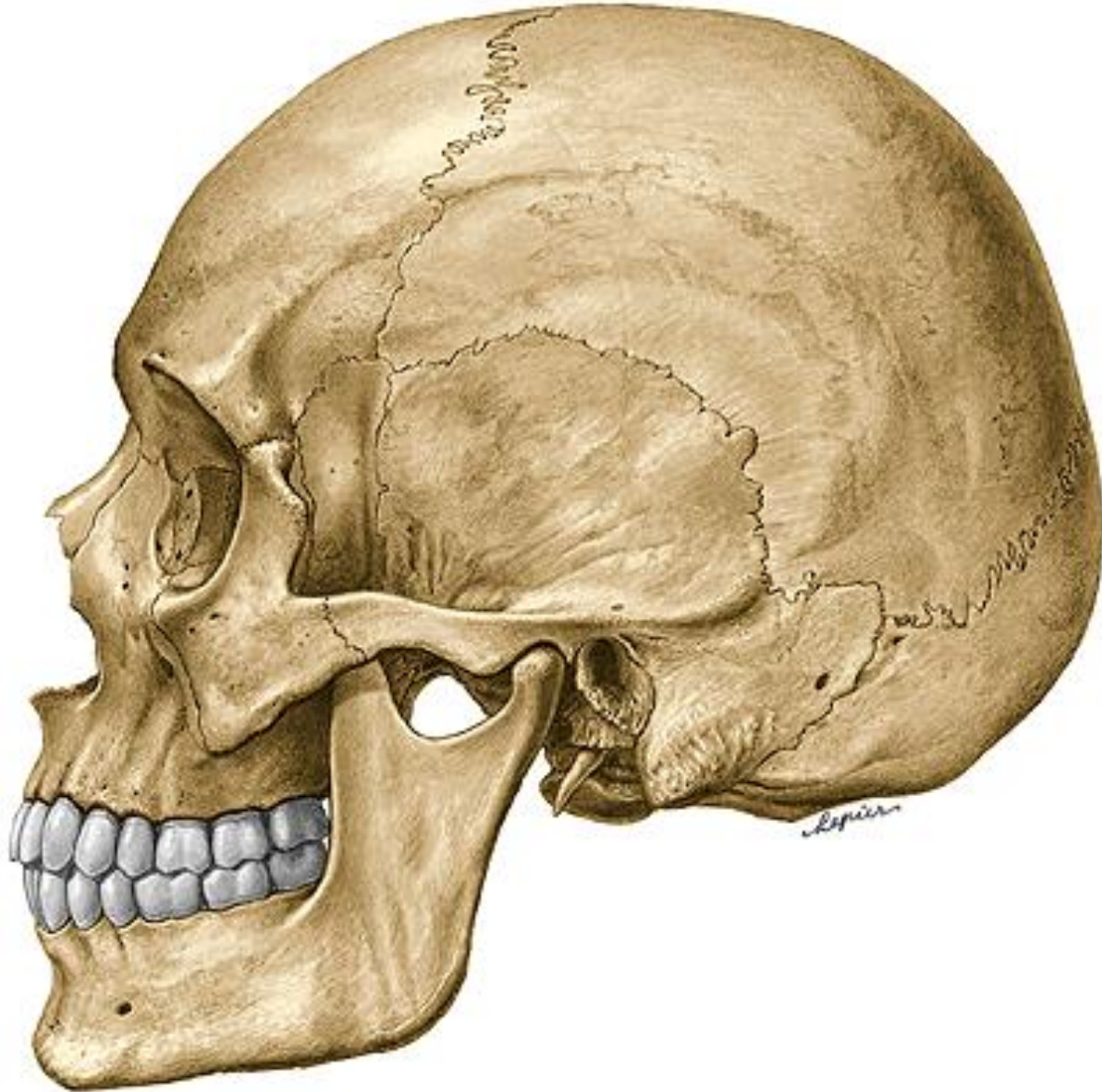
sutura sagittalis

sutura lambdoidea

suturae squamosae



Ossa parietalia



tuber parietale

linea temporalis superior

linea temporalis inferior

foramina parietalia



angulus frontalis

angulus sphenoidalis

angulus occipitalis

angulus mastoideus



sulci arteriae meningae mediae

sulcus sinus sagittalis superioris

foveolae granulares

sulcus sinus sigmoidei

Os temporale

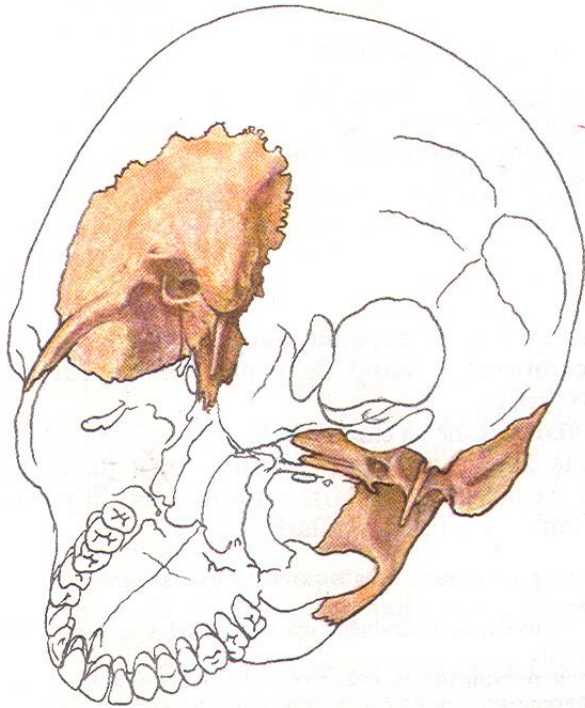
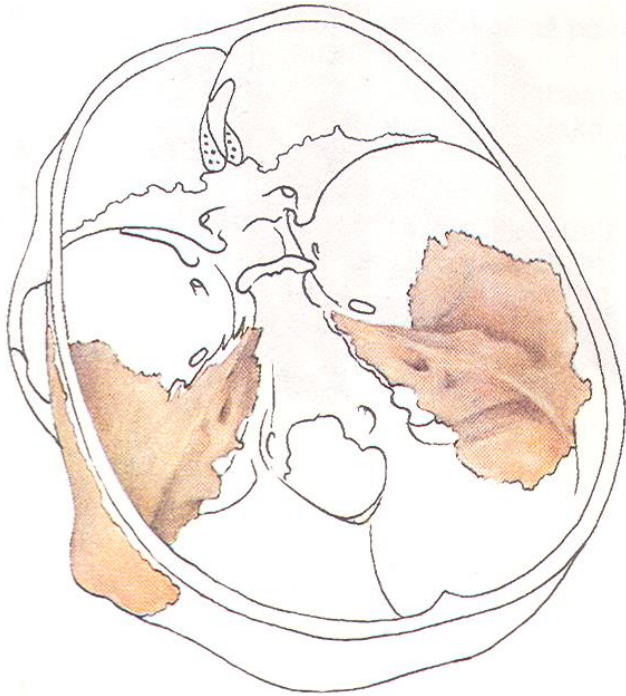
Pars squamosa

Pars petrosa (pyramis)

Pars mastoidea

Pars tympanica

Processus styloideus (pars hyoidea)



Pars squamosa ossis temporalis



processus zygomaticus

linea temporalis inferior

crista supramastoidea

spina suprameatum

fossa mandibularis

tuberculum articulare



sulci arteriosi

juga cerebraalia

impressiones gyrorum

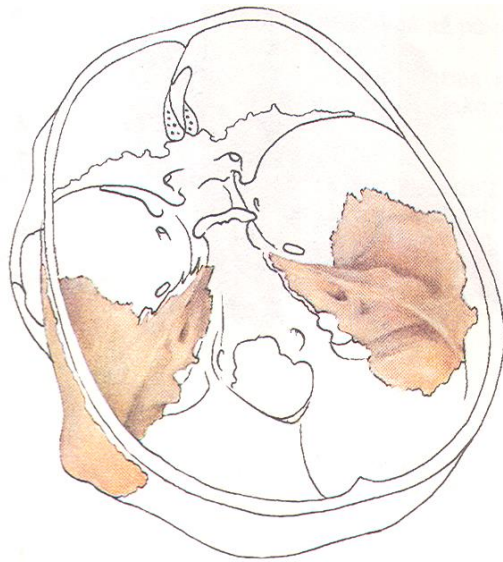
Pars petrosa (pyramis)

Facies anterior (cerebralis) pyramidis

Facies posterior

Facies inferior

Facies ventrobasalis (sensory-hearing organ)



