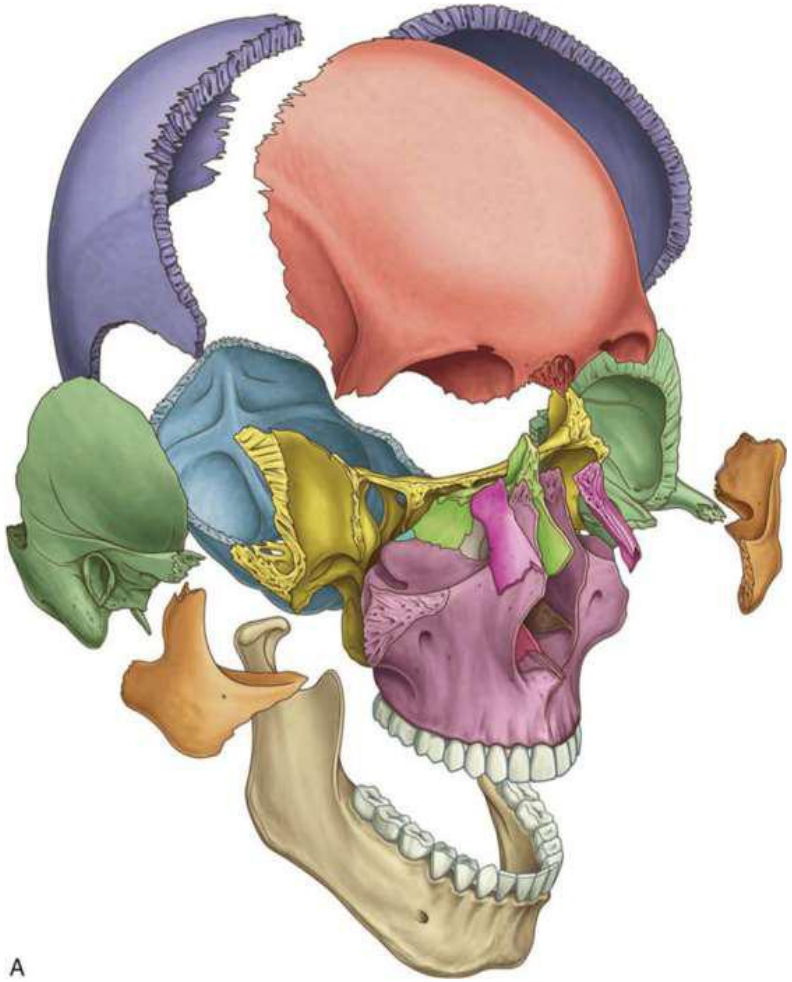
Bones of Skull



Dr Nawal

Al-Shannan

Osteology of the skull

Learning goals / general

** **Demonstrate sufficient knowledge of bone identification and morphology Including landmarks and features**

****Apply their foundational knowledge in anthropological and medical investigations using the human skeleton**

** **Engage in real-world problems where skeletal identification is used**

- **Learning objectives :**
- **At the end of these lectures the student should be able to know:**

- **Parts of skeleton (axial and appendicular)**
- **Parts of skull**
- **Sutures of skull**
- **Different bones of skull**
- **Different views (Norma) of skull**
- **Interior of the skull**
- **Divisions of the cranial fossa**
- **Anterior cranial fossa , middle and posterior .**
- **Foramens and structures passing through them**
- **Mandible**
-

Skull osteology

Contents

- • **External Features:**
- **Views**

Anterior View (Frontal)

Lateral View

Posterior View (Occipital

Superior View

Inferior View

- **Internal Features**
- – Cranial Cavity
- • Anterior
- • Middle
- • Posterior

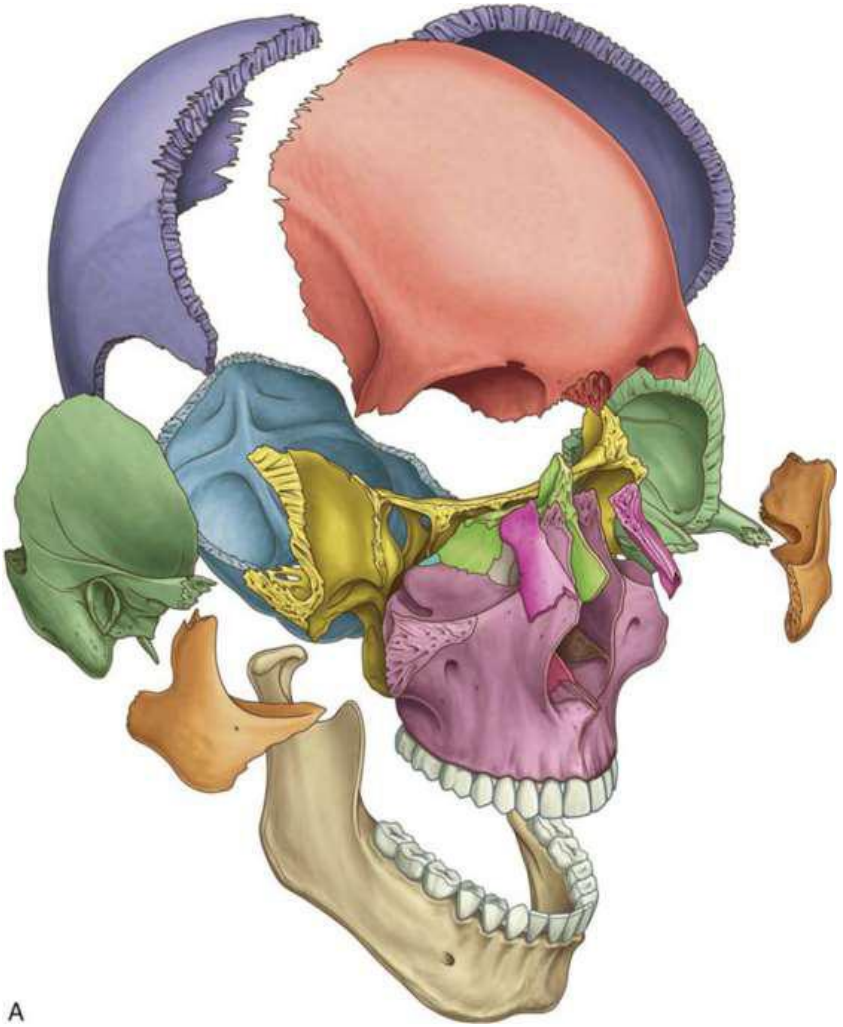
- **Mandible**

Skull

- It is composed of several separate bones united by **immobile** joints called **sutuers** , the connective tissue between the bones is called **sutural ligaments** the .exception is the **mandible** which is united to the skull by mobile temperomandibular joints(TMJ).

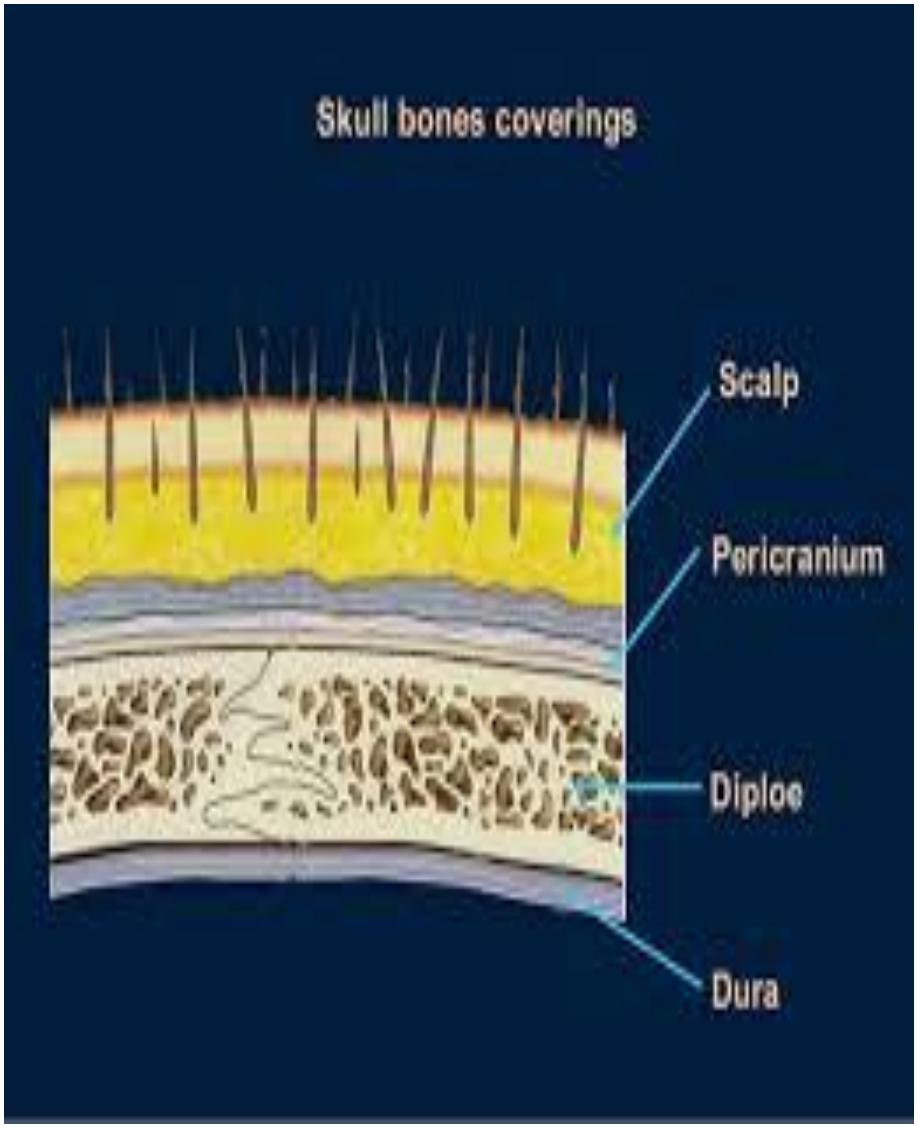
skull

- The skull can be divided into:
- 1. **Brain box** ,which encloses the brain
  2. Bones of the **face** and **mandible**
- 3. The upper part of the cranium is called **vault**
- 4. The lowest part of the skull is the **base** of the skull.

