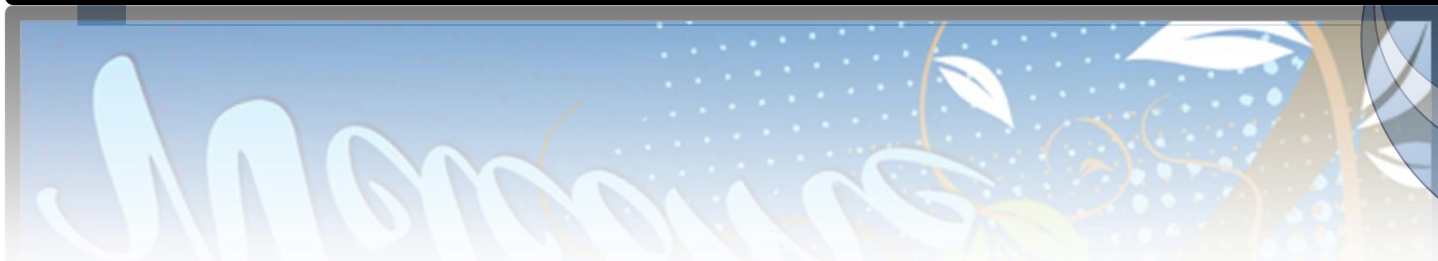


In the name of God





Session 2

Locomotor system

Dr. Zahiri



-
- ▶ **اهداف اختصاصی این جلسه:**
 - ▶ انتظار می رود دانشجو بتواند:
 - ▶ وظایف سیستم اسکلتی را بیان نماید
 - ▶ استخوان ها را تقسیم بندی نماید و از هر کدام مثالی بزند.
 - ▶ سیستم اسکلتی را تقسیم بندی نماید.
 - ▶ مجمه را تعریف کرده و استخوانهای صورت و کاسه سر را نام ببرد.
 - ▶ مجمه را در نماهای مختلف بیان نماید.

▶ **Locomotor system:**

▶ Bones

▶ Muscles

▶ Joints

▶ Ligaments

-
- ▶ **Locomotor system:**
 - ▶ **Bones**
 - ▶ Muscles
 - ▶ Joints
 - ▶ Ligaments

-
- ▶ The **human skeleton** is the internal framework of the body.
 - ▶ It is composed of 270 bones at birth
 - ▶ decreases to 206 bones by adulthood after some bones have fused together

Skeletal system:

Organization of the Skeleton

Axial Skeleton



Axial Skeleton is the “**blue**”

Appendicular Skeleton



Appendicular Skeleton is the “**purple**”

Skeletal system:

▶ **Axial skeleton**

- skull
- vertebral column
- sternum
- ribs

▶ **Appendicular Skeleton**

- Pectoral Girdle
- Pelvic Girdle
- Limbs

Bone Structure and Function

- ▶ **The human skeleton serves six major functions:**
- ▶ support
- ▶ Movement
- ▶ Protection
- ▶ production of blood cells
- ▶ storage of ions
- ▶ endocrine regulation

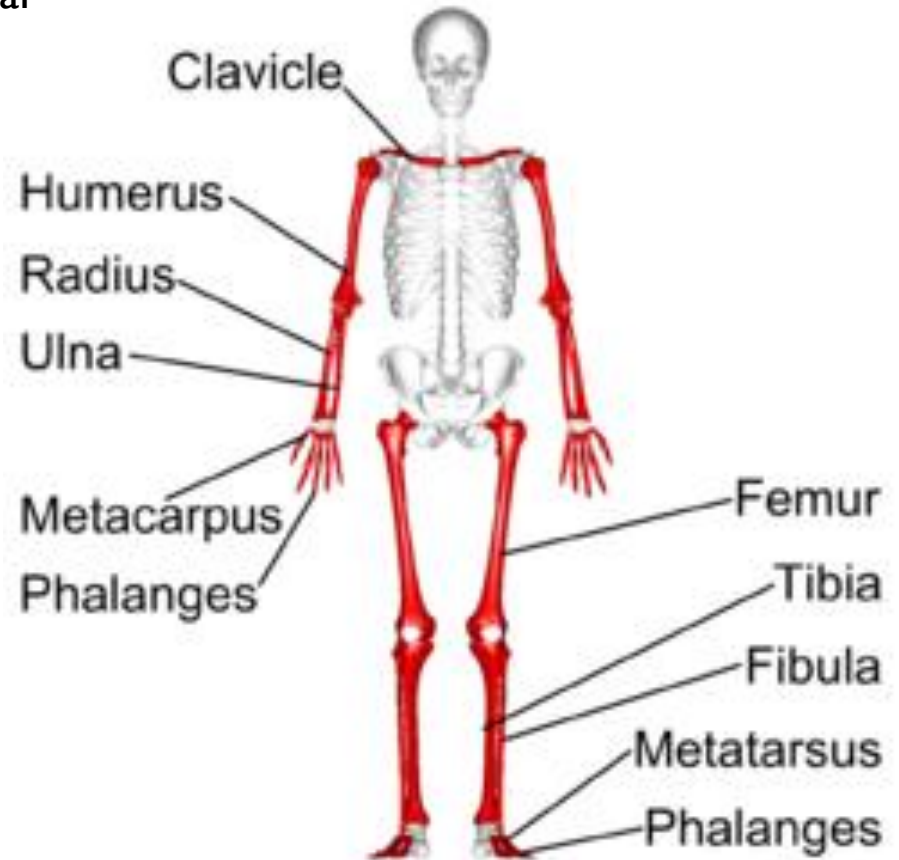
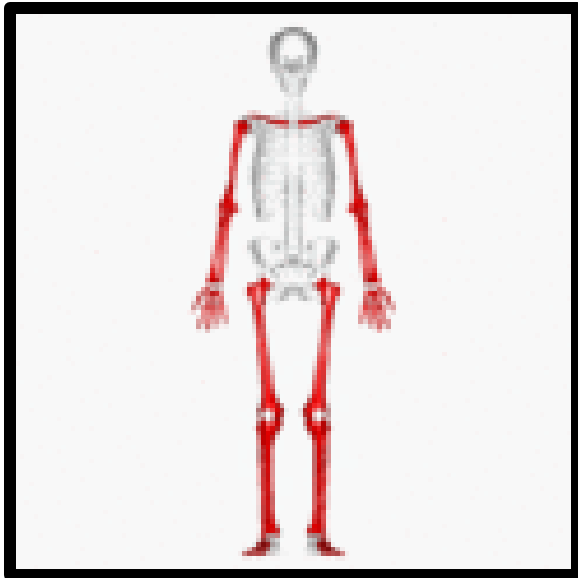
-
- ▶ The human skeleton is not as sexually dimorphic as that of many other primate species, but subtle differences between sexes in the morphology of the skull, dentition, long bones, and pelvis exist.



-
- ▶ **There are five types of bones:**
 - ▶ long, short, flat, irregular and sesamoid

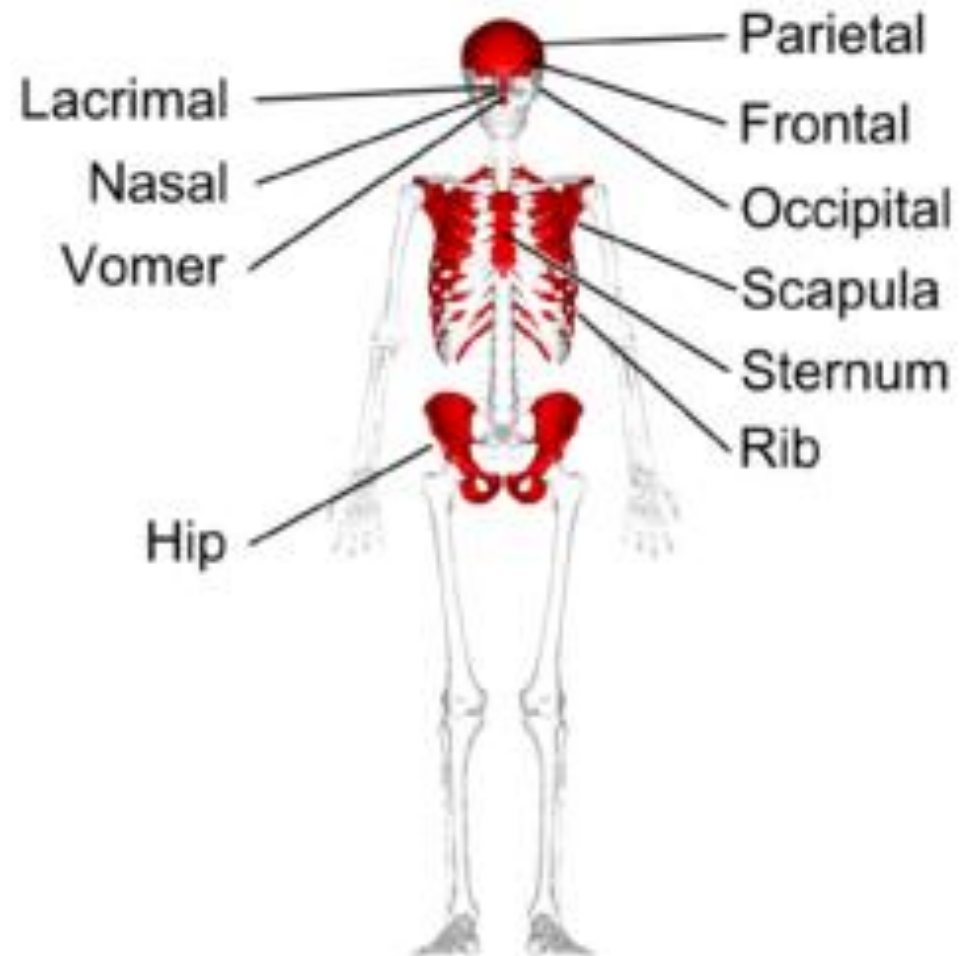
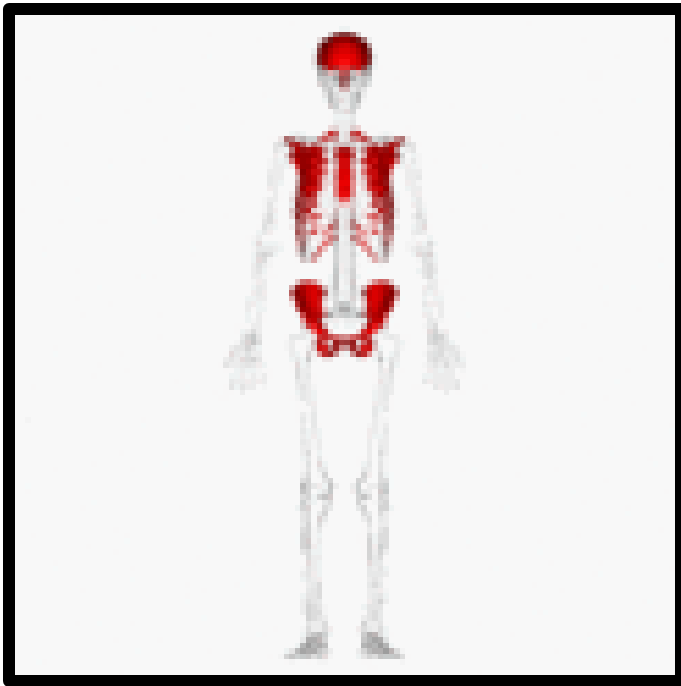
Long bones:

subjected to most of the load during daily activities and they are crucial for skeletal mobility