Facies anterior pyramidis

foramen lacerum

apex pyramidis

impressio trigemini

canalis musculotubarius

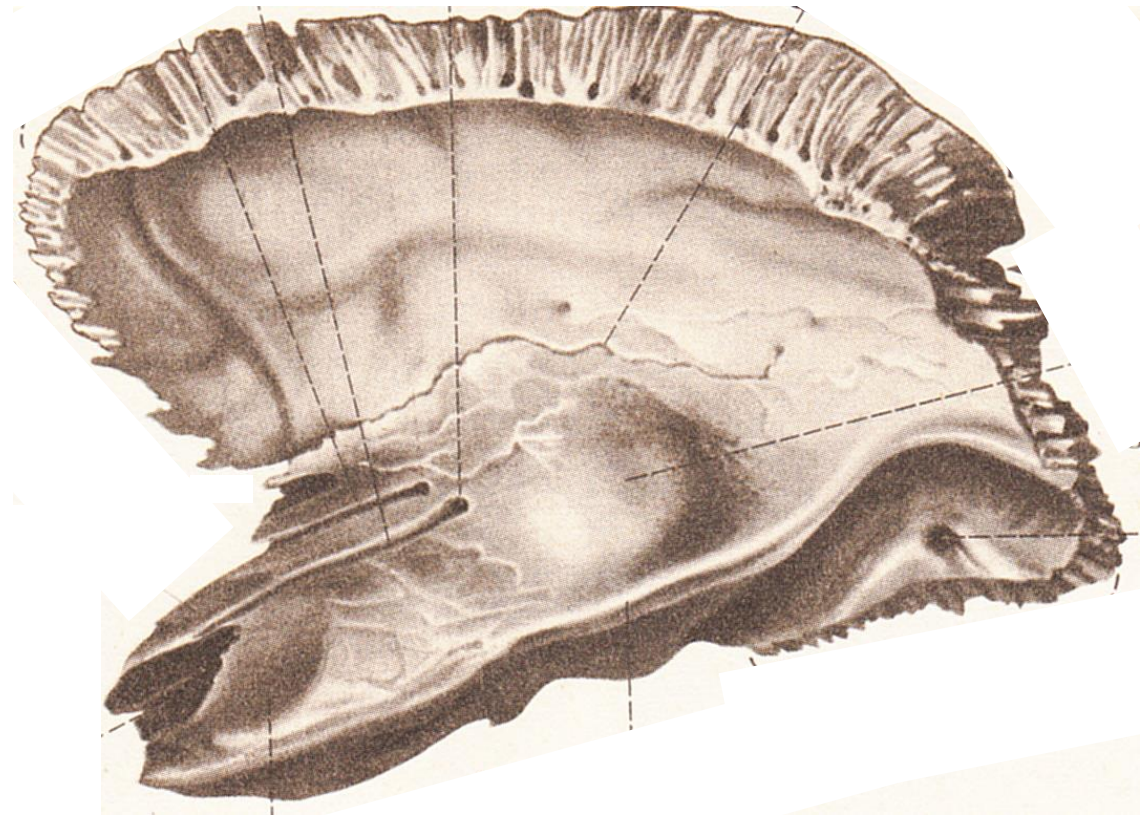
apertura interna canalis carotici

eminentia arcuata

tegmen tympani

hiatus canalis nervi petrosi majoris et minoris

sulcus nervi petrosi majoris et minoris



Facies posterior pyramidis

margo superior - crista pyramidis

sulcus sinus petrosi superioris et inferioris

porus acusticus internus

meatus acusticus internus

fundus meatus acustici interni
(introitus canalis nervi facialis)

fossa subarcuata

apertura externa aquaeductus vestibuli

incisura jugularis (foramen jugulare)

apertura externa canaliculi cochleae

sulcus sinus sigmoidei



Facies inferior pyramidis

apertura externa canalis carotici

fossa jugularis

canaliculus mastoideus

apertura externa canaliculi tympanici
(fossula petrosa)

Processus styloideus

Foramen stylomastoideum



Pars mastoidea ossis temporalis

processus mastoideus

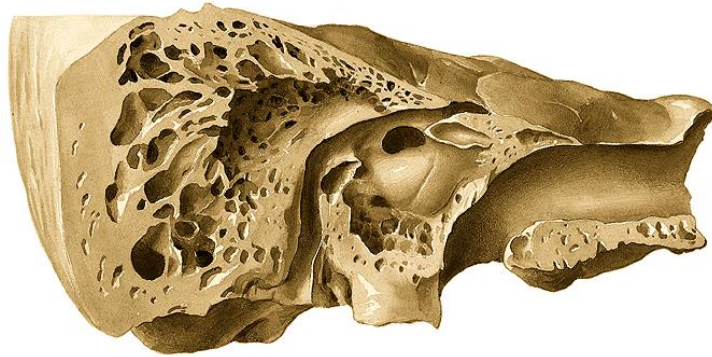
cellulae mastoideae

sulcus sinus sigmoidei

foramen mastoideum

incisura mastoidea

sulcus arteriae occipitalis



Pars tympanica ossis temporalis

porus acusticus externus

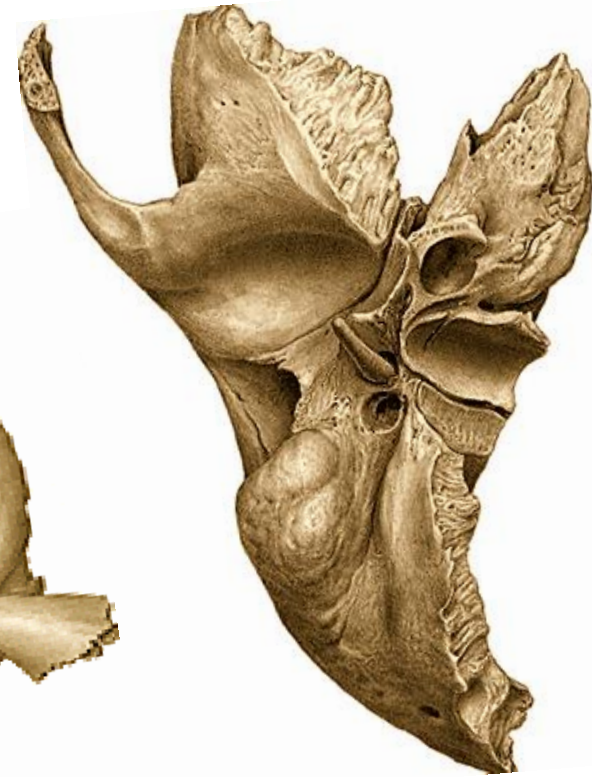
meatus acusticus externus

fissura tympanomastoidea

fissura petrotympanica

sulcus tympanicus

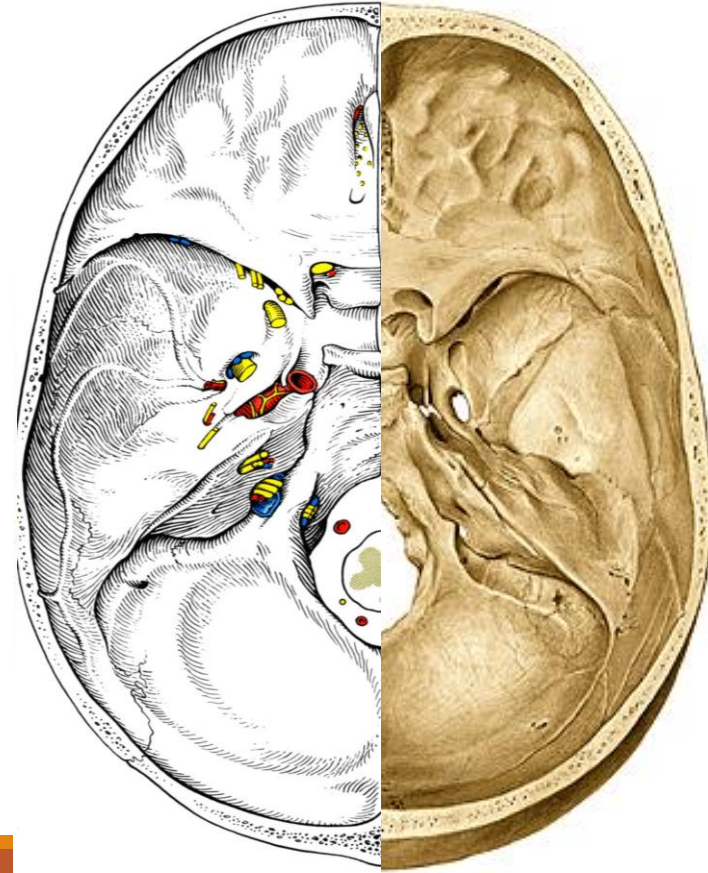
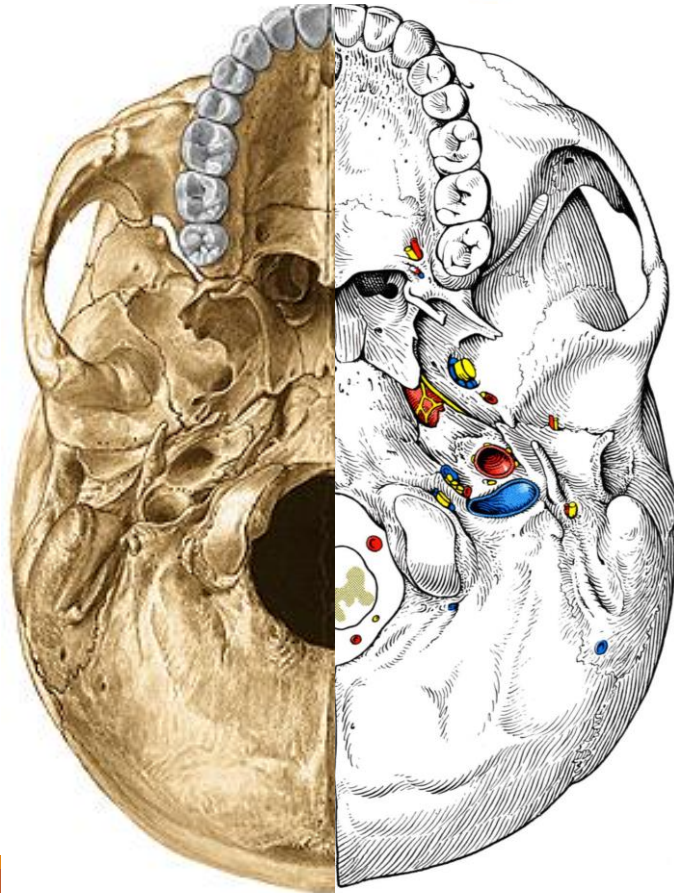
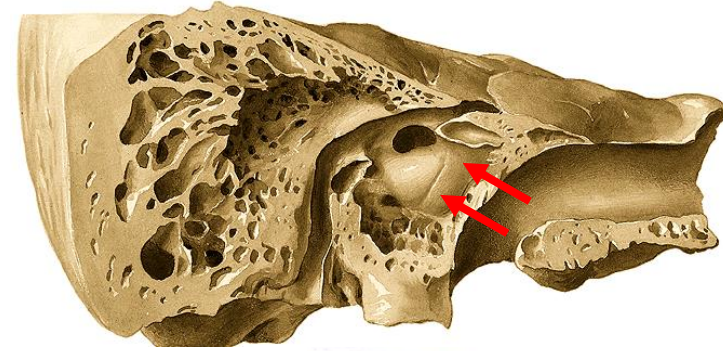
incisura tympanica