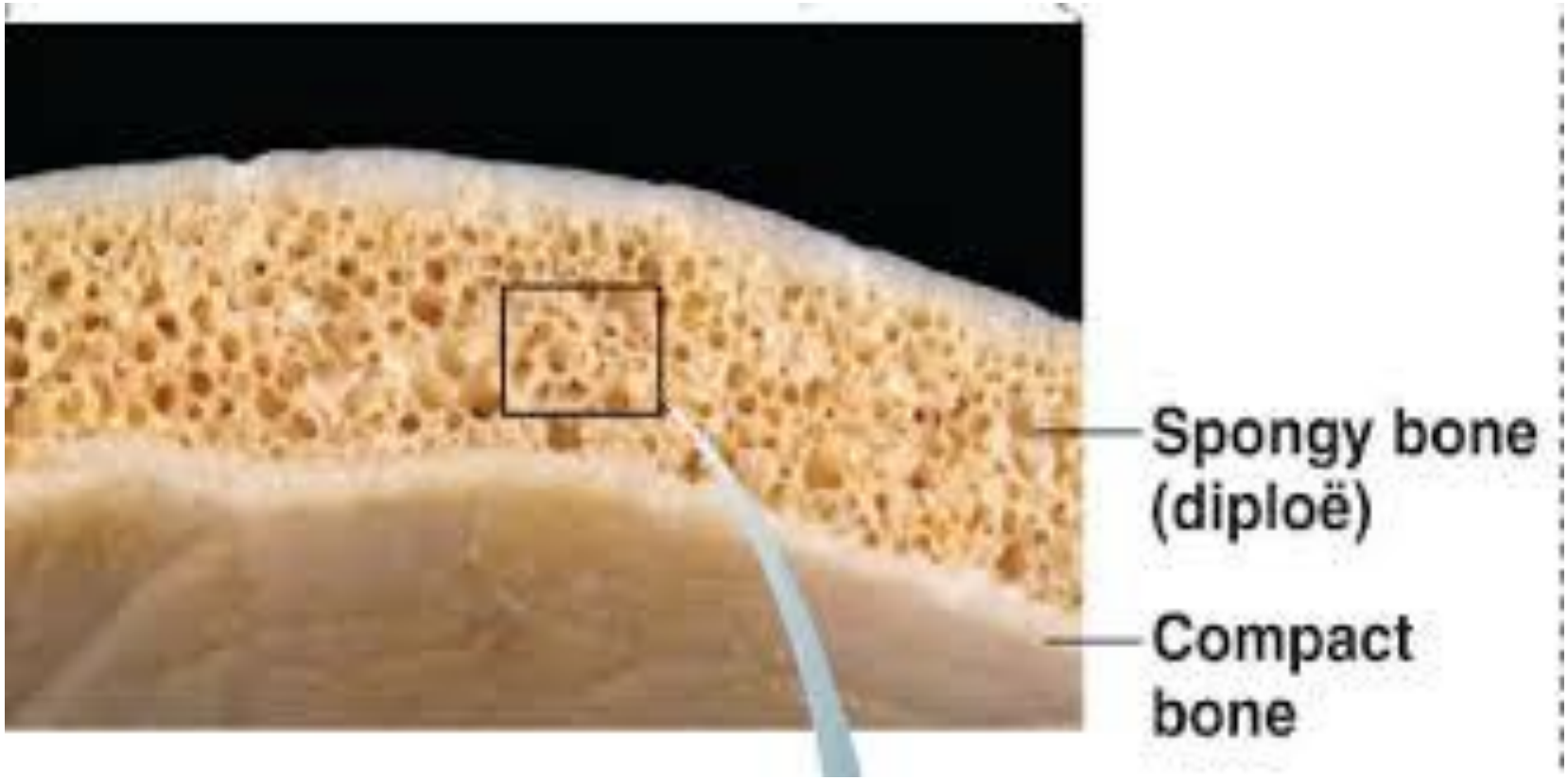


Bones of skull

- Each **bone** is made up of **external** and **internal** tables of **compact bone** separated by a layer of **spongy bone** called **diploe**.
- the internal table is thinner and more brittle than external table ,
- Bones of skull are covered with **periosteum**



Diploe



Normal anatomical position

- **Orbitomeatal plane = Frankfort horizontal plane)**

: is a standered craniometric reference ,oriented as

- The **inferior margin of the orbit** and the **superior margin of the external acoustic opening** of both sides lie in the same horizontal plane

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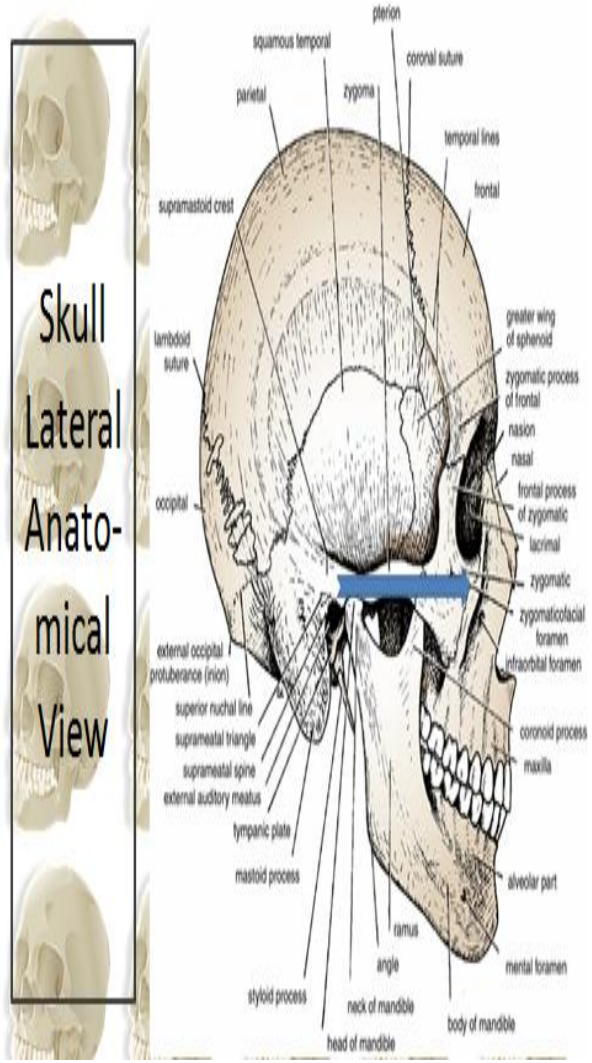


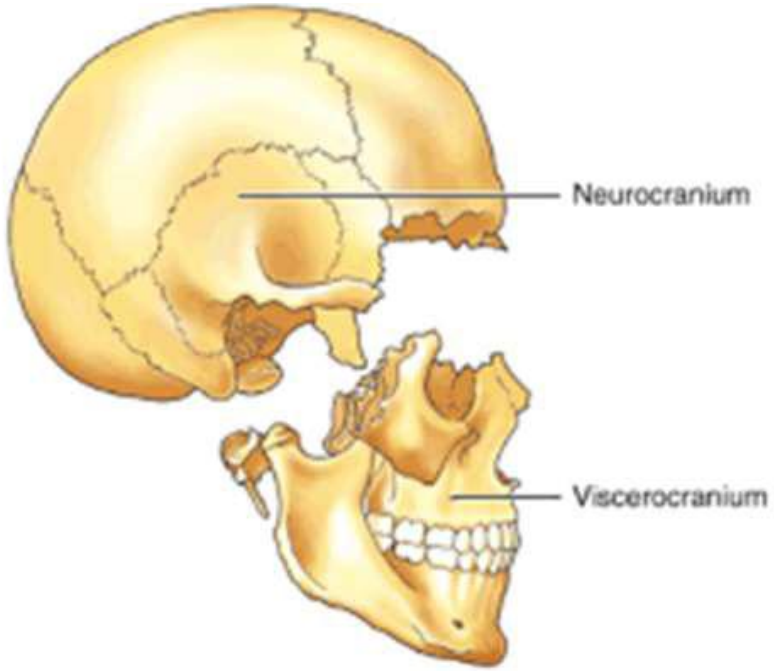
Parts of skull

- The cranium has 22 bones forming two parts:

➢ **Neurocranium**

- Roof or Cranial **Vault,** dome-like, **calvaria** (skullcap)
- **Floor** or cranial base (basicranium).