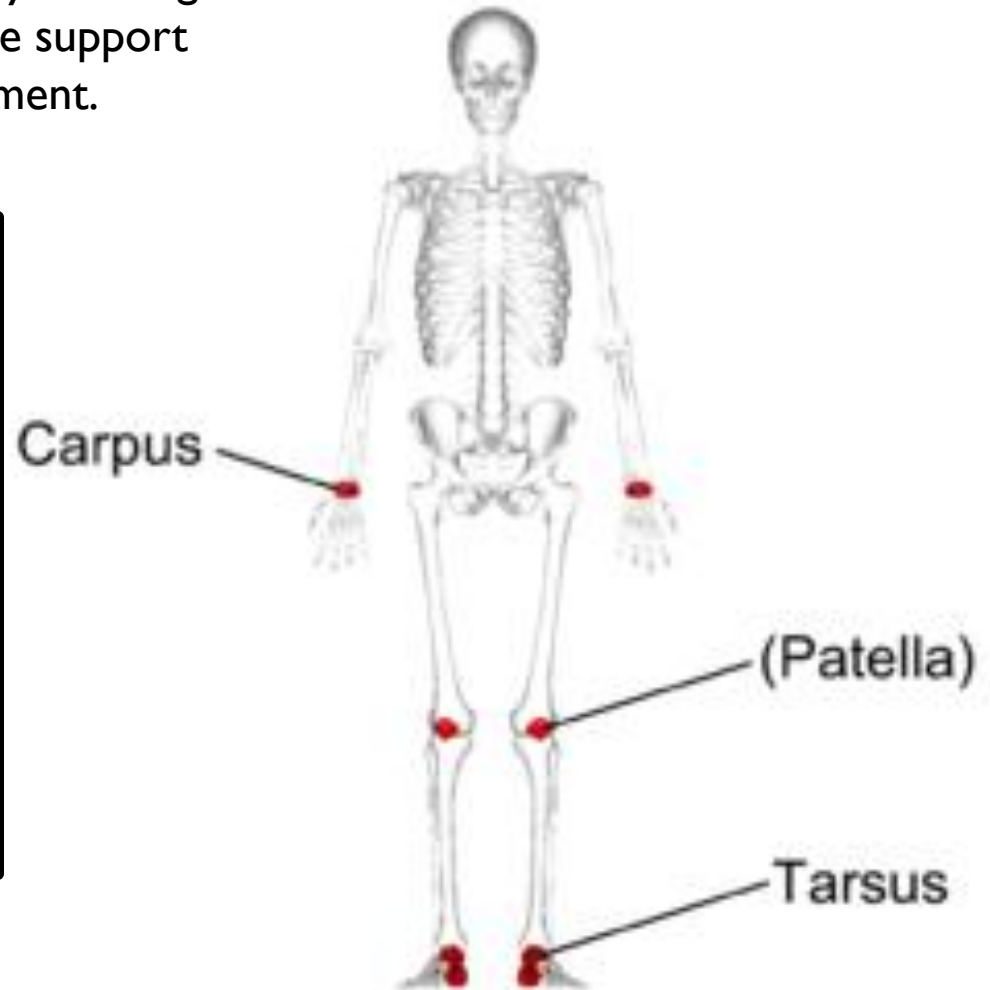
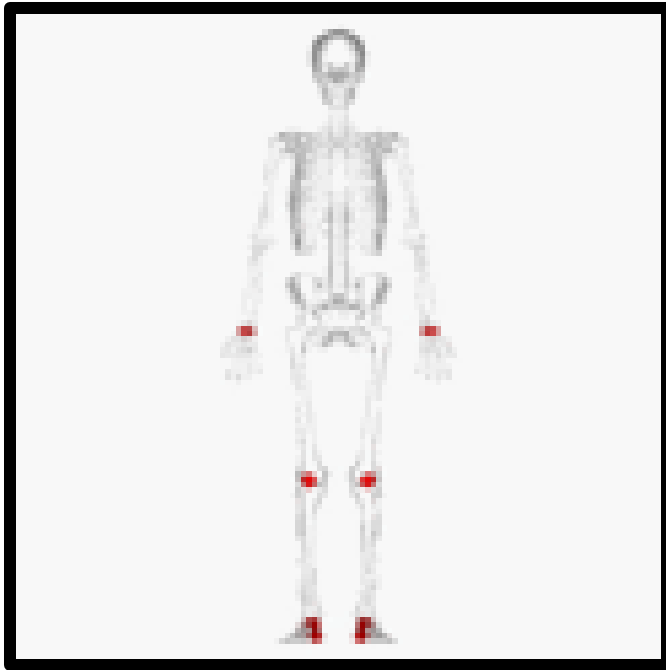
Flat bone:

extensive protection or the provision of broad surfaces for muscular attachment



Short bones:

those bones that are as wide as they are long. Their primary function is to provide support and stability with little to no movement.

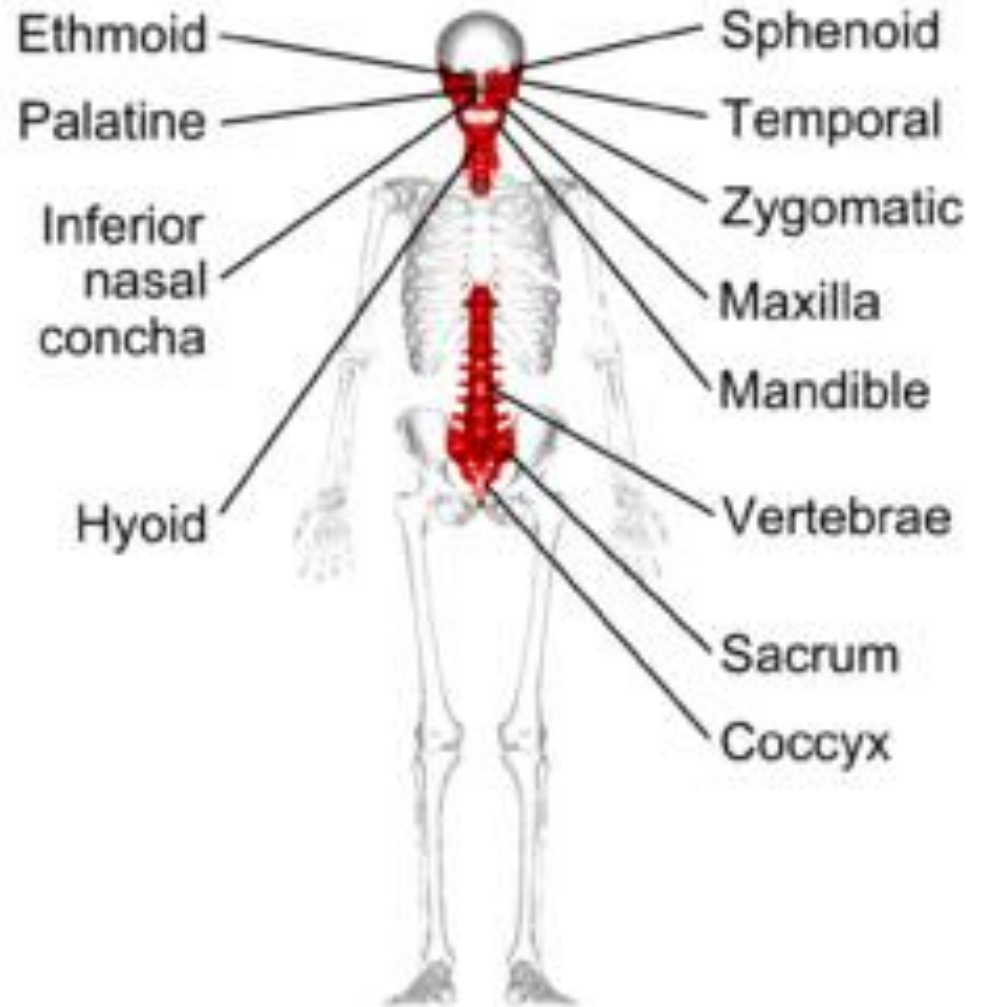
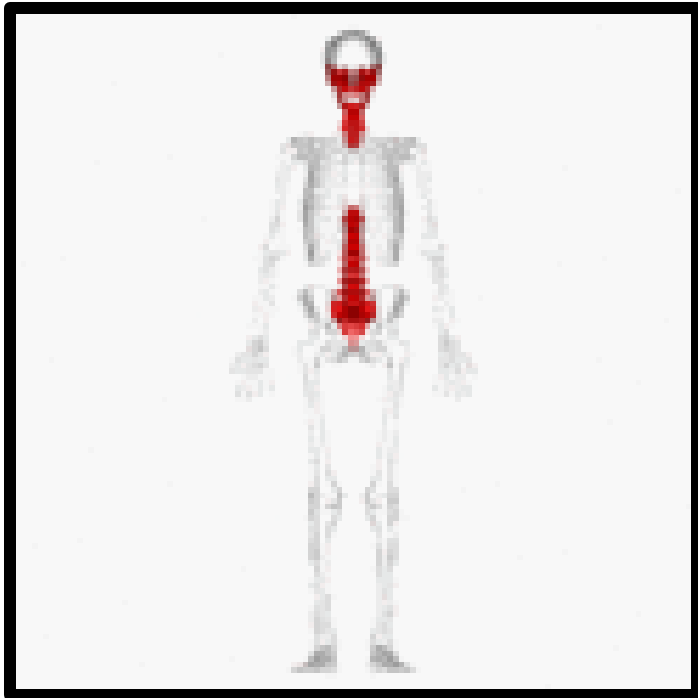


irregular bones

from their peculiar form, cannot be grouped as other groups.