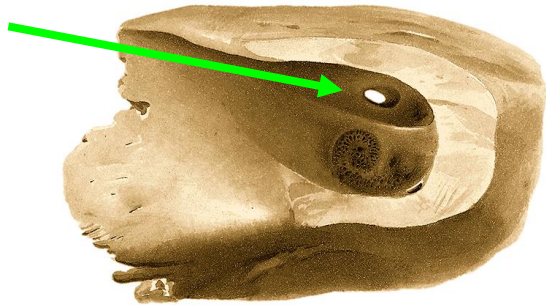
Canals in temporal bone

1. canalis caroticus
2. canaliculi caroticotympanici
3. canalis nervi facialis
4. canalis musculotubarius
5. canaliculus chordae tympani
6. canaliculus tympanicus
7. canaliculus cochleae
8. canaliculus vestibuli
9. canaliculus mastoideus

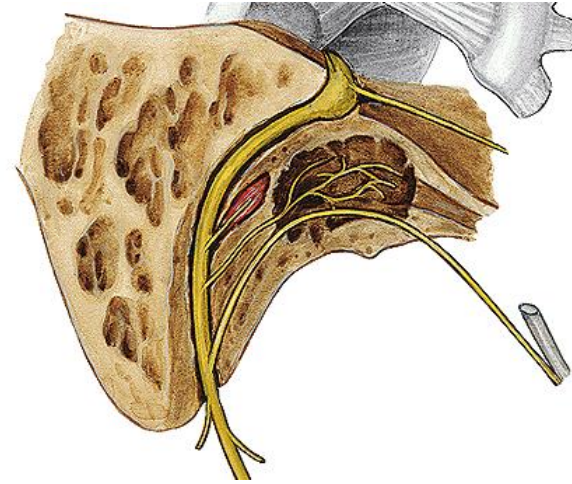
Canalis caroticus, canaliculi caroticotympanici



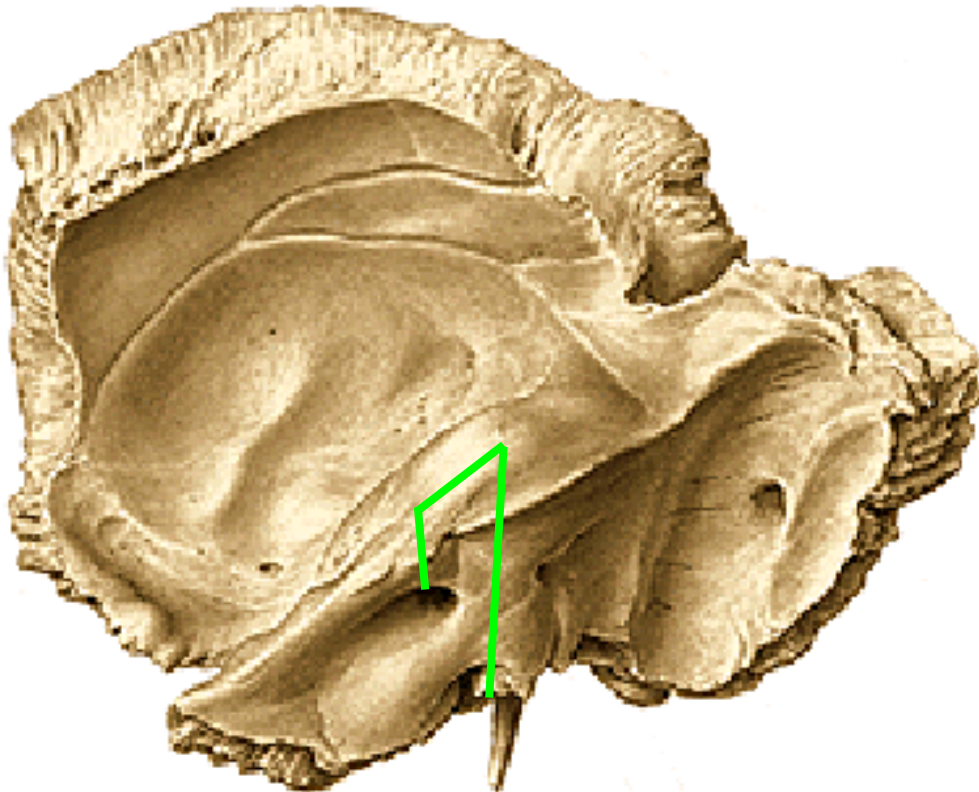
Canalis nervi facialis, canaliculus chordae tympani