➢ **Viscerocranium**



Neurocranium

Viscerocranium

Neurocranium

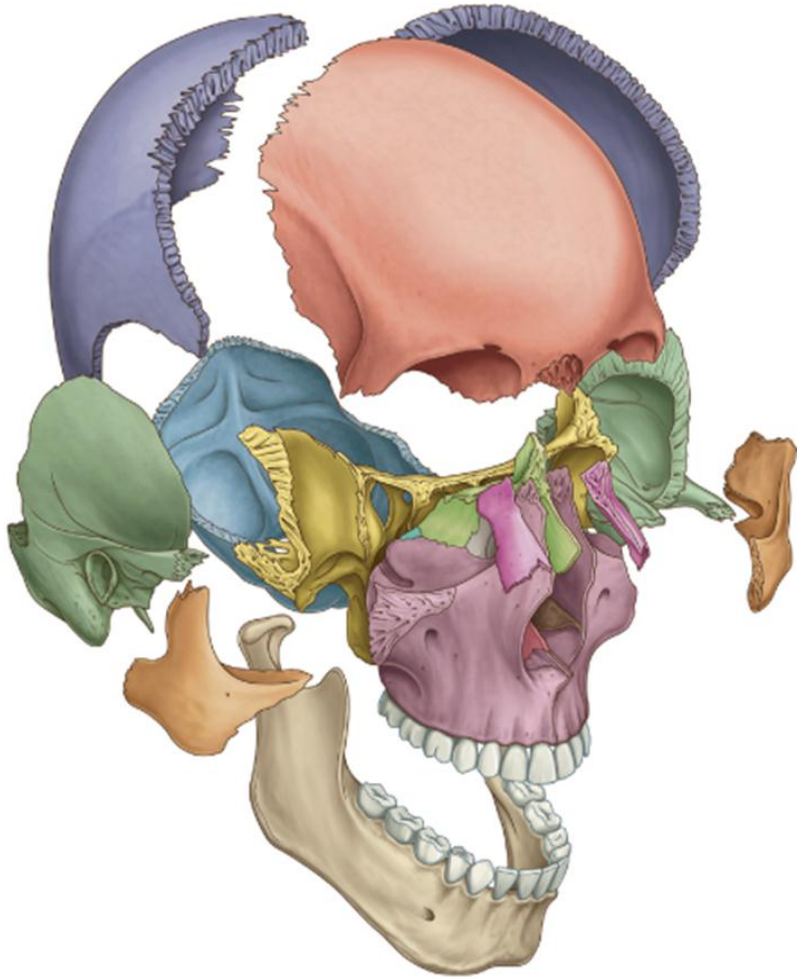
Calvaria

basocranium

Neurocranium

➢**Features:**

- ➢ – The bony case of the brain
- ➢ – has membranous coverings as cranial meninges.
- ➢ – It also contains proximal parts of the cranial nerves
- ➢ The vasculature of the brain.



Neurocranium

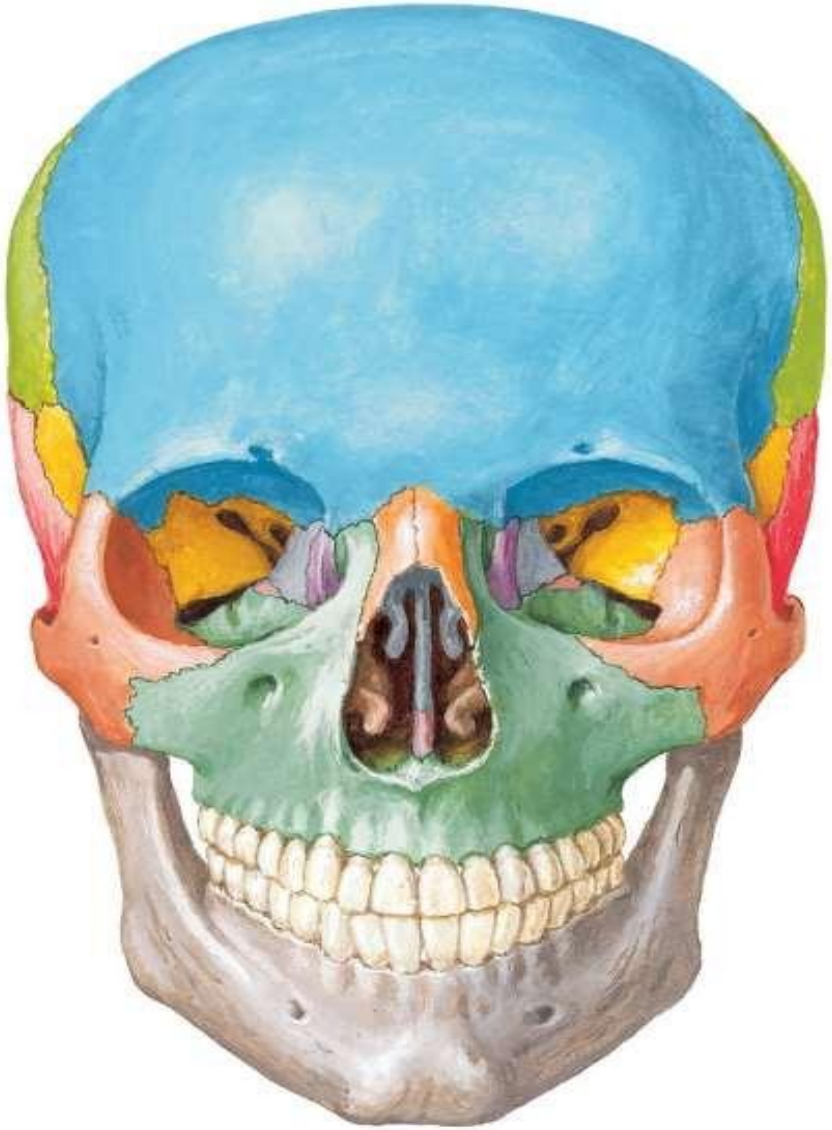
in adults is formed by a series of **eight** bones:

- **– 4 singular bones** centered on the **midline**
- **Unpaired:**
- Frontal 1
- Occipital1
- Sphenoid1
- Ethmoid1

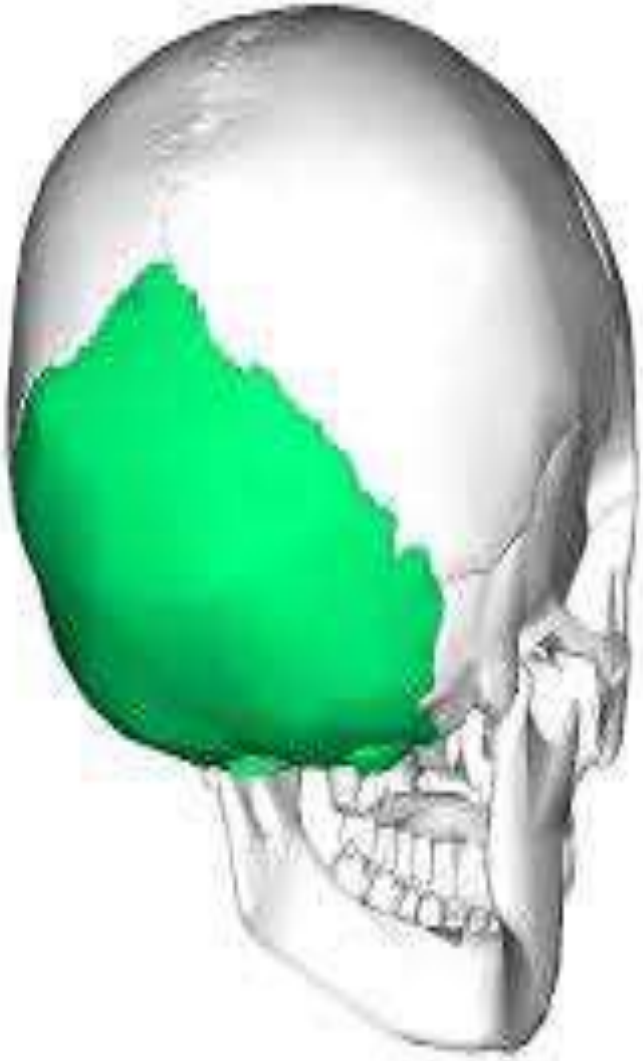
- **2 sets of bones** occurring as **bilateral** pairs