- ▶ Irregular bones serve various purposes in the body, such as:
 - ▶ protection of nervous tissue (such as the vertebrae protect the spinal cord)
 - ▶ affording multiple anchor points for skeletal muscle attachment (as with the sacrum)
 - ▶ maintaining pharynx and trachea support, and tongue attachment (such as the hyoid bone)

irregular bones



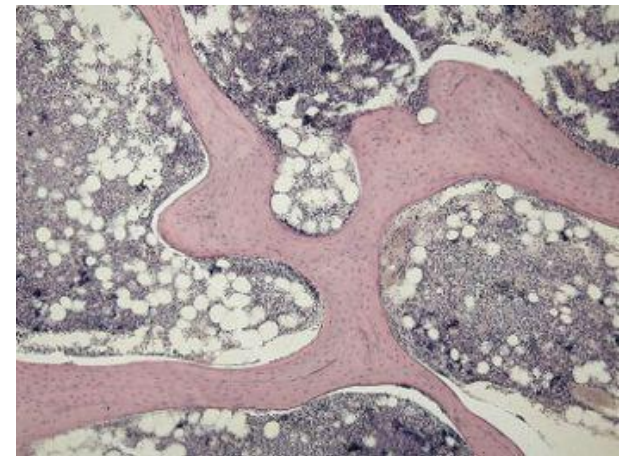
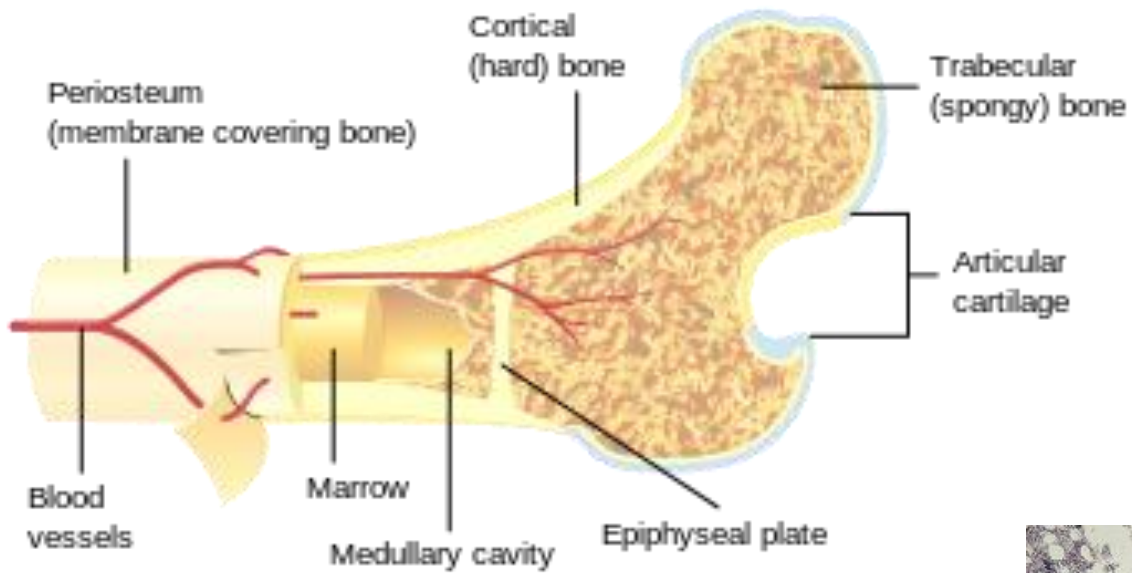
sesamoid bone

- ▶ is a bone embedded within a tendon or a muscle.
- ▶ Sesamoids act like pulleys, providing a smooth surface for tendons to slide over increasing the tendon's ability to transmit muscular forces

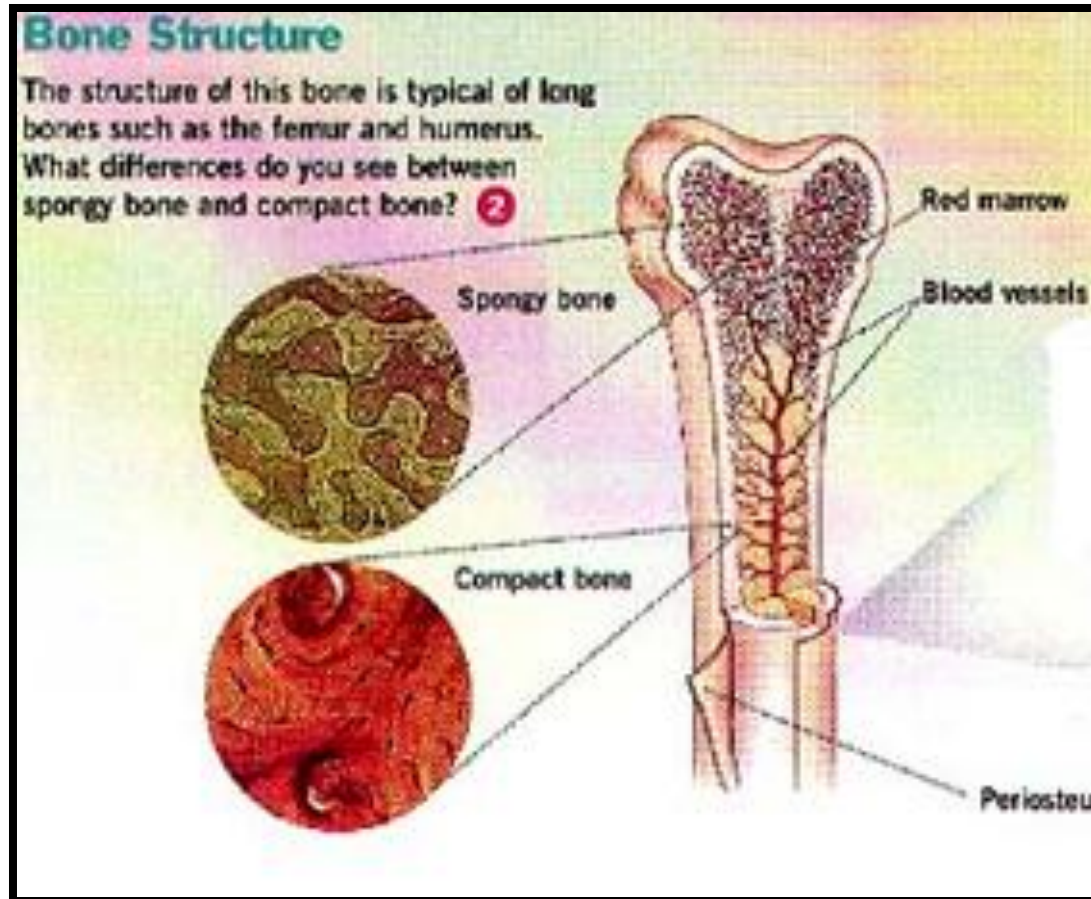
Histology

Cancellous bone = trabecular bone or spongy bone

- ▶ has a high surface area
- ▶ it is less dense
- ▶ softer, weaker, and more flexible characteristics.
- ▶ It is suitable for metabolic activity e.g. exchange of calcium ions
- ▶ It is typically found at the ends of long bones, proximal to joints and within the interior of vertebrae
- ▶ It is highly vascular and frequently contains red bone marrow where haematopoiesis



Cortical bone = compact bone

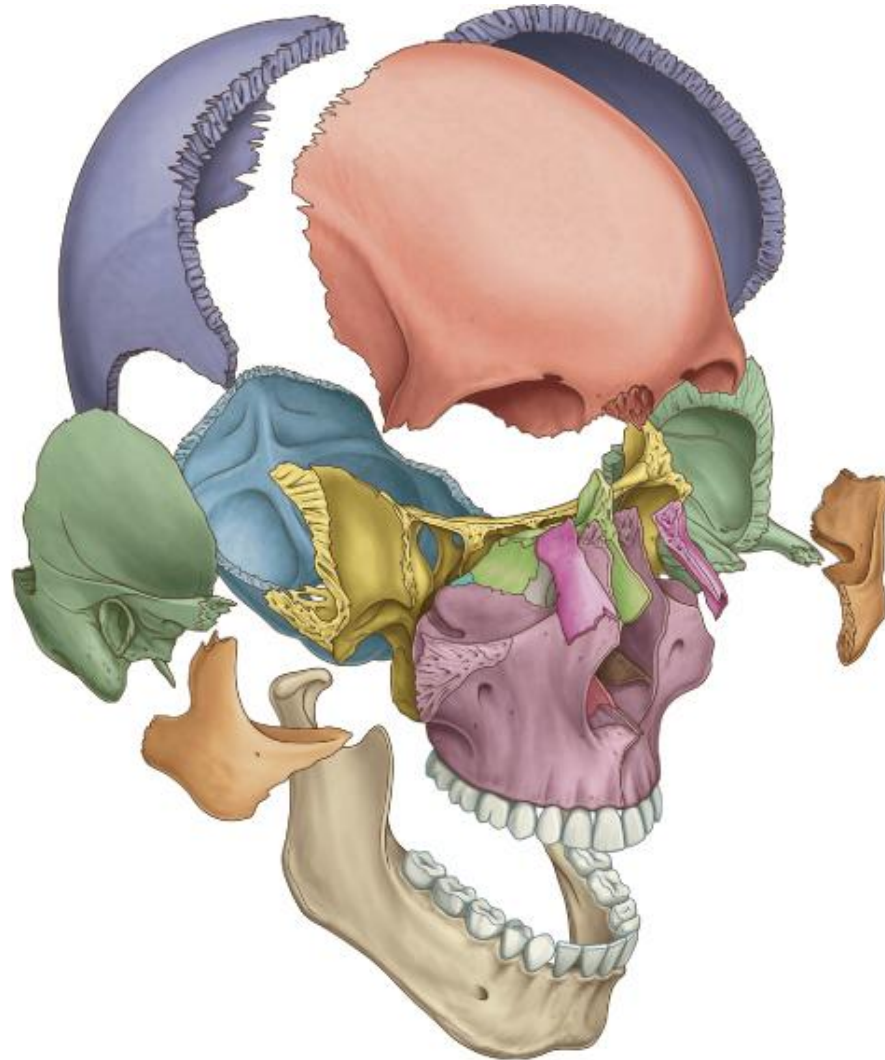


skull

- ▶ is the bony structure that forms the head in the human skeleton. It supports the structures of the face and forms a cavity for the brain.
- ▶ it protects the brain from injury