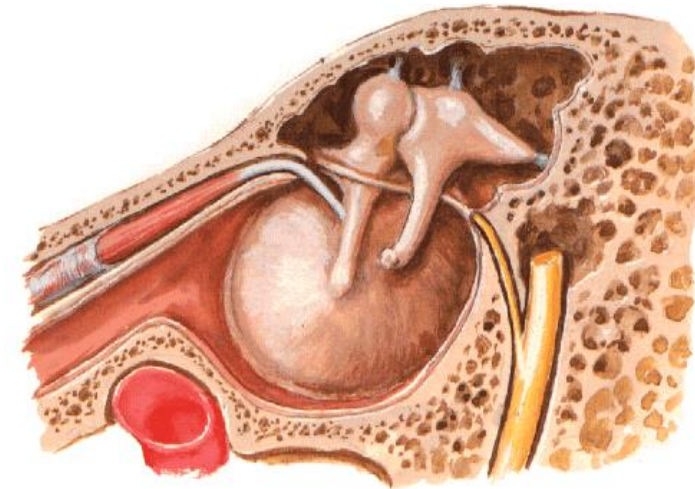
introitus canalis nervi facialis



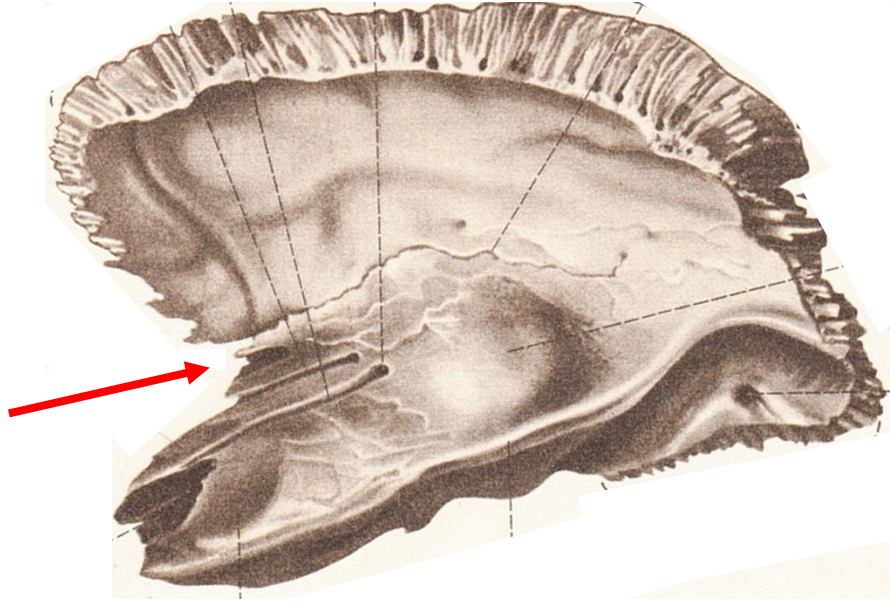
fissura petrotympanica



foramen stylomastoideum

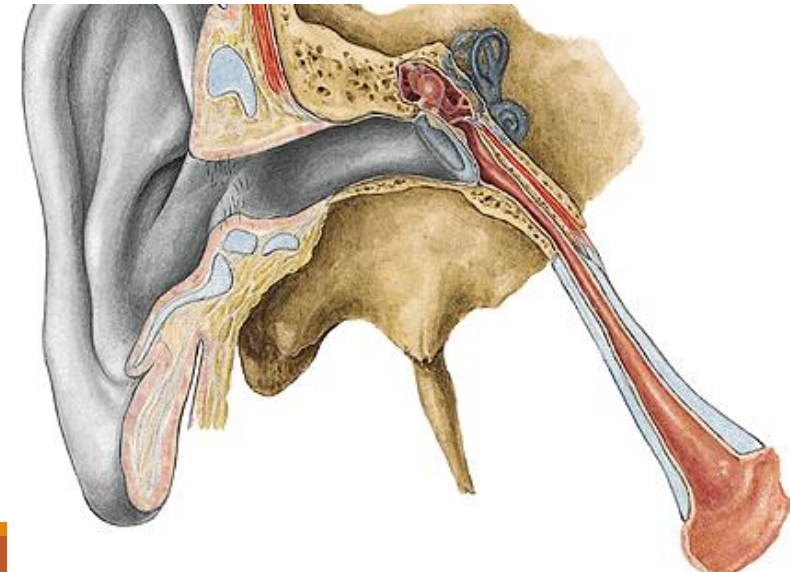
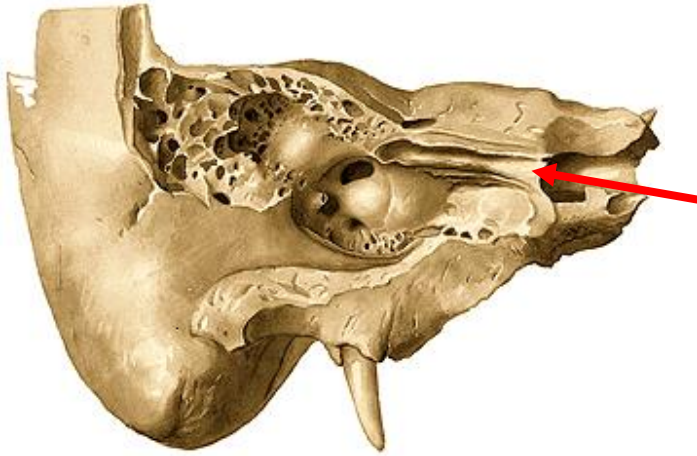
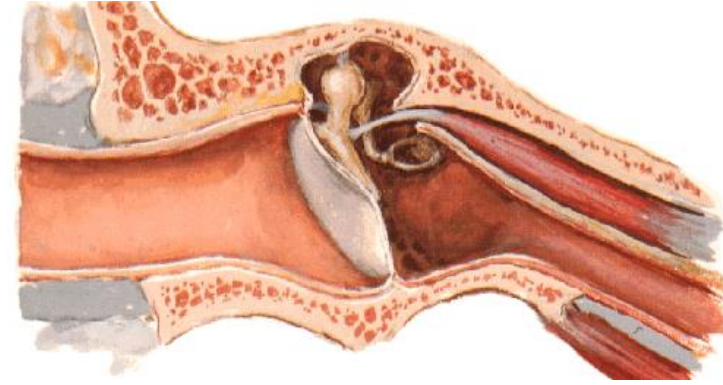