- **Paired:**
- Parietal 2
- Temporal 2

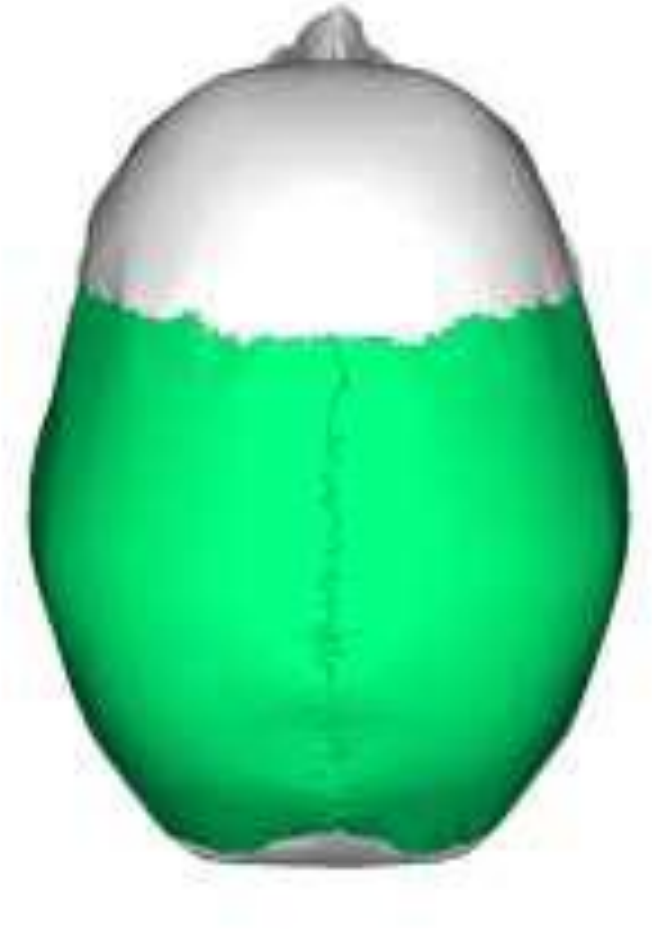
Frontal



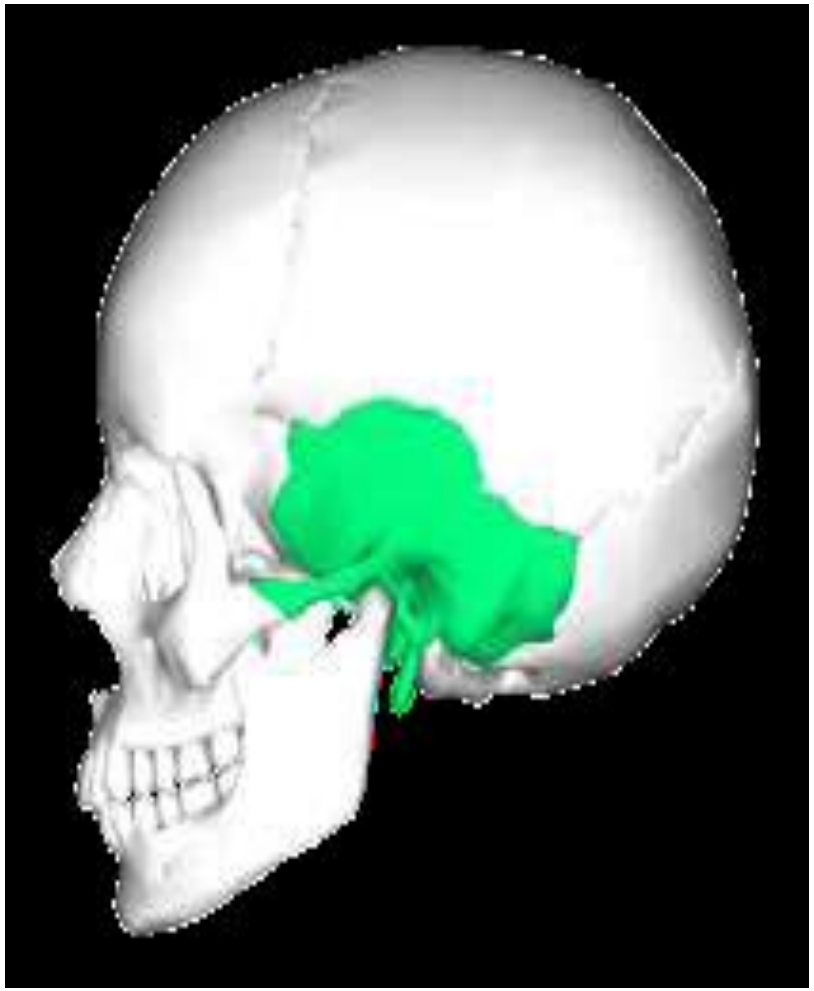
occipital



Paraietal bone

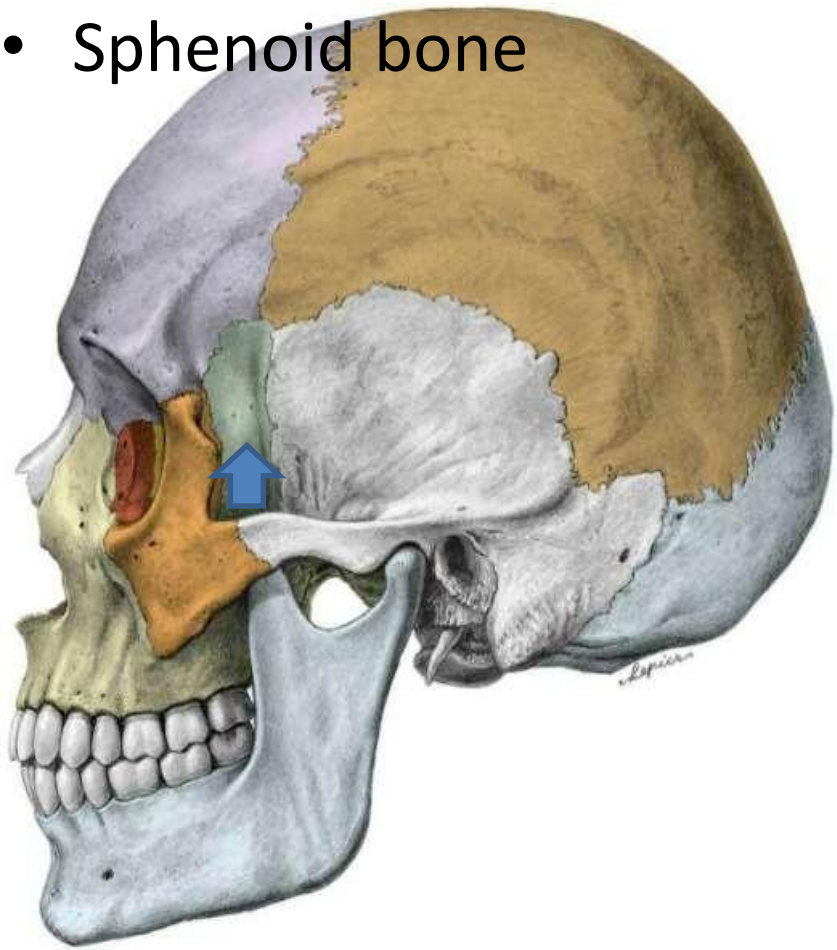


temporal bone

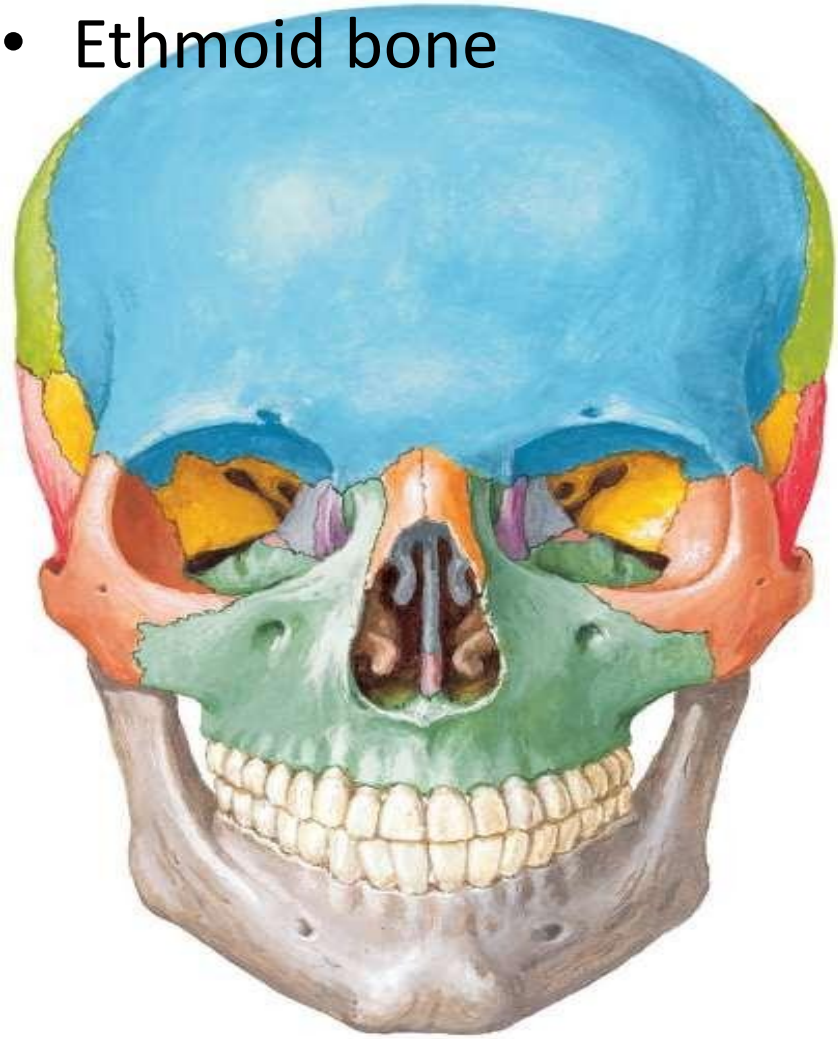


Neurocranium

- Sphenoid bone



- Ethmoid bone

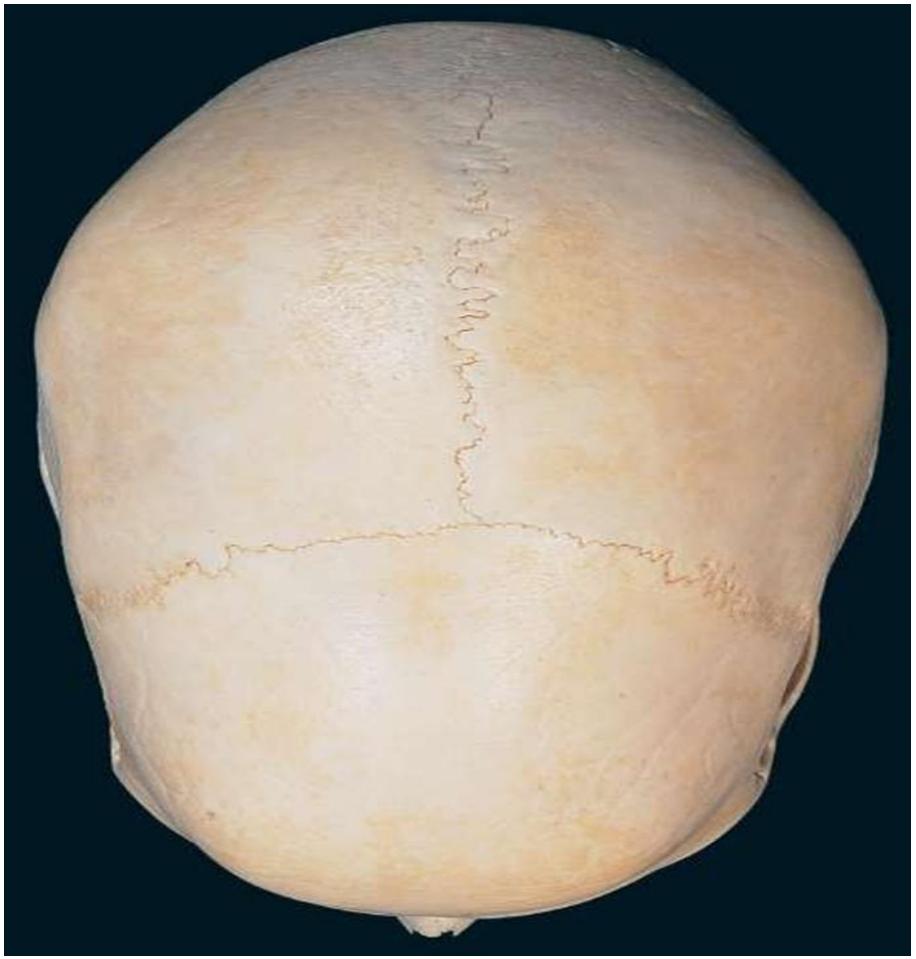


Calveria

The bones making the **calvaria** are primarily flat bones

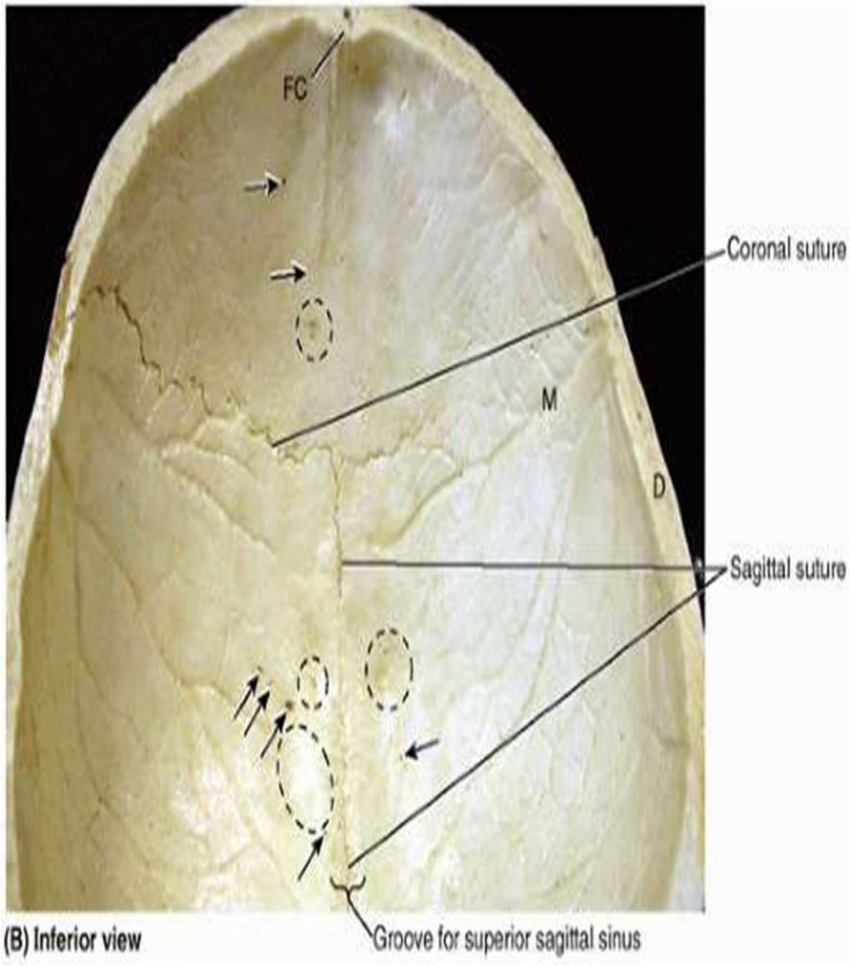
– **Frontal ,paraietal and occipital**

–



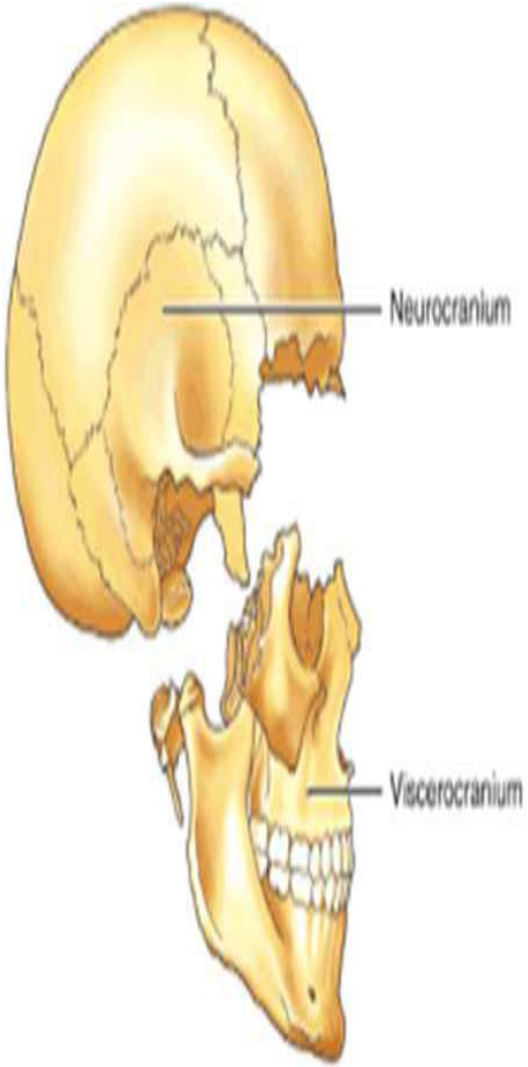