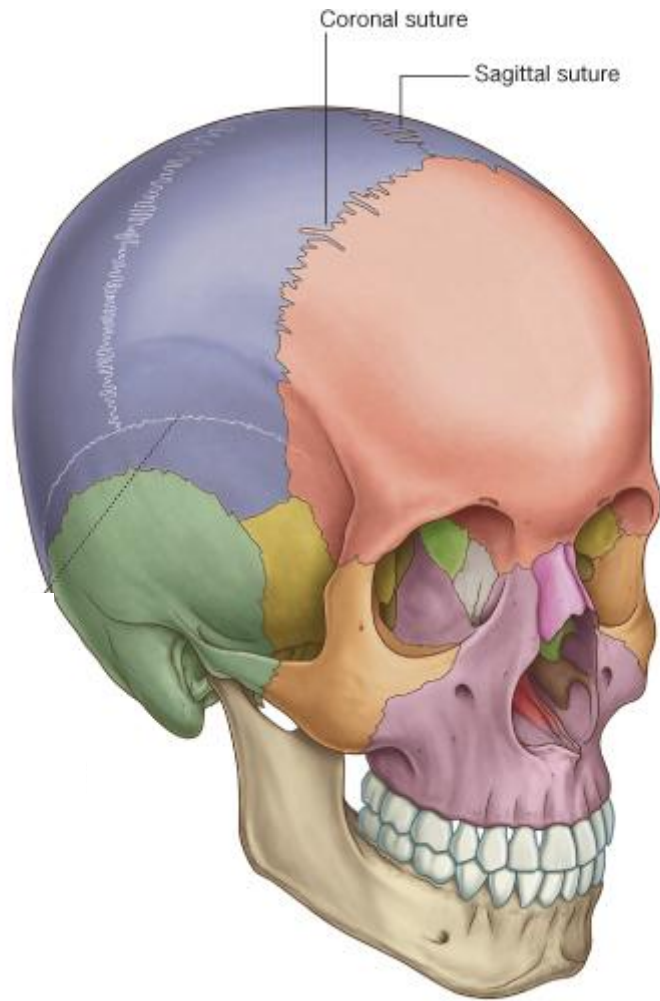
-
- ▶ **8 Cranial Bones:**
 - ▶ 1 x Frontal Bone
 - ▶ 1 x Ethmoid Bone
 - ▶ 1 x Sphenoid Bone
 - ▶ 1 x Occipital Bone
 - ▶ 2 x Temporal Bones
 - ▶ 2 x Parietal Bones