Canalis musculotubarius

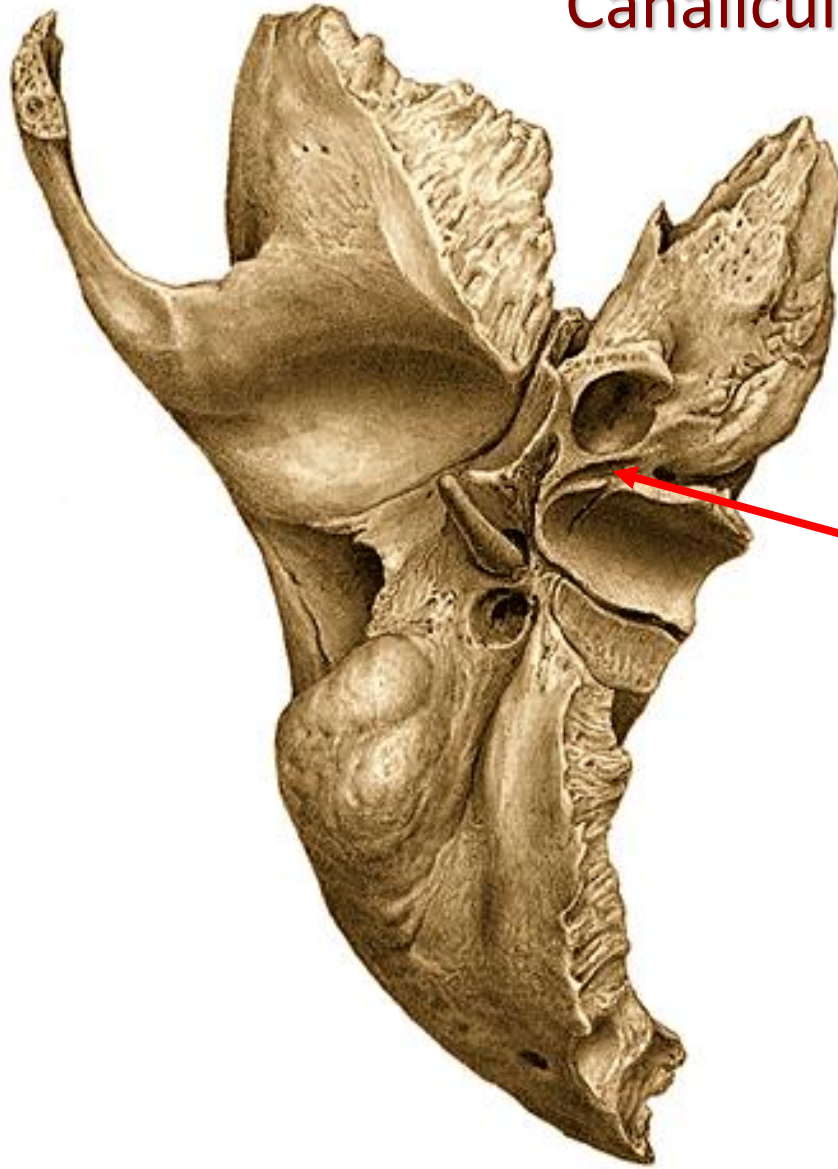


semicanalis muscoli tensoris tympani

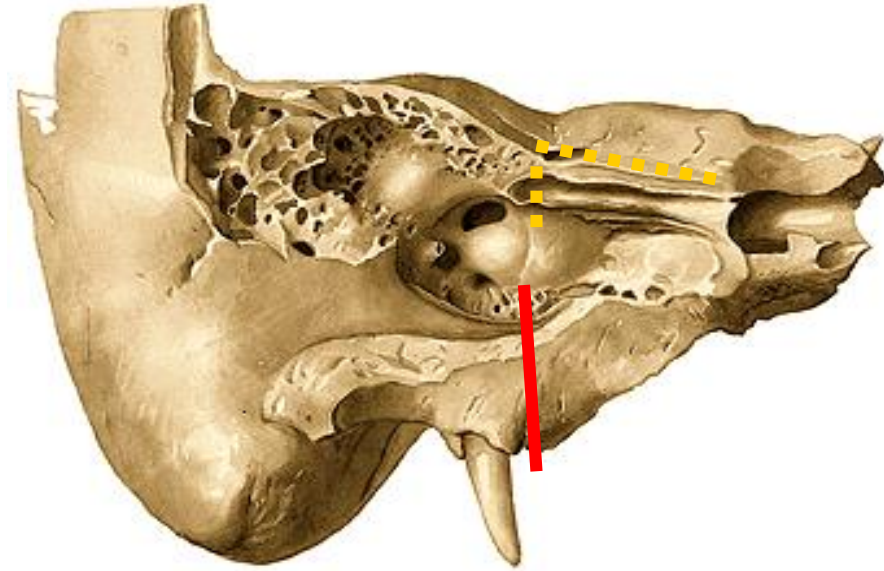
semicanalis tubae auditivae



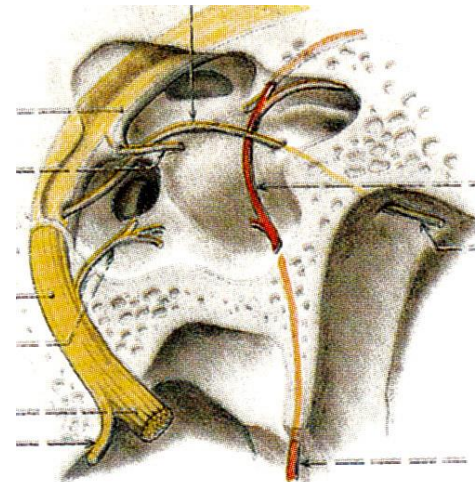
Canaliculus tympanicus



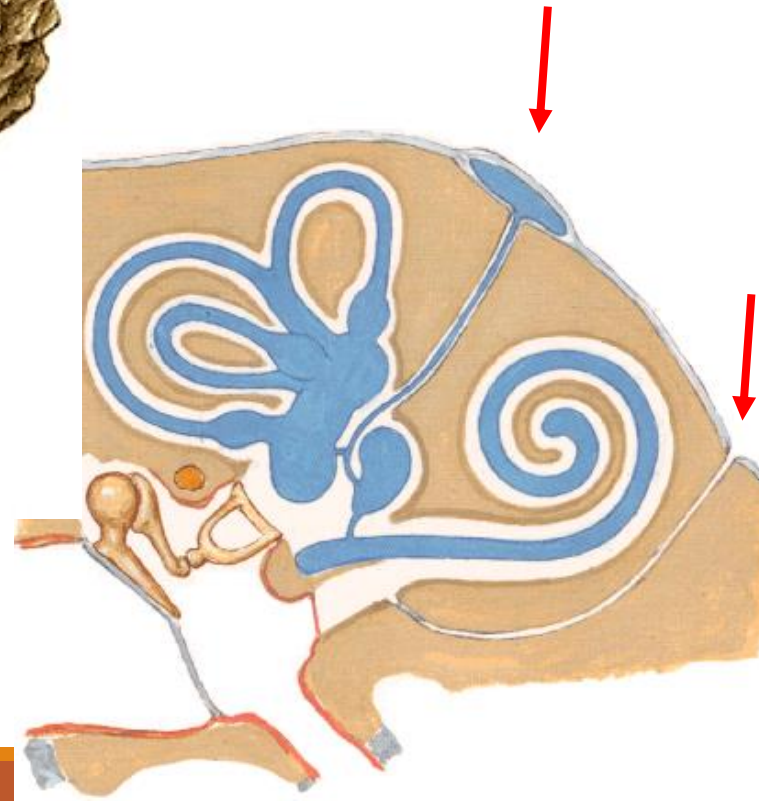
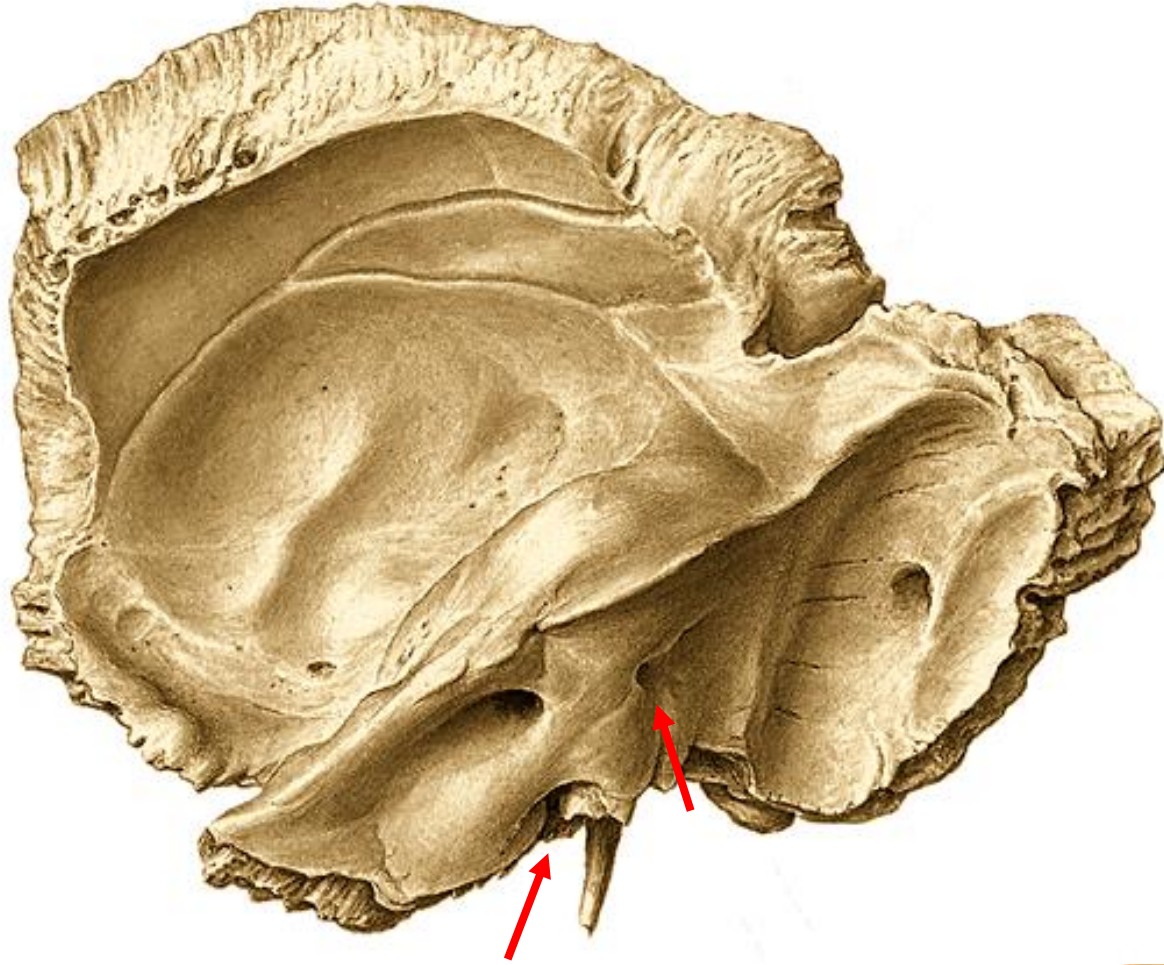
apertura externa canaliculi tympanici



apertura interna canaliculi tympanici



Canaliculus cochleae, canaliculus vestibuli

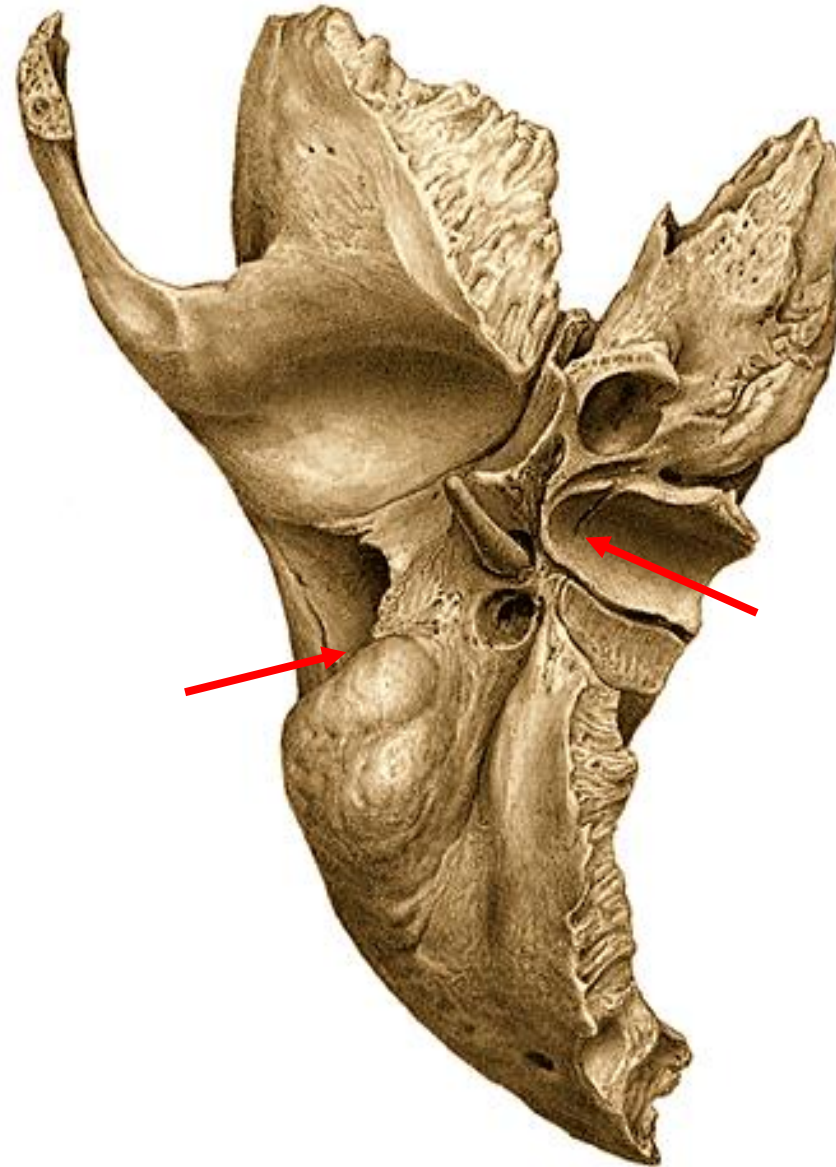


Canaliculus mastoideus

fossa jugularis

fissura tympanomastoidea

(nervus auricularis nervi vagi)