Internal aspect of calveria

- - grooves for middle meningeal artery
- Groove for superior sagittal sinus
- Pits for arachnoid granulations



Viscerocranum

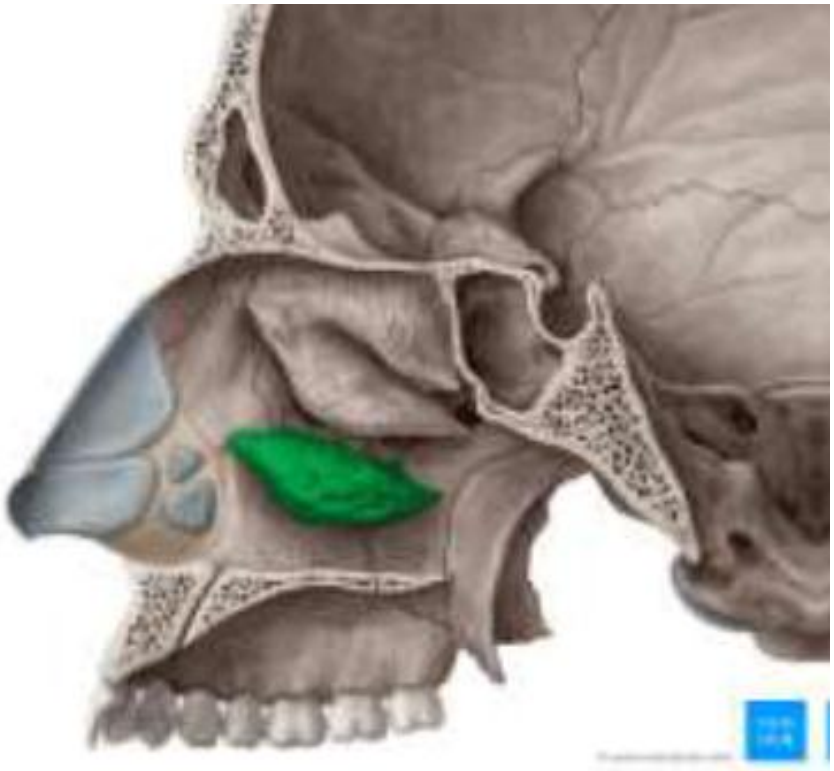
- It forms the anterior part of the cranium
- Consist of the bones surrounding the mouth (upper and lower jaws) nose, orbit
- It consists of 14 irregular bones:
- 2 singular bones lying in the midline
- mandible, 1
- Vomer 1
- 6 bones occurring as bilateral pairs
- • Maxillae 2
- inferior nasal conchae 2
- zygomatic 2
- palatine 2
- nasal 2
- lacrimal bones 2