A

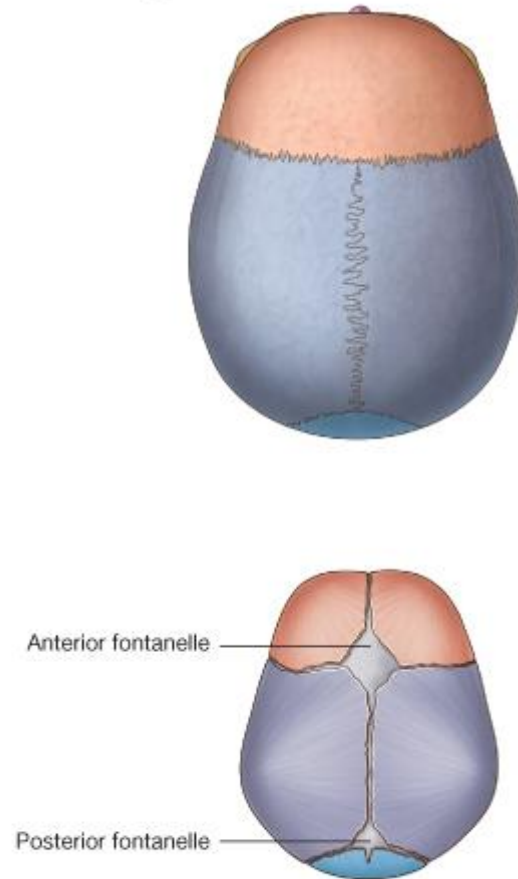


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B

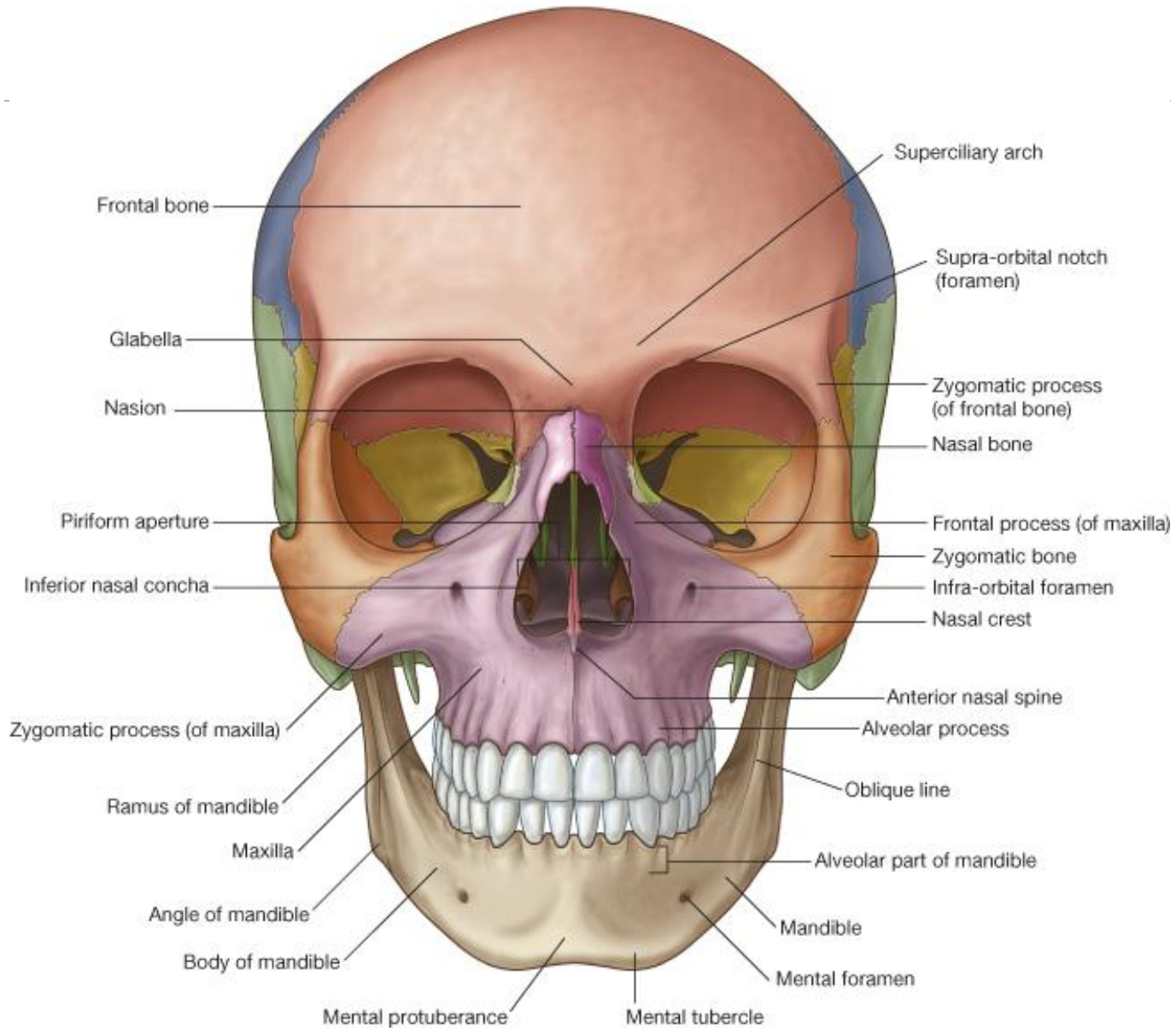


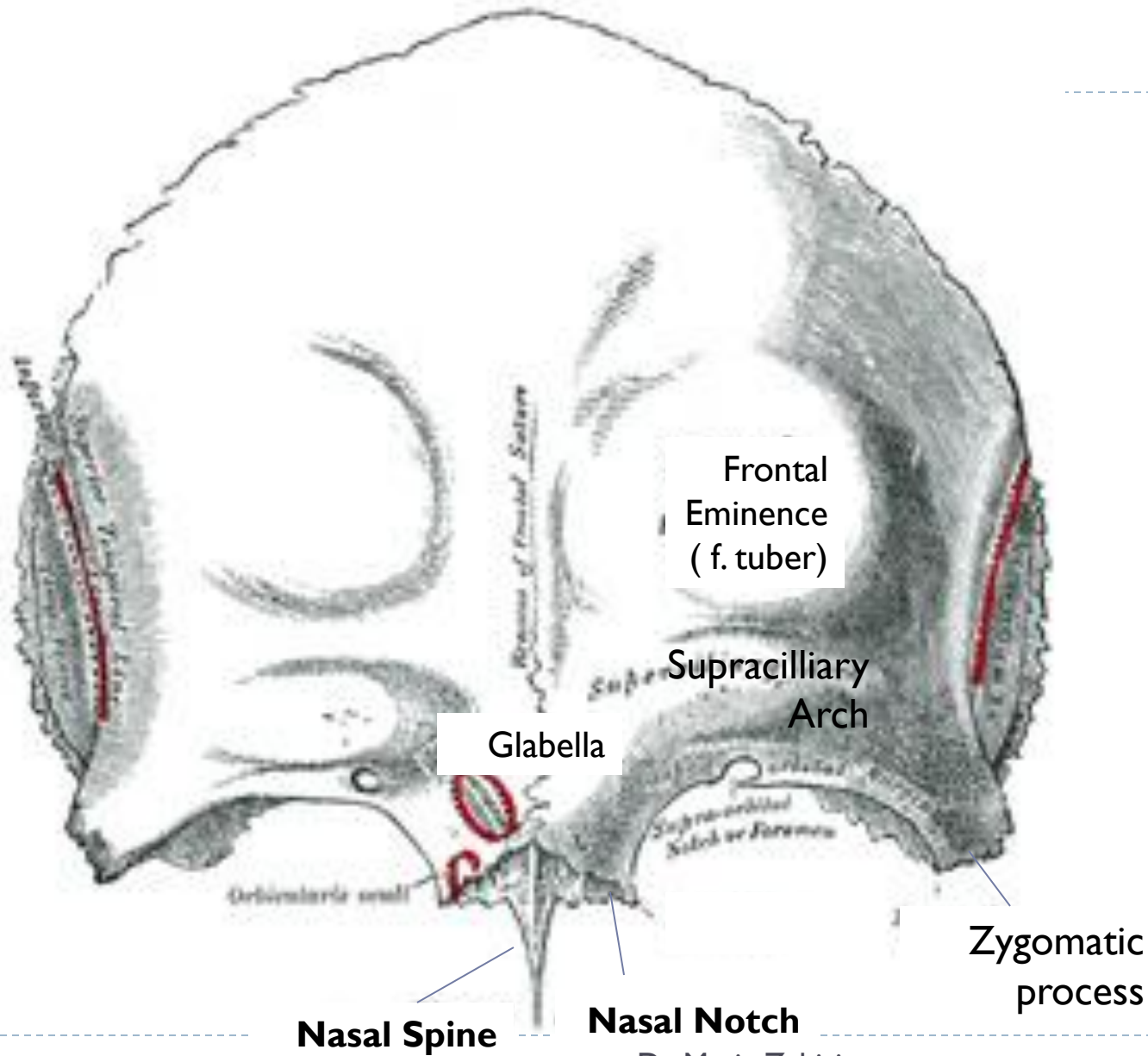
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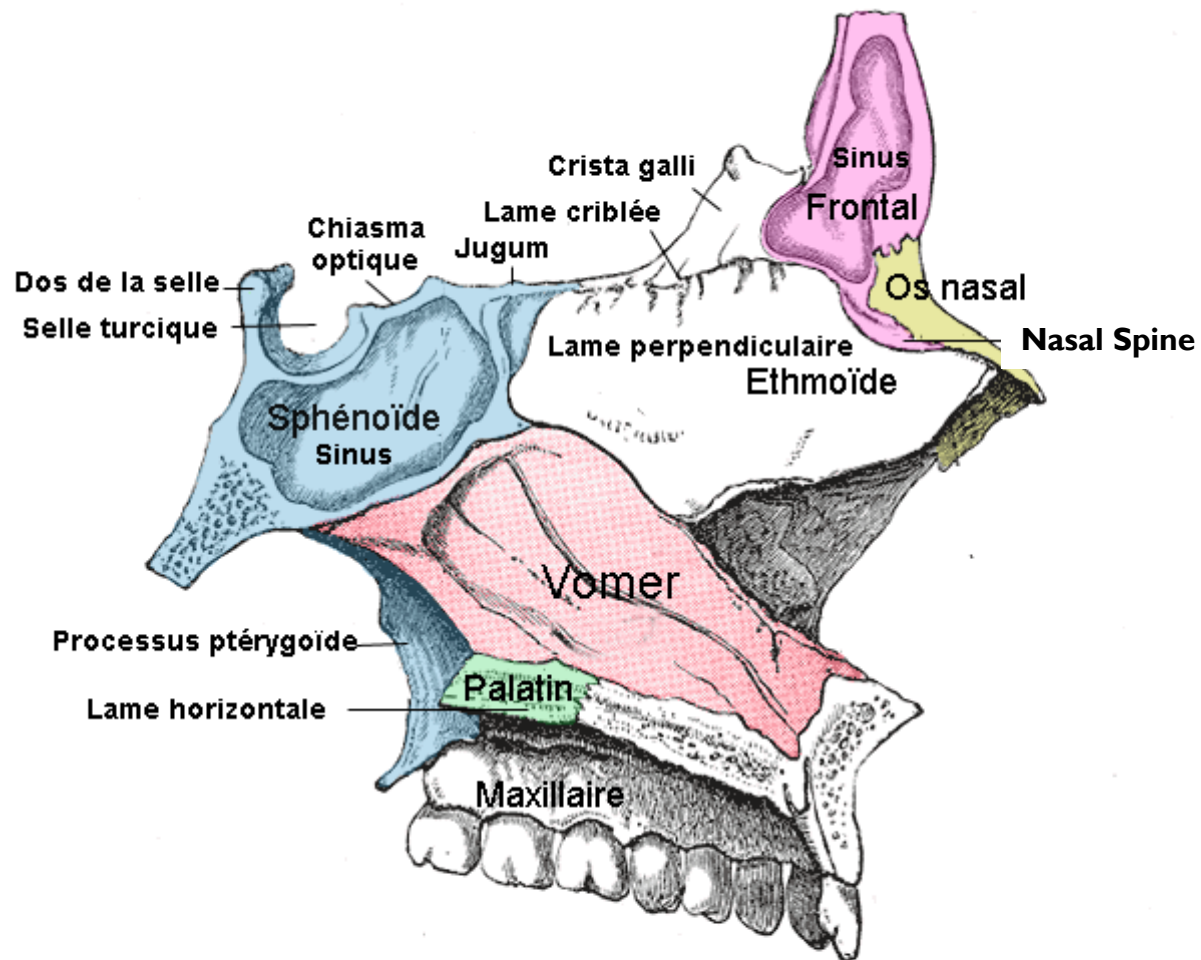


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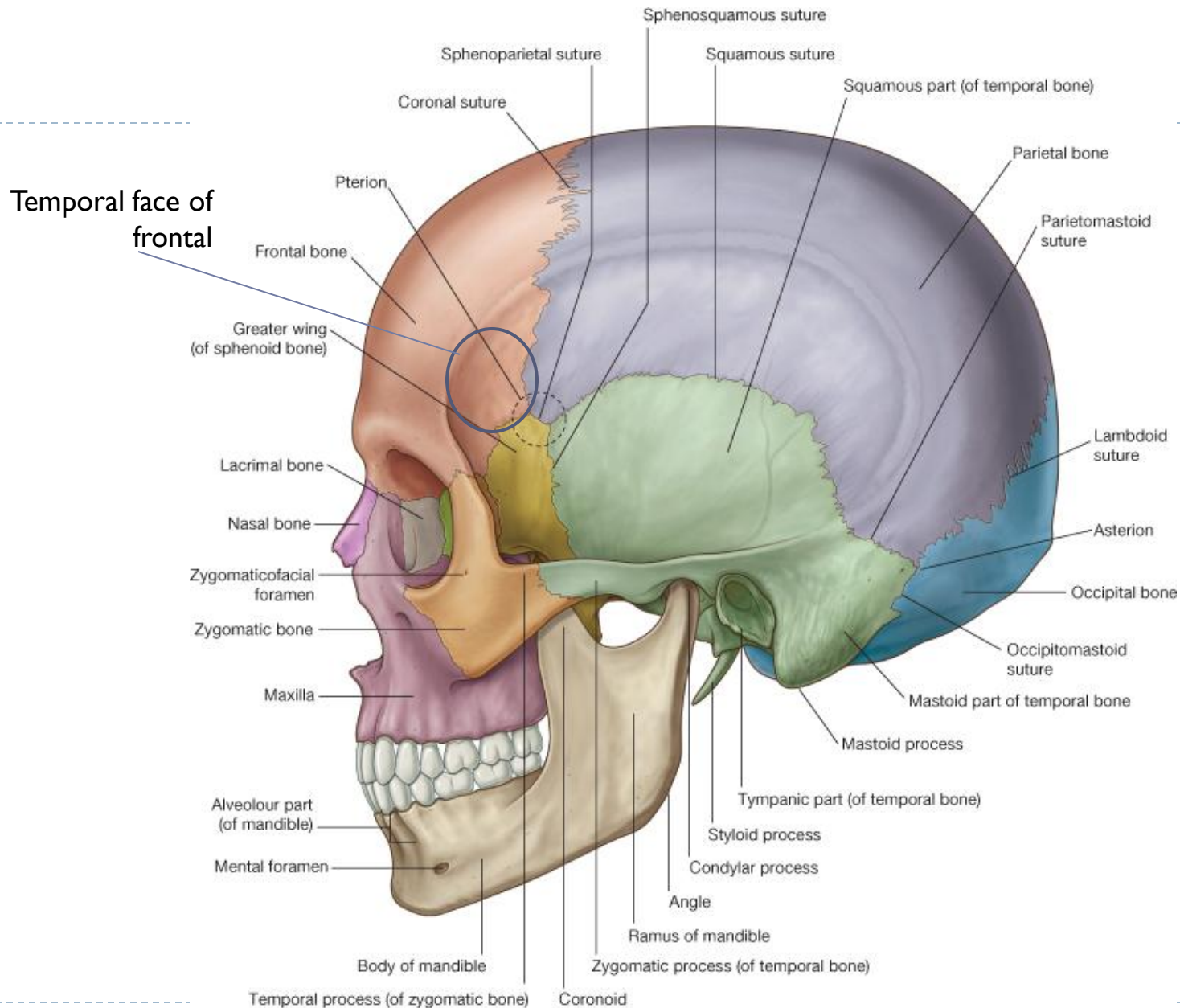
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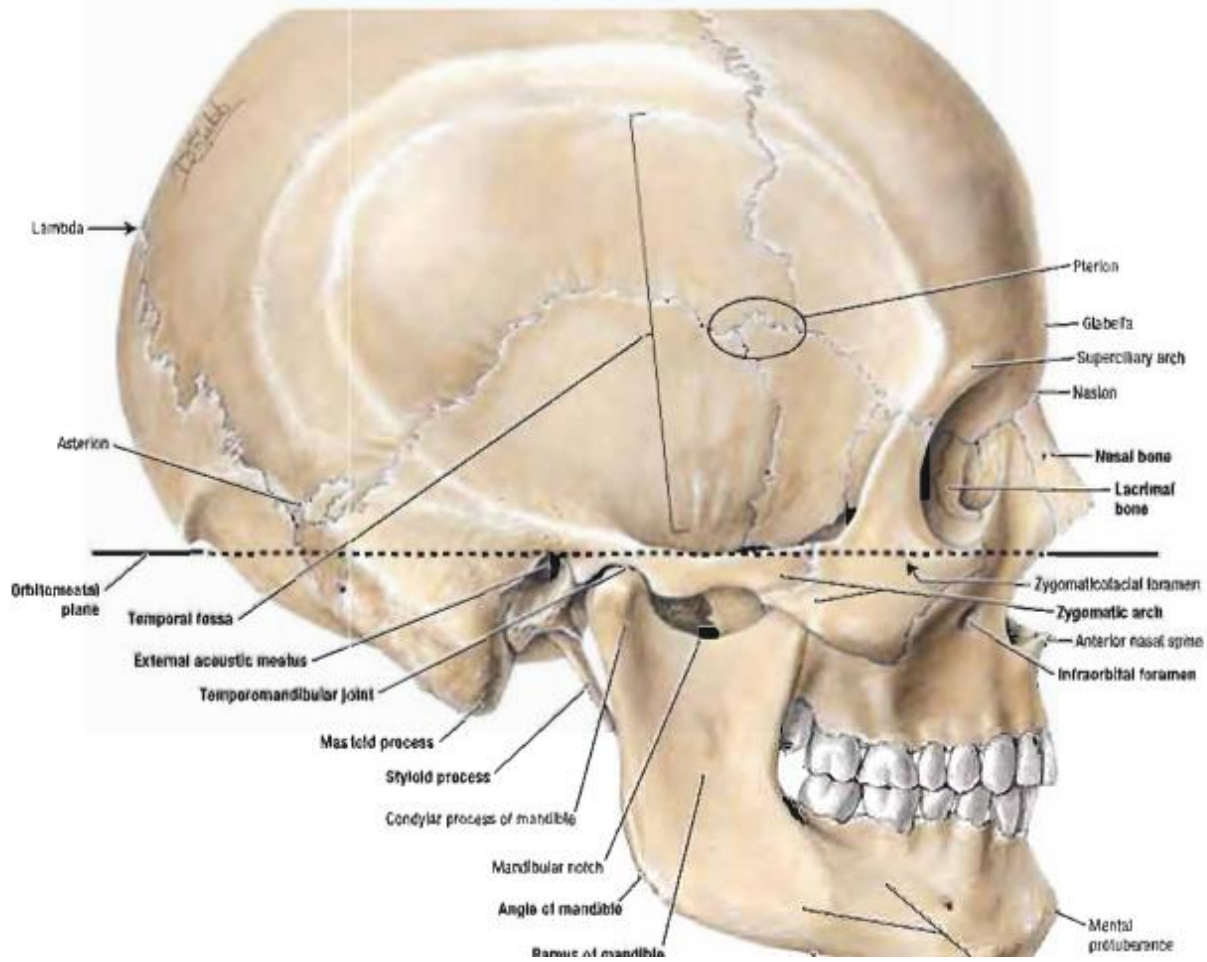