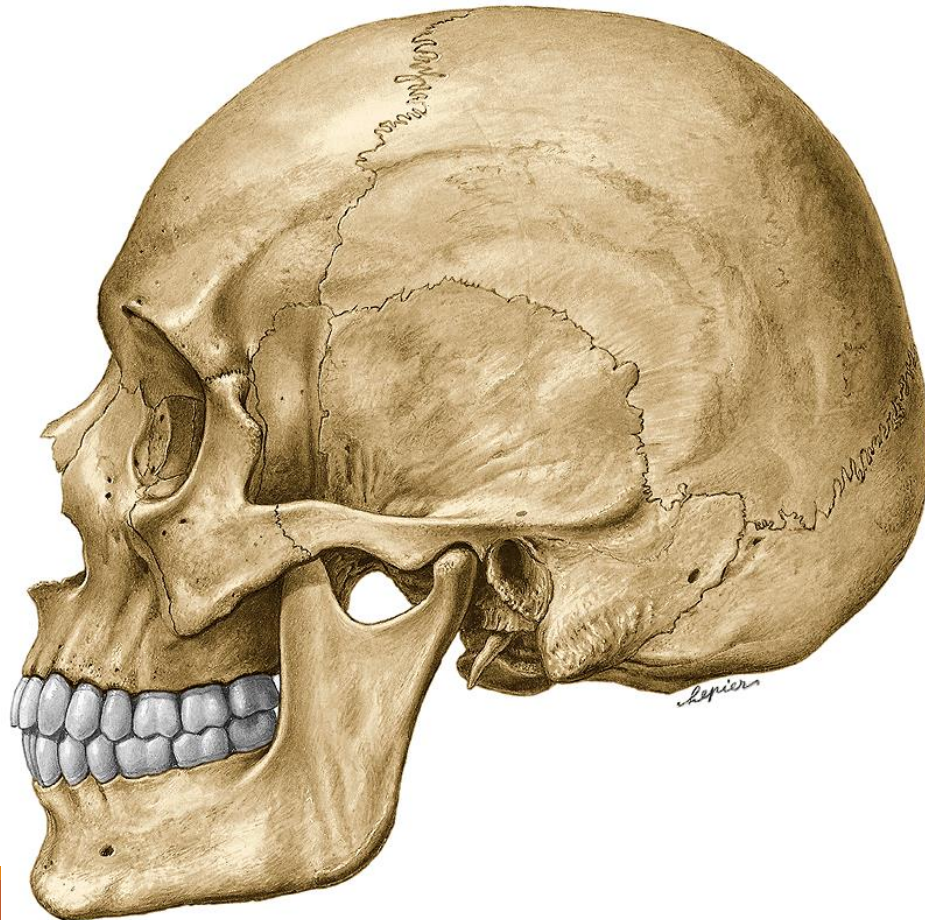


Os frontale

Squama ossis frontalis

Partes orbitales

Pars nasalis ossis frontalis



Squama ossis frontalis (facies anterior)

sutura coronalis

tubera frontalia

arcus superciliares

glabella

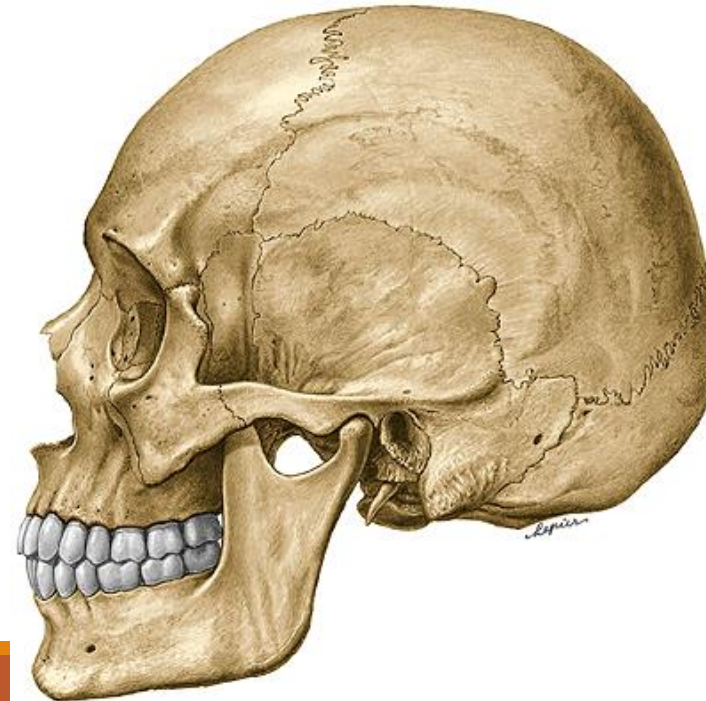
margo supraorbitalis

incisura frontalis (foramen frontale)