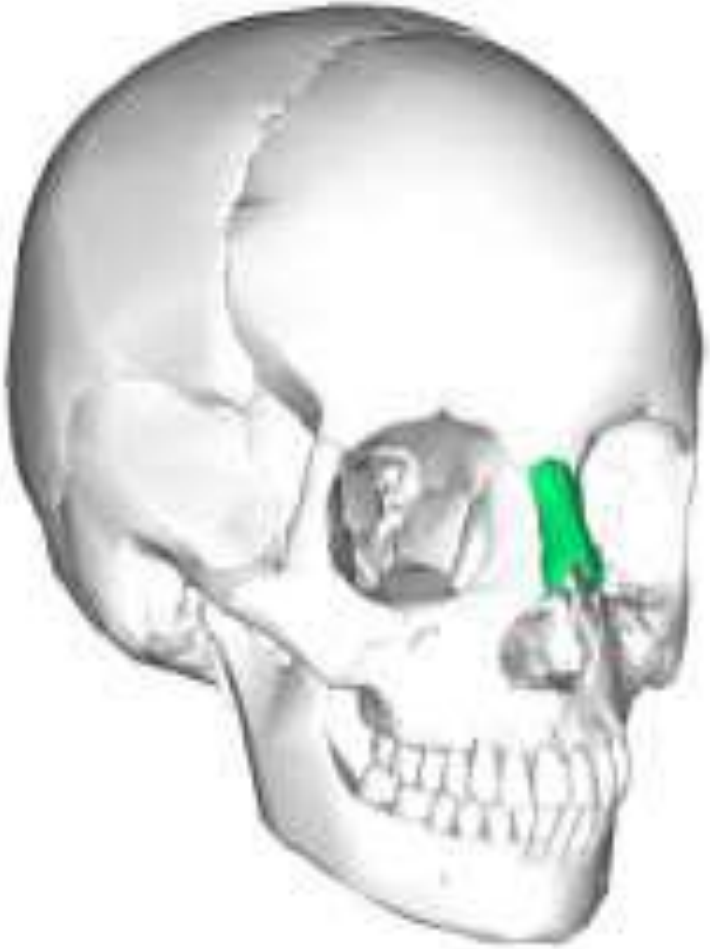
Viscerocranium

Zygoma

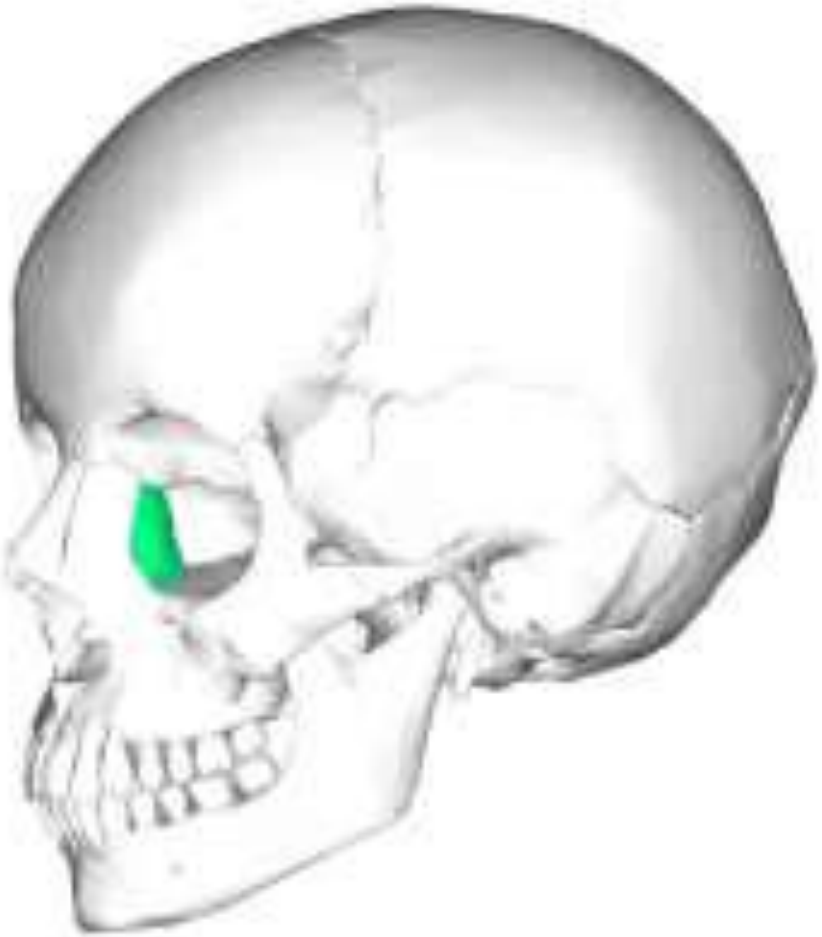
Inferior nasal chonchea



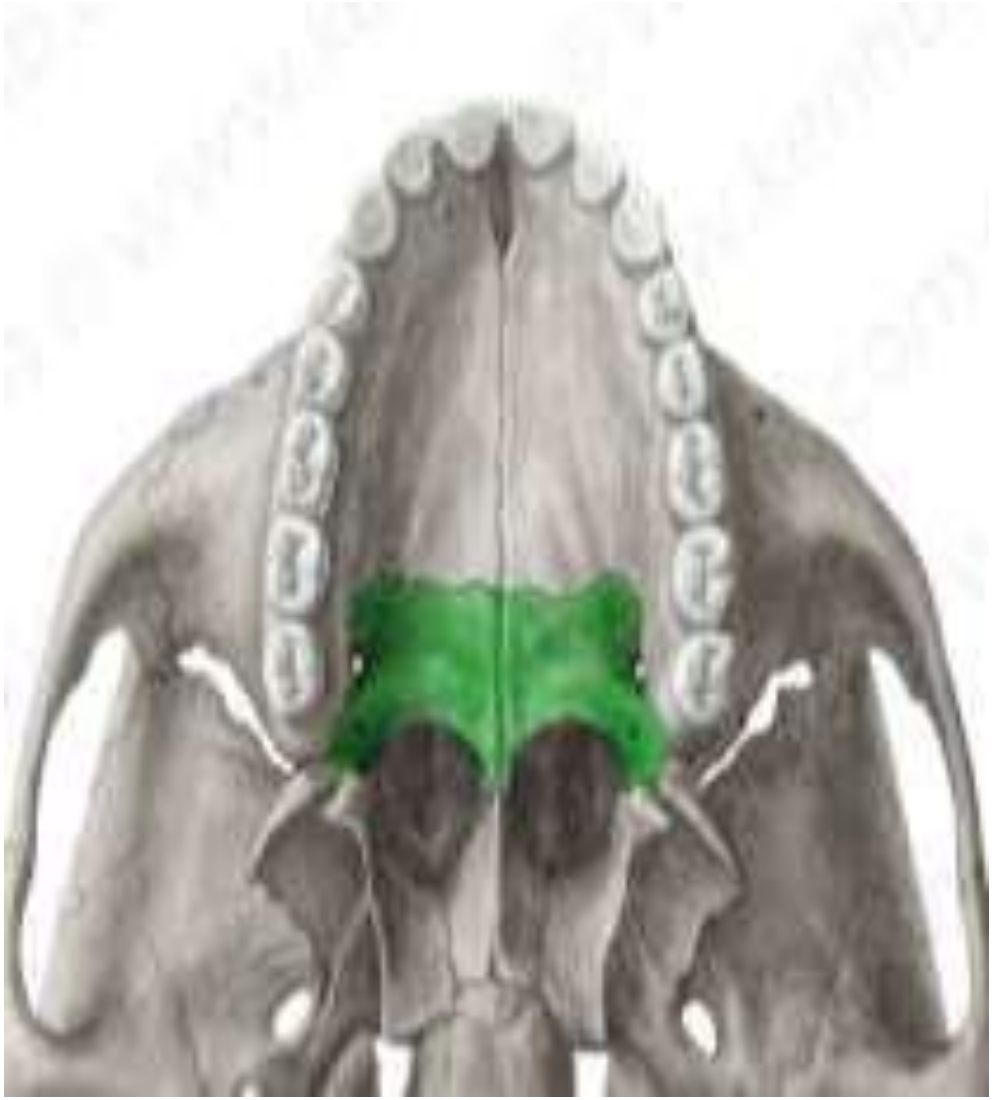
Nasal



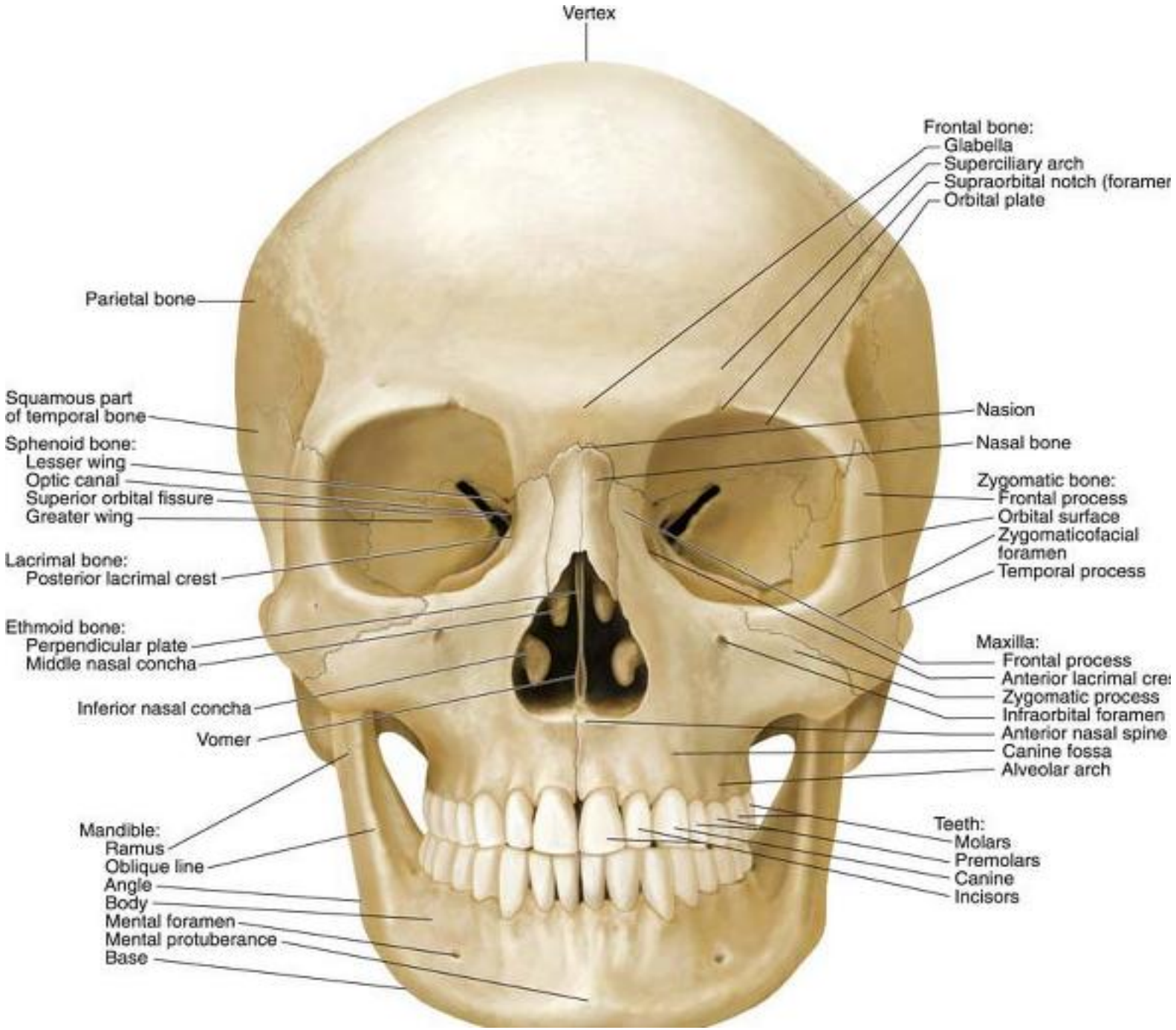
Lacrimal bones



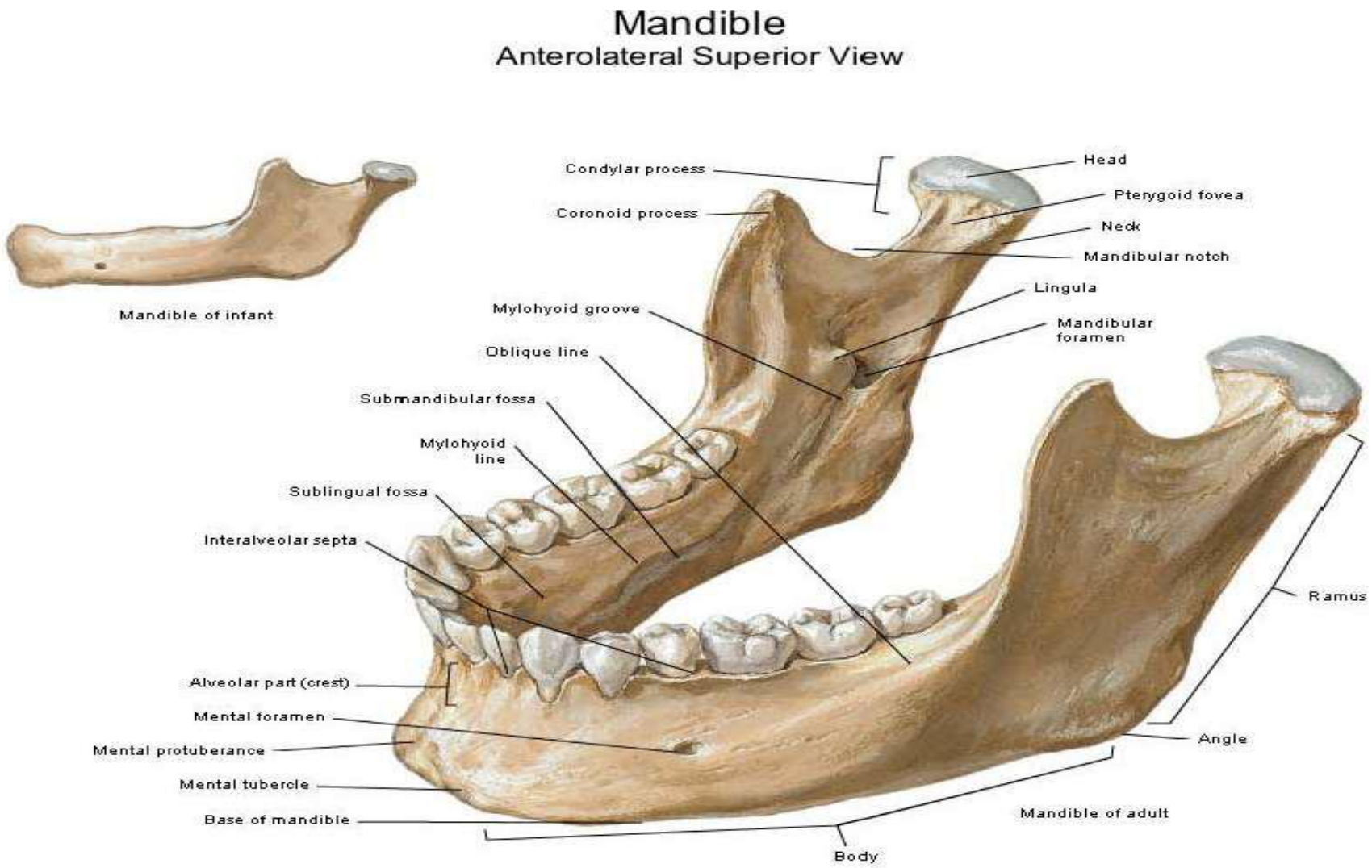
Palatine



maxilla


Vertex
Frontal bone:
Glabella
Superciliary arch
Supraorbital notch (foramen
Orbital plate
Parietal bone
Squamous part of temporal bone
Sphenoid bone:
Lesser wing
Optic canal
Superior orbital fissure
Greater wing
Lacrimal bone:
Posterior lacrimal crest
Ethmoid bone:
Perpendicular plate
Middle nasal concha
Inferior nasal concha
Vomer
Mandible:
Ramus
Oblique line
Angle
Body
Mental foramen
Mental protuberance
Base
Nasion
Nasal bone
Zygomatic bone:
Frontal process
Orbital surface
Zygomaticofacial foramen
Temporal process
Maxilla:
Frontal process
Anterior lacrimal crest
Zygomatic process
Infraorbital foramen
Anterior nasal spine
Canine fossa
Alveolar arch
Teeth:
Molars
Premolars
Canine
Incisors

Mandible


Mandible
Anterolateral Superior View
Mandible of infant
Condylar process
Coronoid process
Mylohyoid groove
Oblique line
Submandibular fossa
Mylohyoid line
Sublingual fossa
Interalveolar septa
Alveolar part (crest)
Mental foramen
Mental protuberance
Mental tubercle
Base of mandible
Head
Pterygoid fovea
Neck
Mandibular notch
Lingula
Mandibular foramen
Ramus
Angle
Mandible of adult
Body