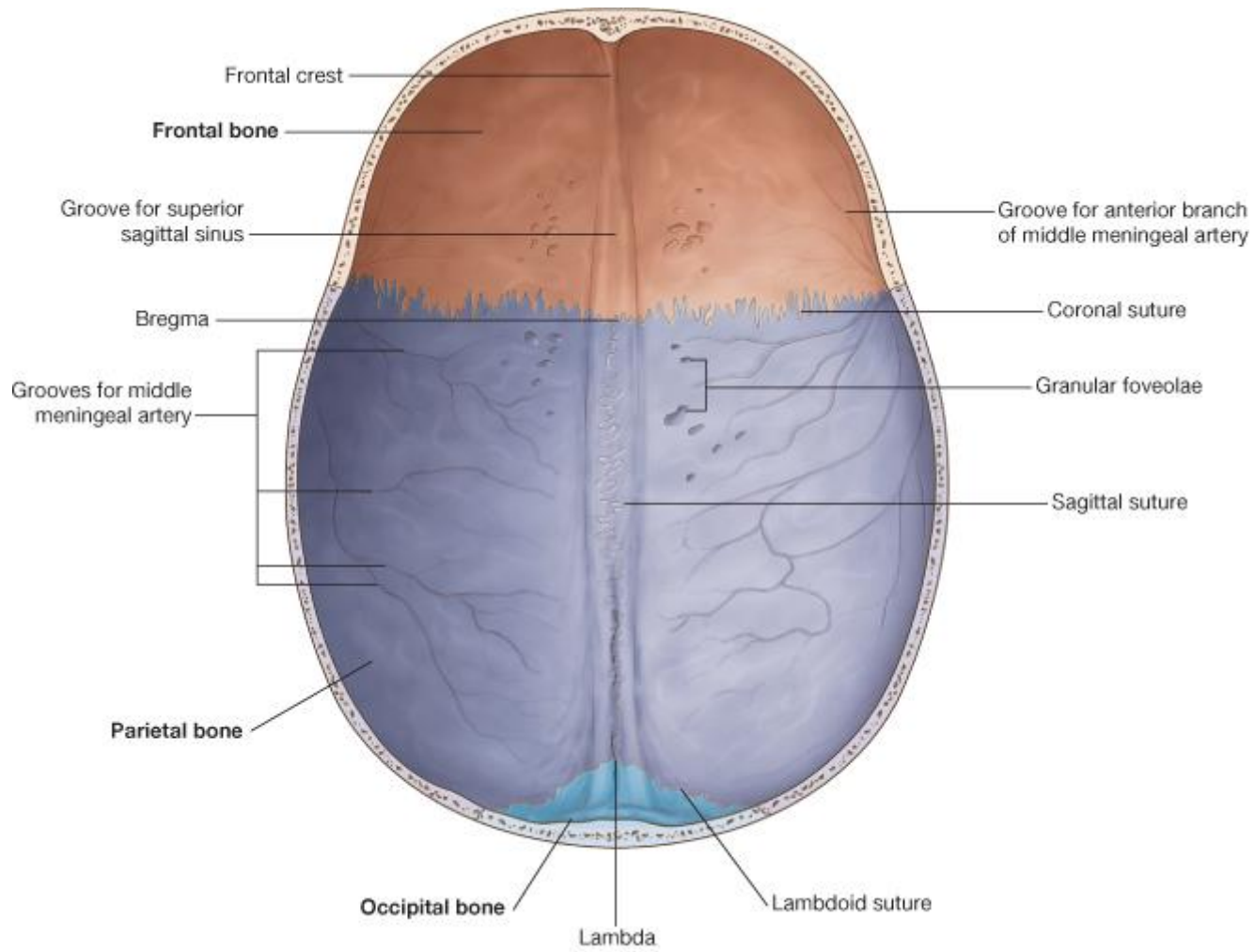




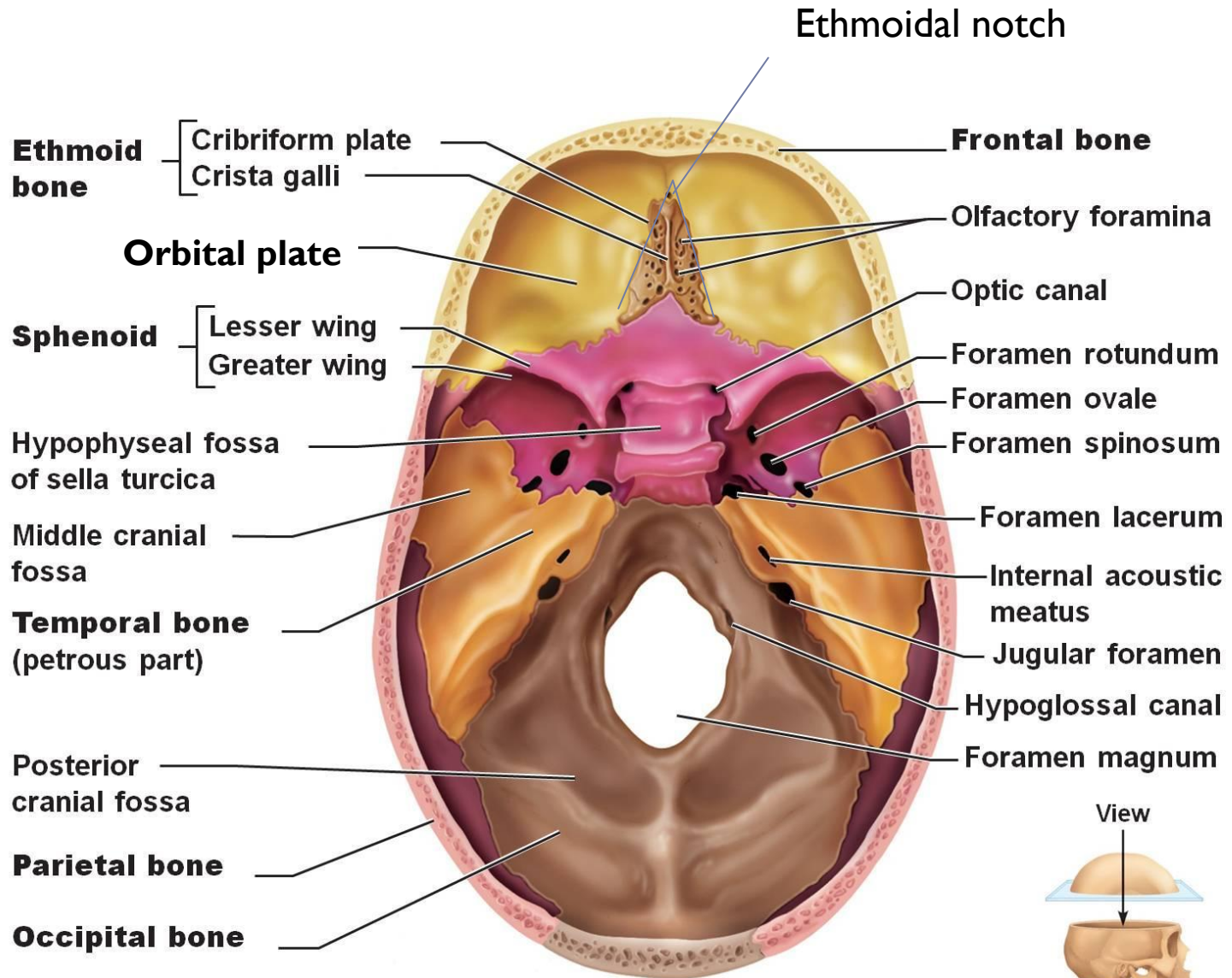
Vomer
(vue latérale droite)