incisura supraorbitalis

processus zygomaticus

linea temporalis superior



Squama ossis frontalis

crista frontalis

sulcus sinus sagittalis superioris

impressiones digitatae/gyrorum

juga cerebralia

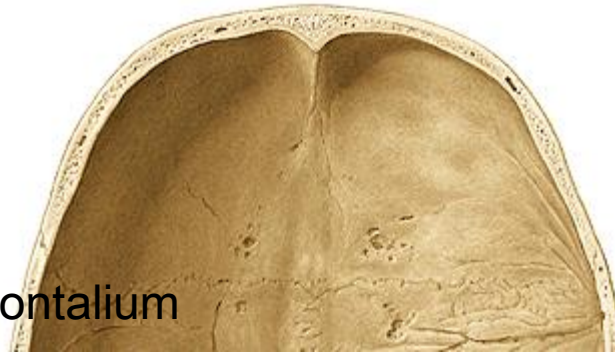
foramen caecum

sulci arteriosi

sinus frontalis

septum sinuum frontaliu

apertura sinuum frontaliu



Partes orbitales et pars nasalis ossis frontalis

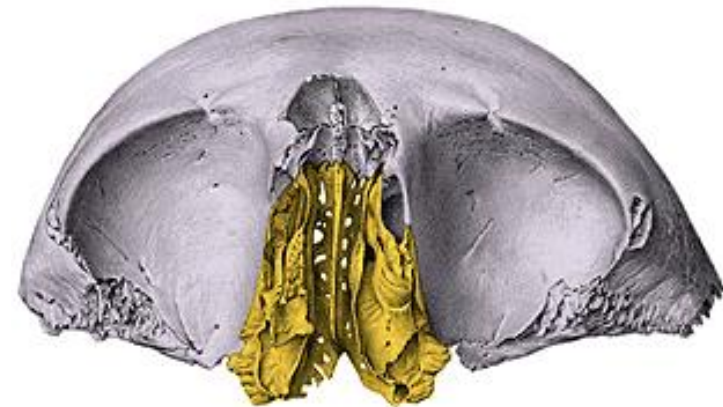
fossa glandulae lacrimalis

spina (fovea) trochlearis

foramen ethmoidale anterius

foramen ethmoidale posterius

incisura ethmoidalis

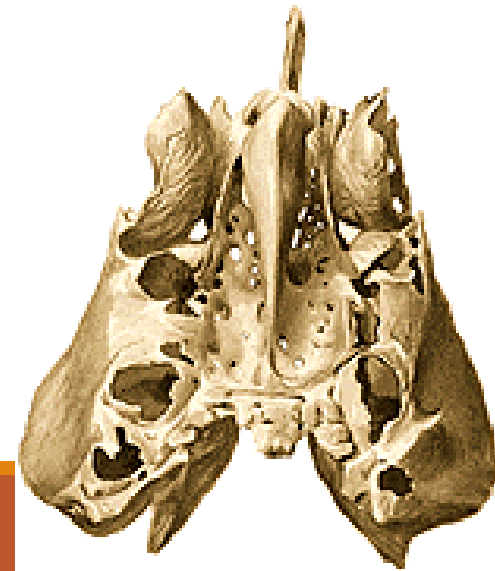
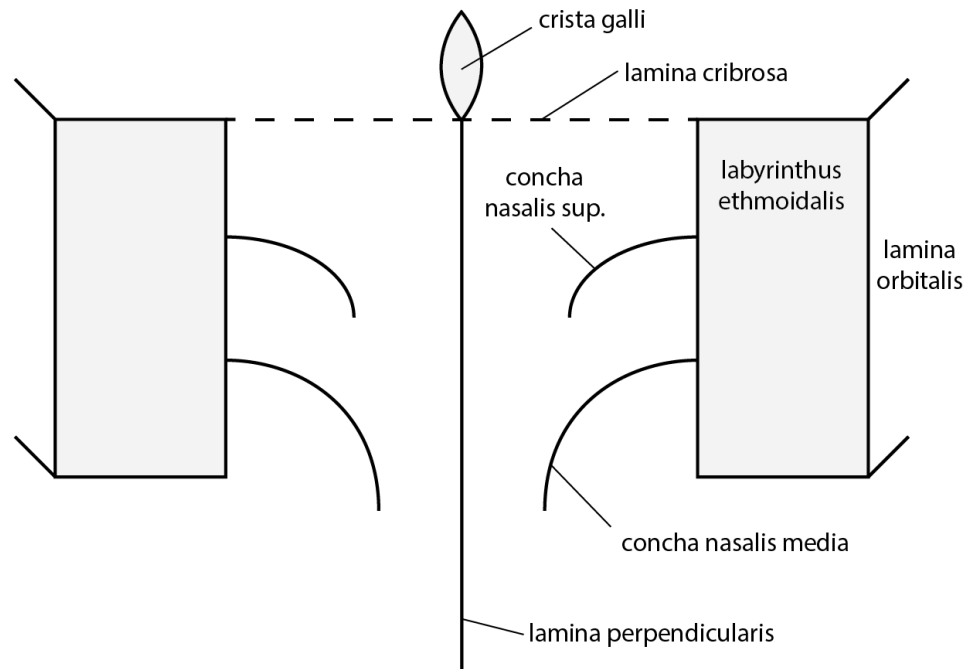
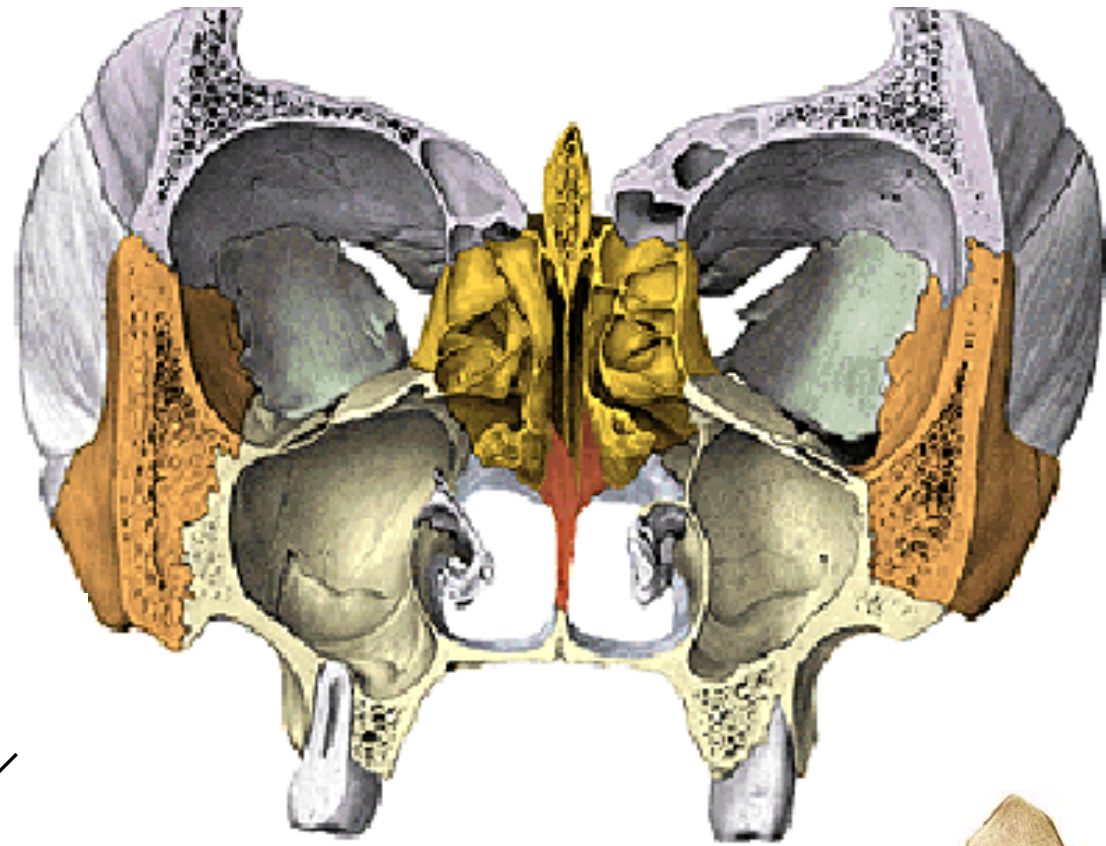


Os ethmoidale

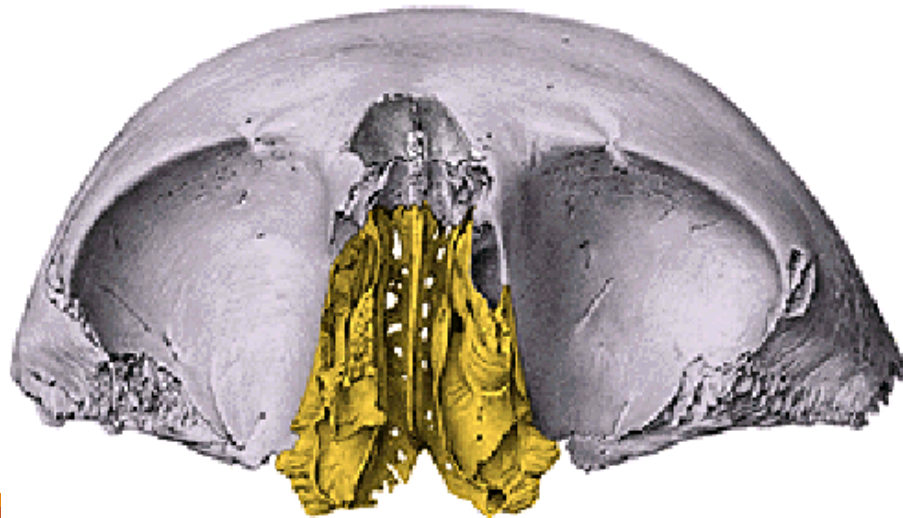
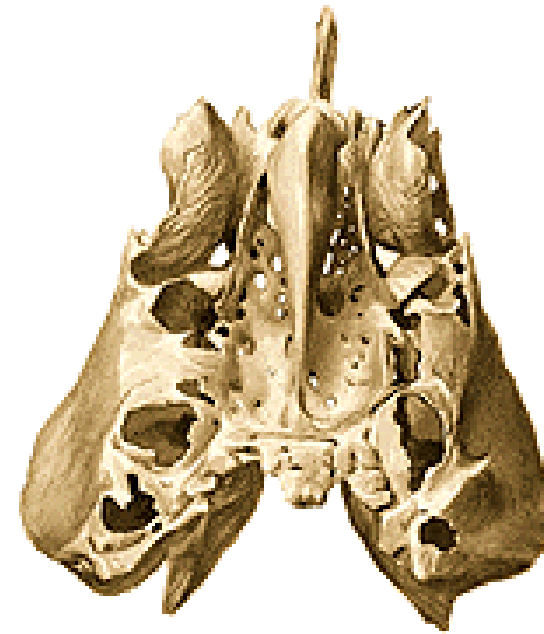
lamina cribrosa