Pneumatic bones

** **Pneumatized Bones**

– Frontal

– Temporal

– Sphenoid

– Ethmoid bones

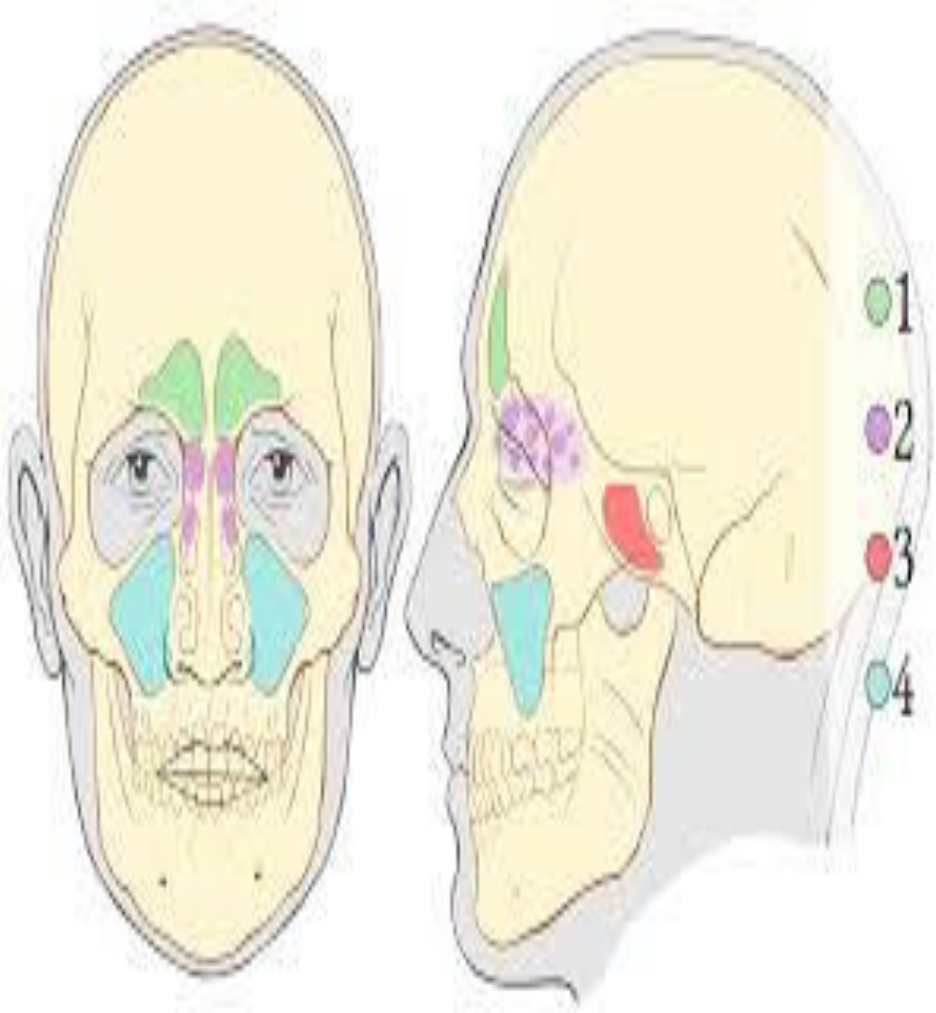
- Maxilla

**Contain air spaces (air cells or large sinuses),

- to **decrease their weight**.

- The total volume of the air spaces in these bones

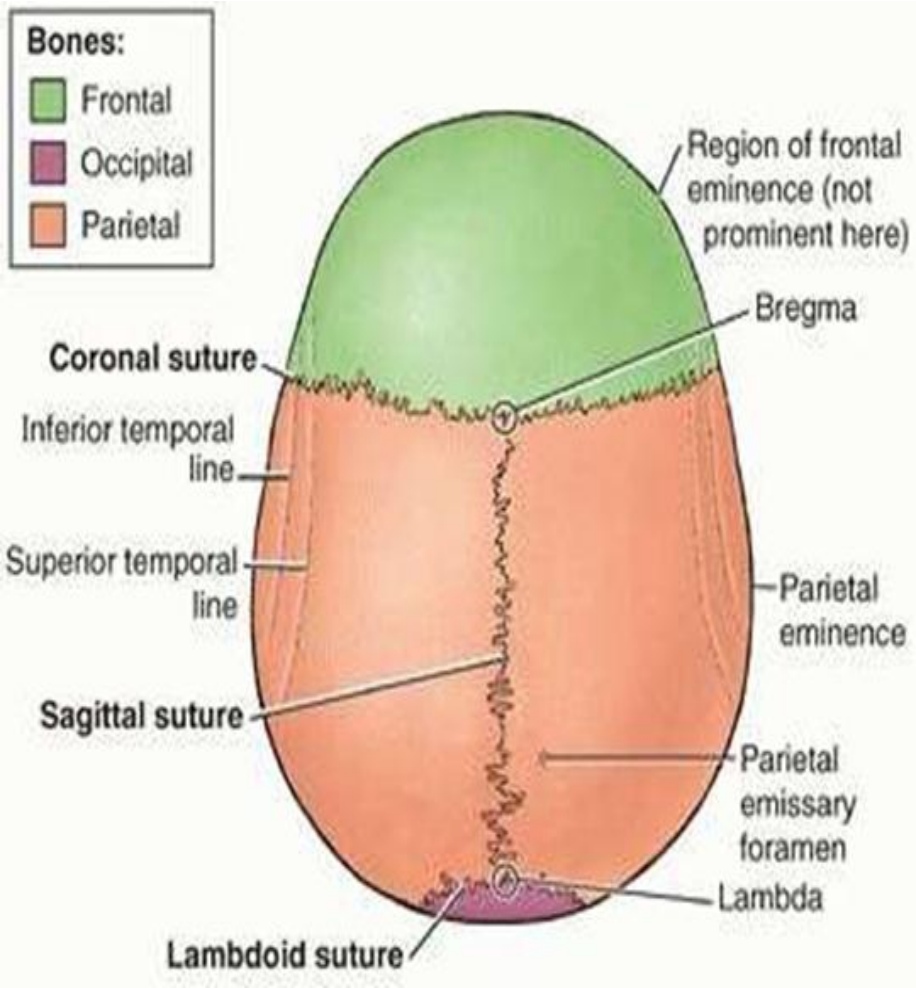
- **increases with age.**



Study of skull
External features

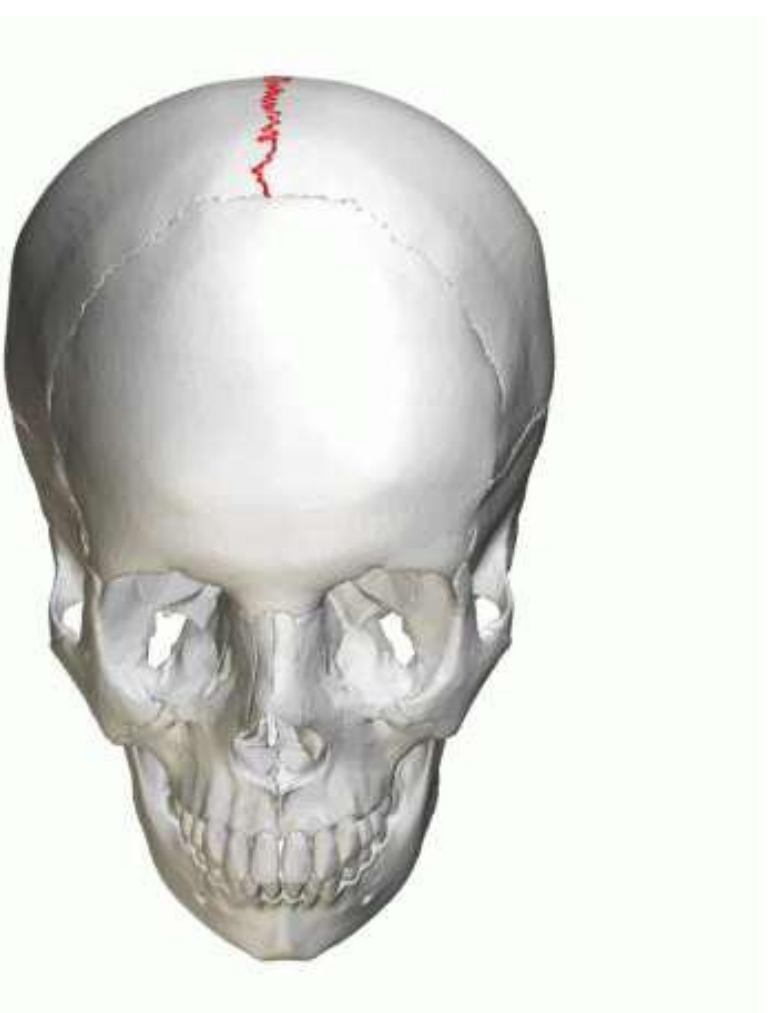
- **Sutuers of skull:**

- Sagittal suture : in the medial plane between two paraietal bones
- Coronal suture : between frontal and two paraietal bones
- Lambdid suture : between occipital and two paraietal bones



Coronal

sagittal



Lambdoid