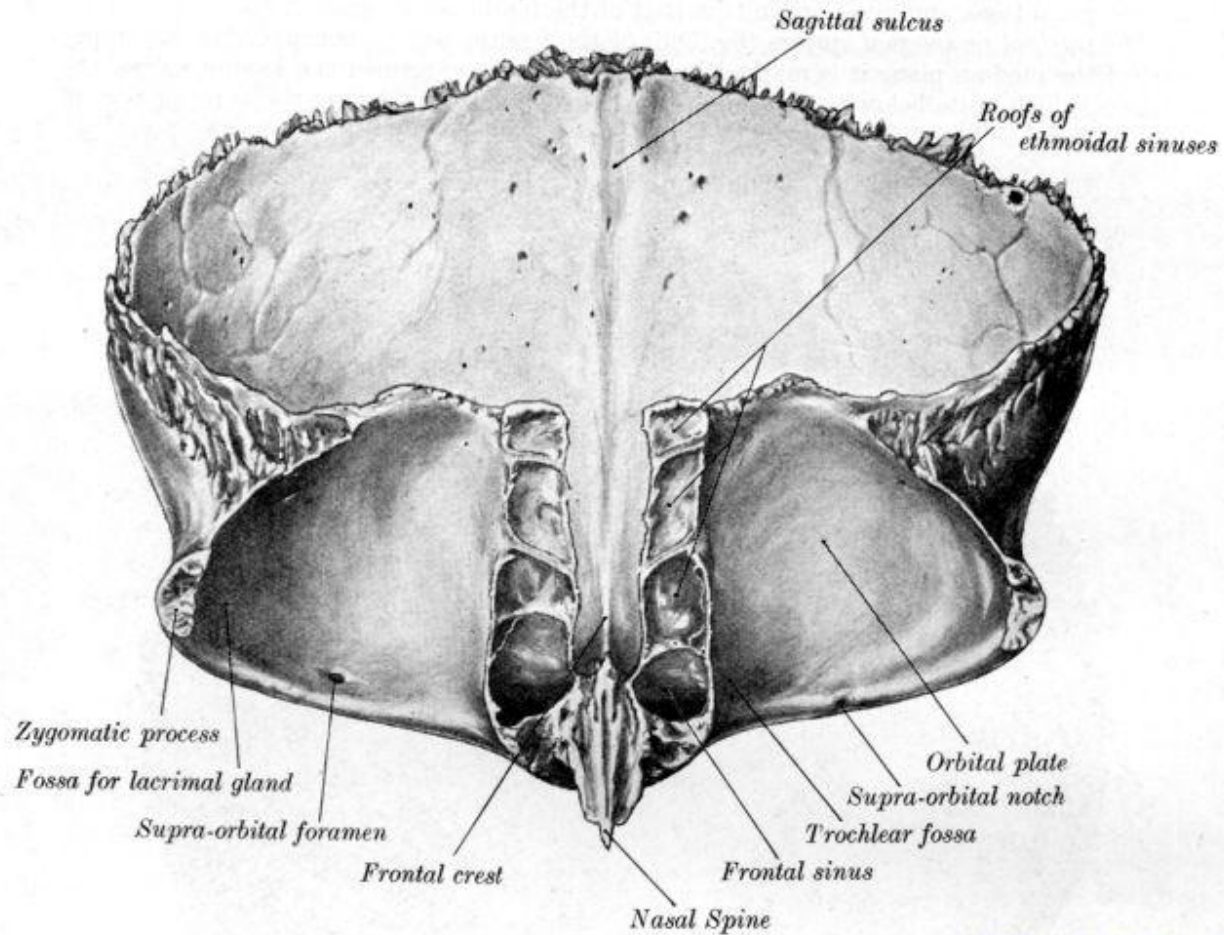


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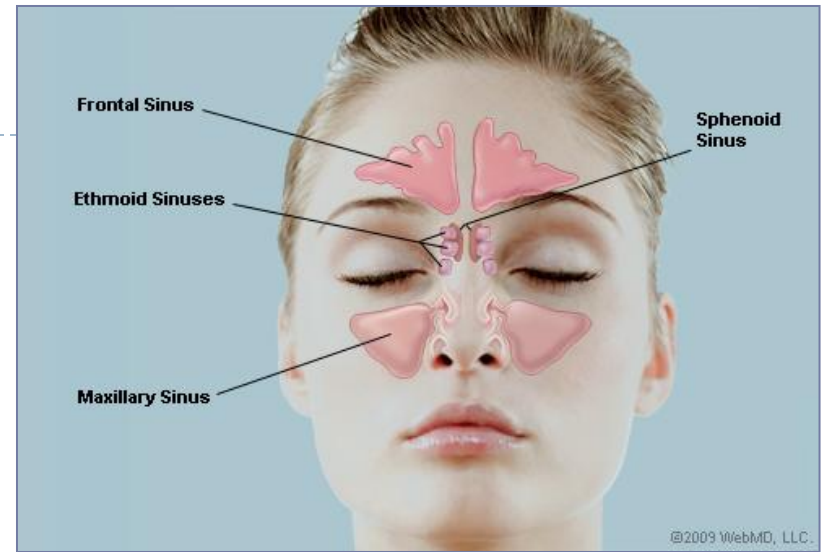
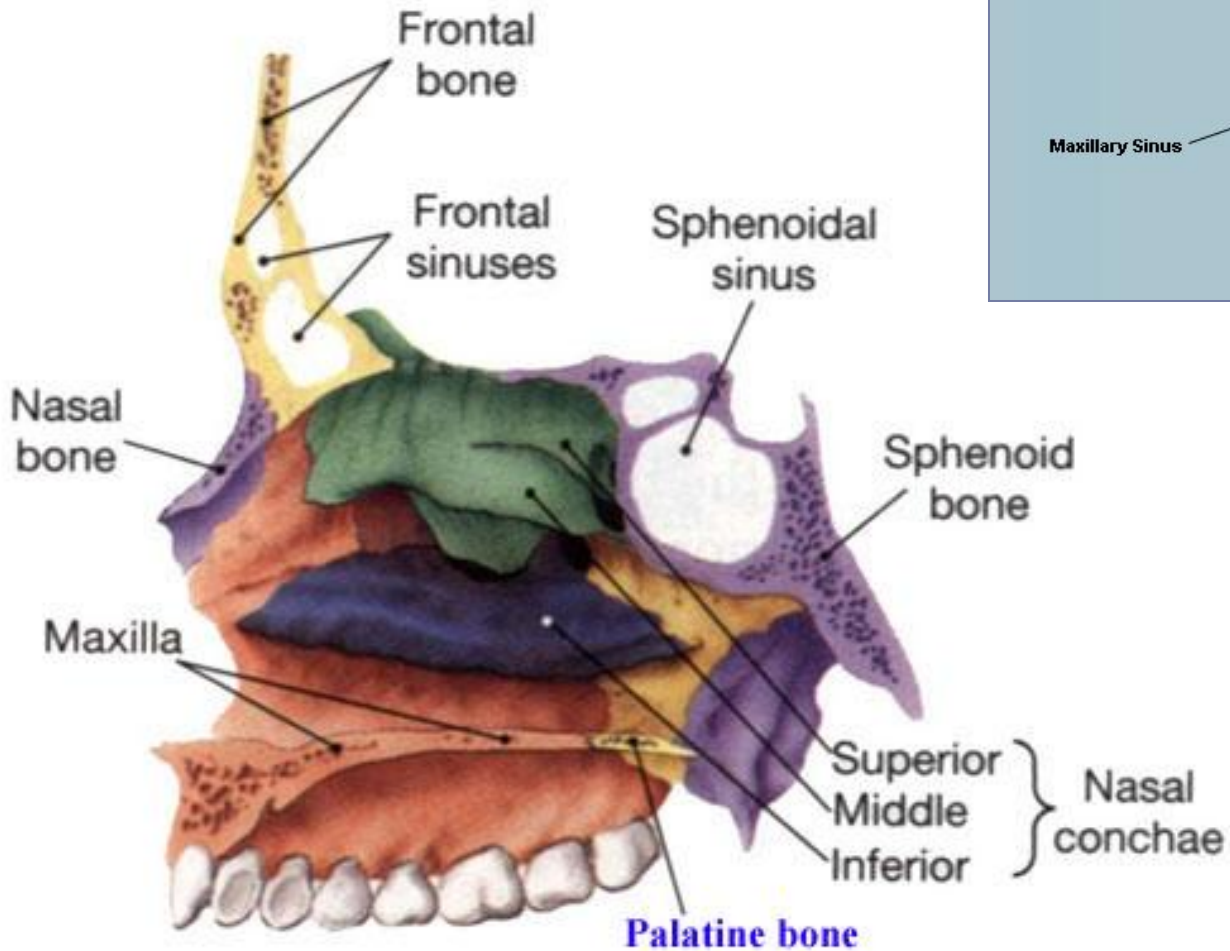