lamina perpendicularis

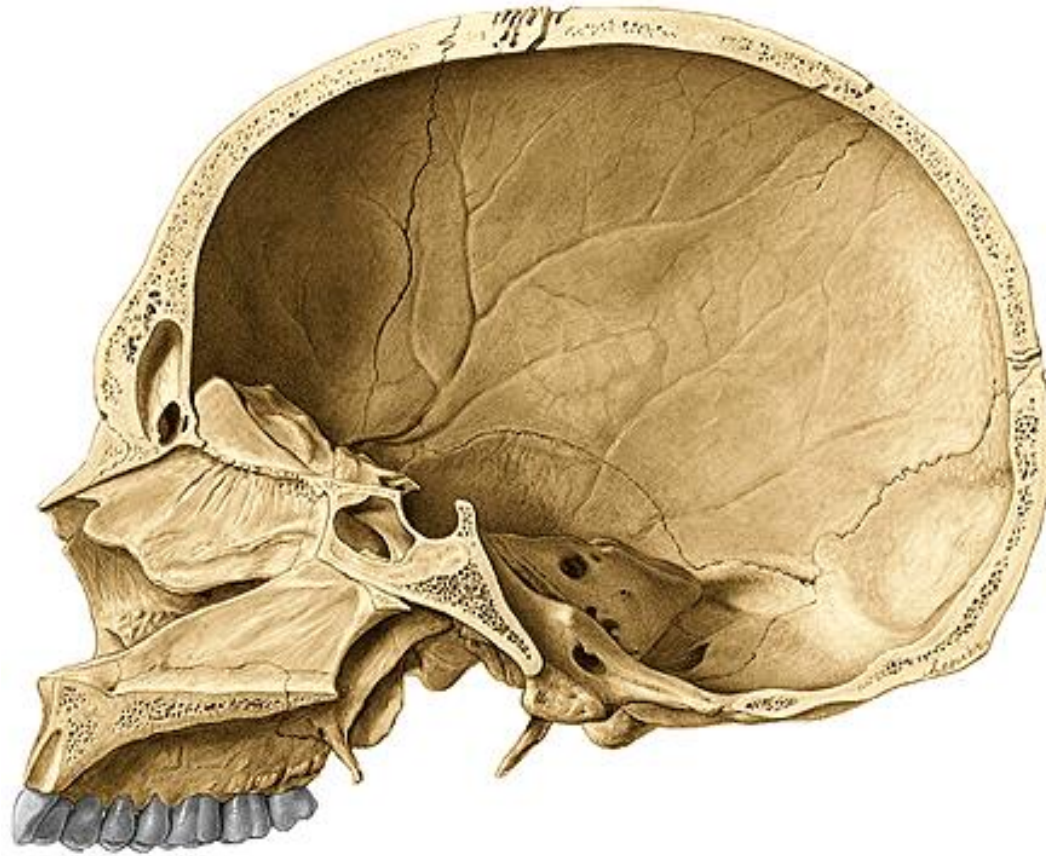
labirynthi ethmoidales



Lamina cribrosa ossis ethmoidalis

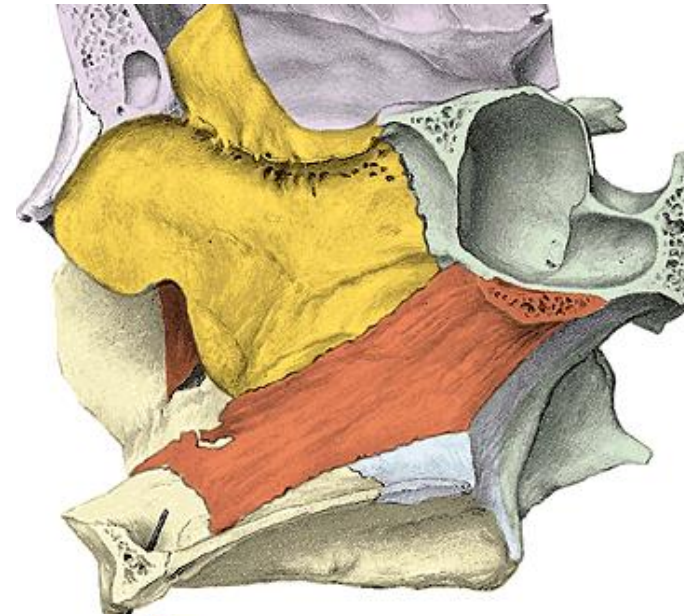


Lamina perpendicularis ossis ethmoidalis

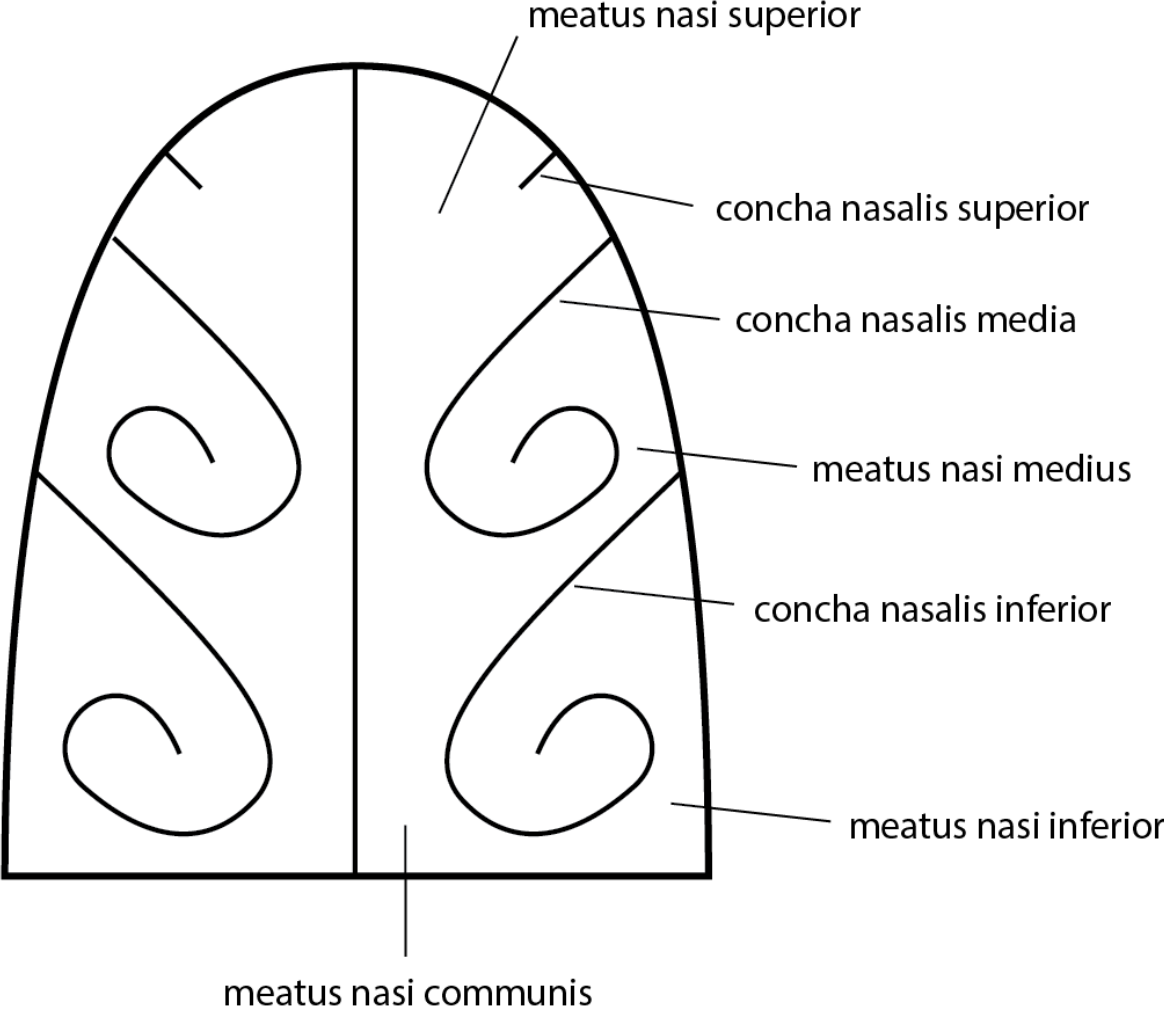


Crista galli

Septum nasi osseum



Cavum nasi



Labyrinthi ethmoidales

Cellulae ethmoidales
(anteriores, medii, posteriores)

Lamina orbitalis

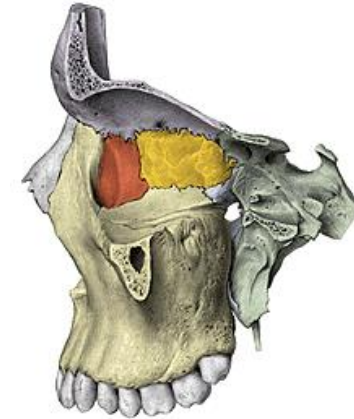
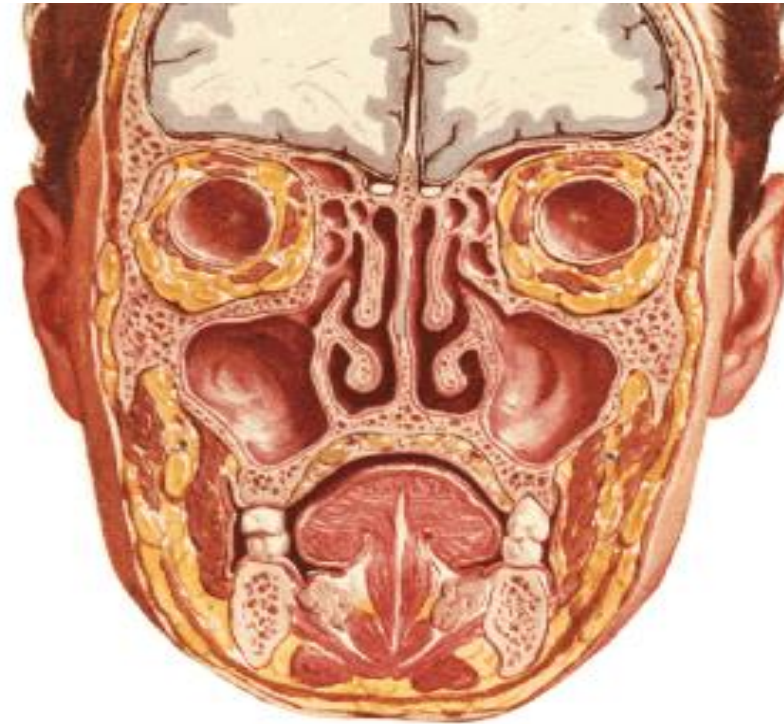
Foramen ethmoidale anterius

Foramen ethmoidale posterius

Concha nasalis superior et media

Processus uncinatus

Bulla ethmoidalis



The pictures used in this lectures were taken from following sources:

Drake et al (2010):

Gray's Anatomy for Students.

Putz, R. (2008):

Atlas of Human Anatomy Sobotta. Elsevier Books.

Keith L. Moore, Arthur F. Dalley (2005):

Clinically Oriented Anatomy. Williams and Wilkins.

Platzer, W., Kahle, W., Leonhardt H. (1992):

Locomotor system. Georg Thieme Verlag, Stuttgart, New York, 4th edition.

Čihák, R. (1987): Anatomie 1. Avicenum, Zdravotnické nakladatelství.

Own archiv of the lecturer