(a) Superior view of the skull, calvaria removed

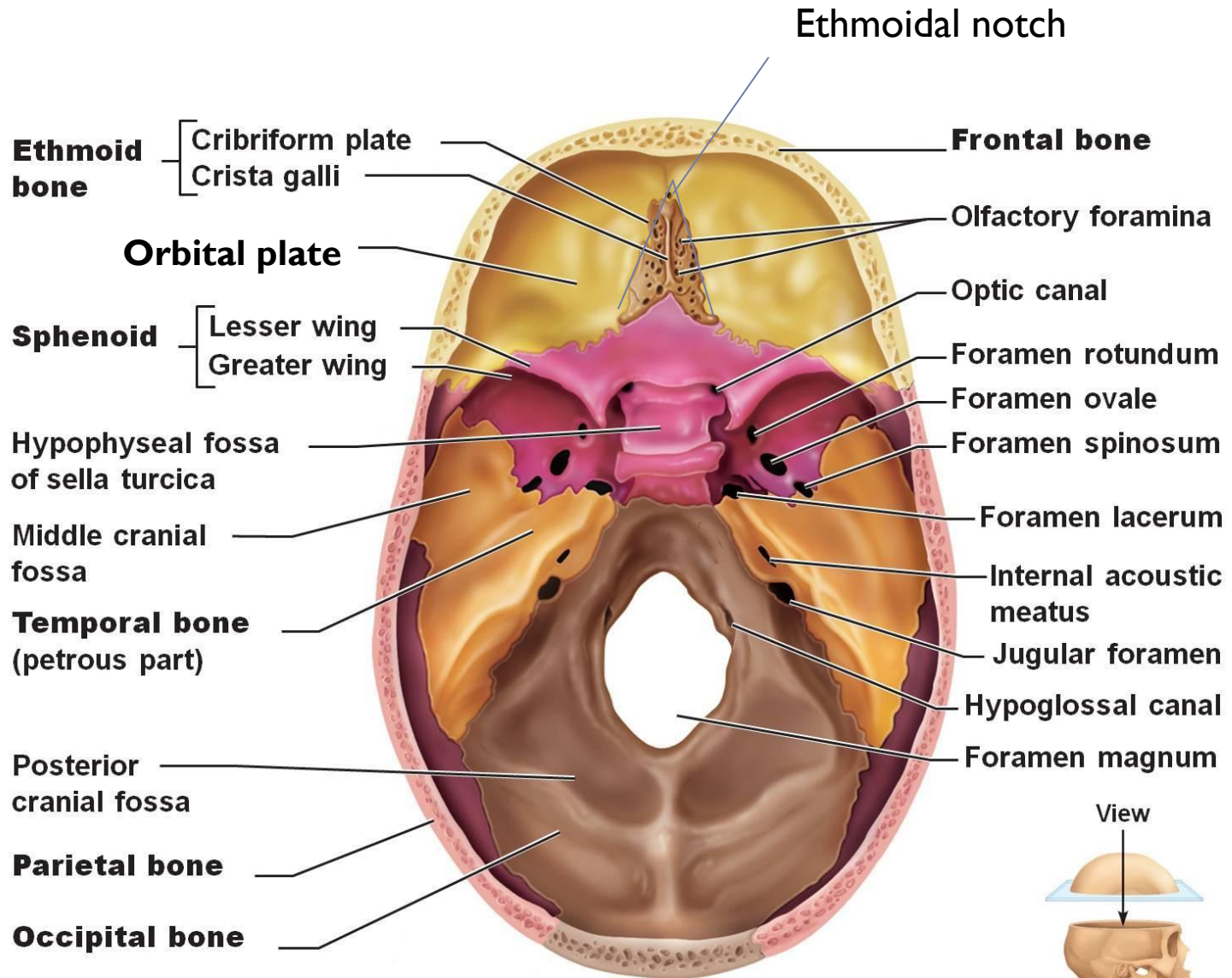
FIG. 363.—The frontal bone. Viewed from below.



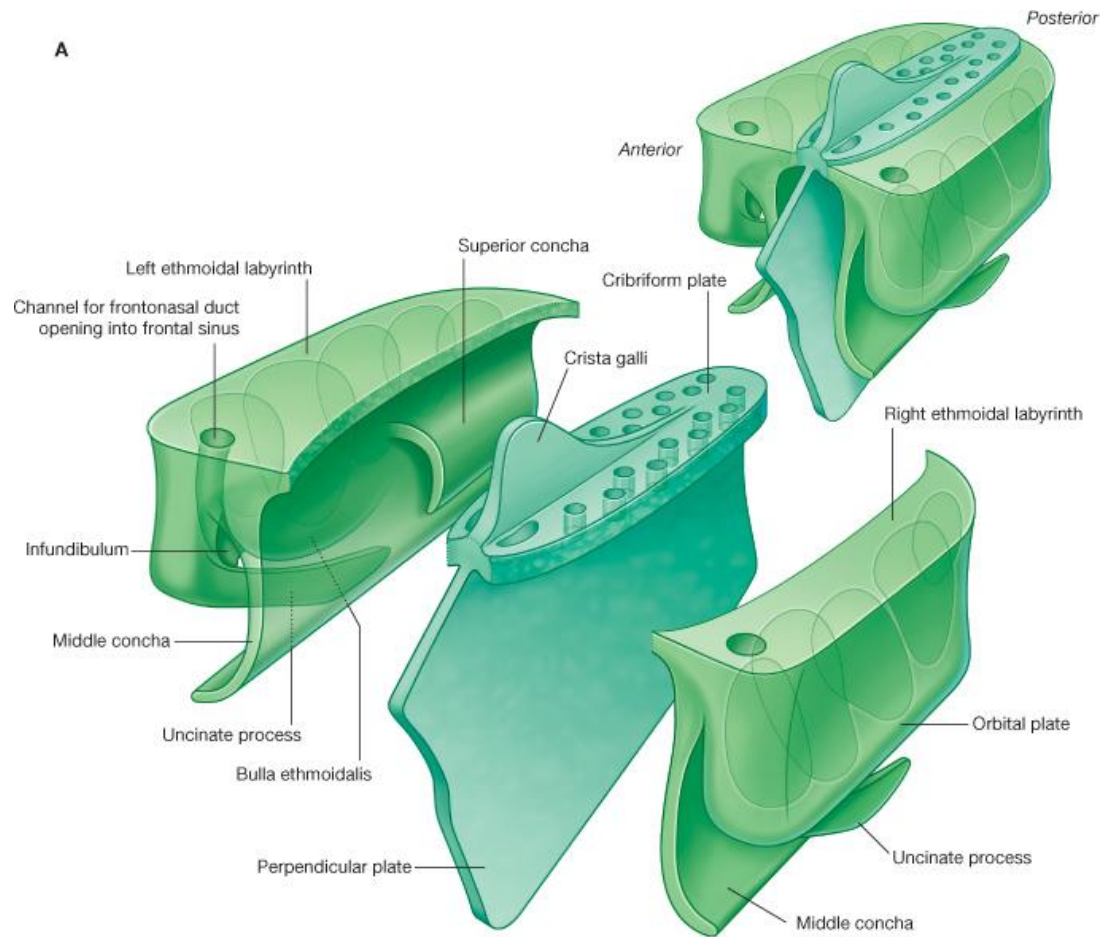
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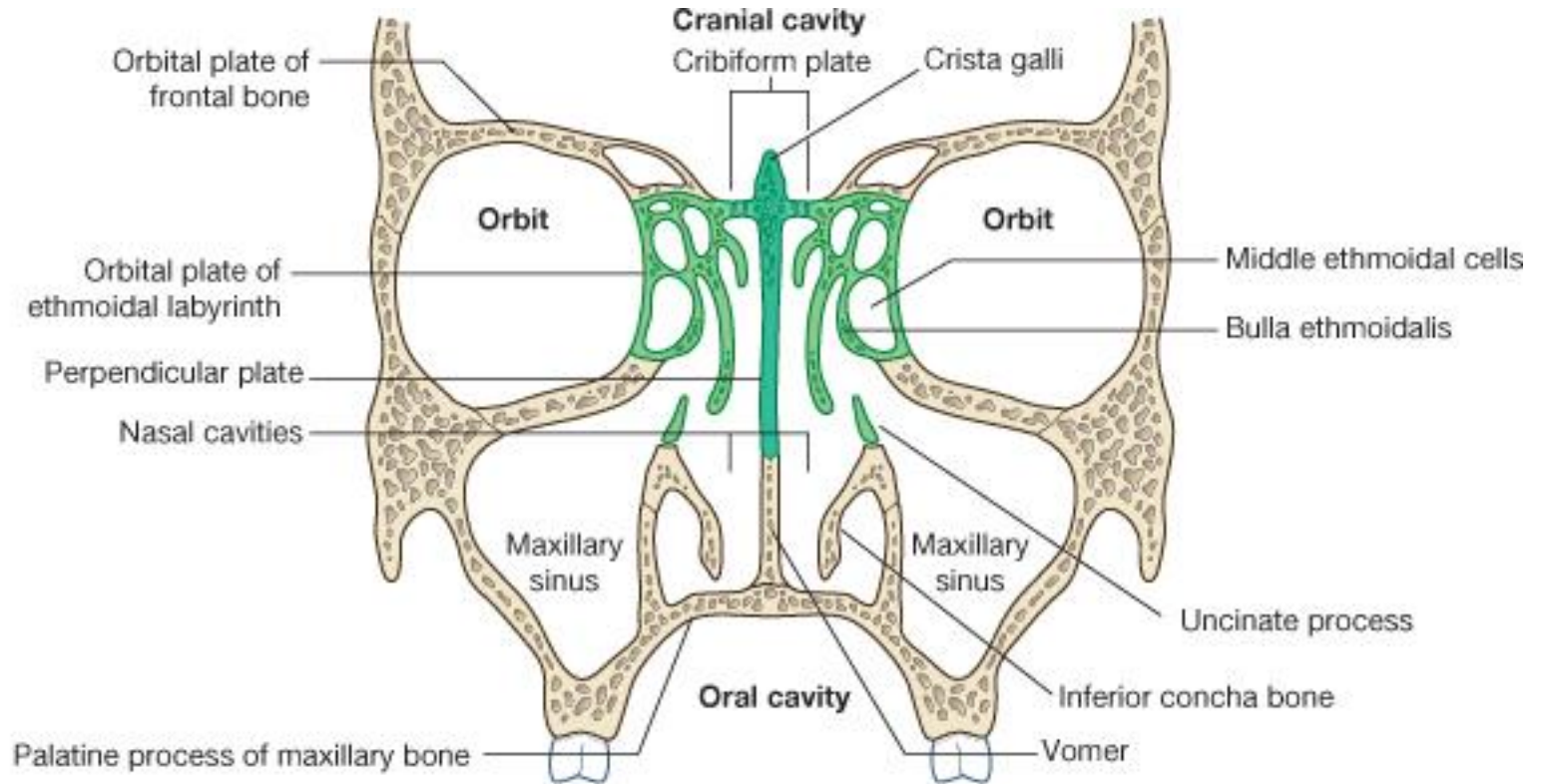


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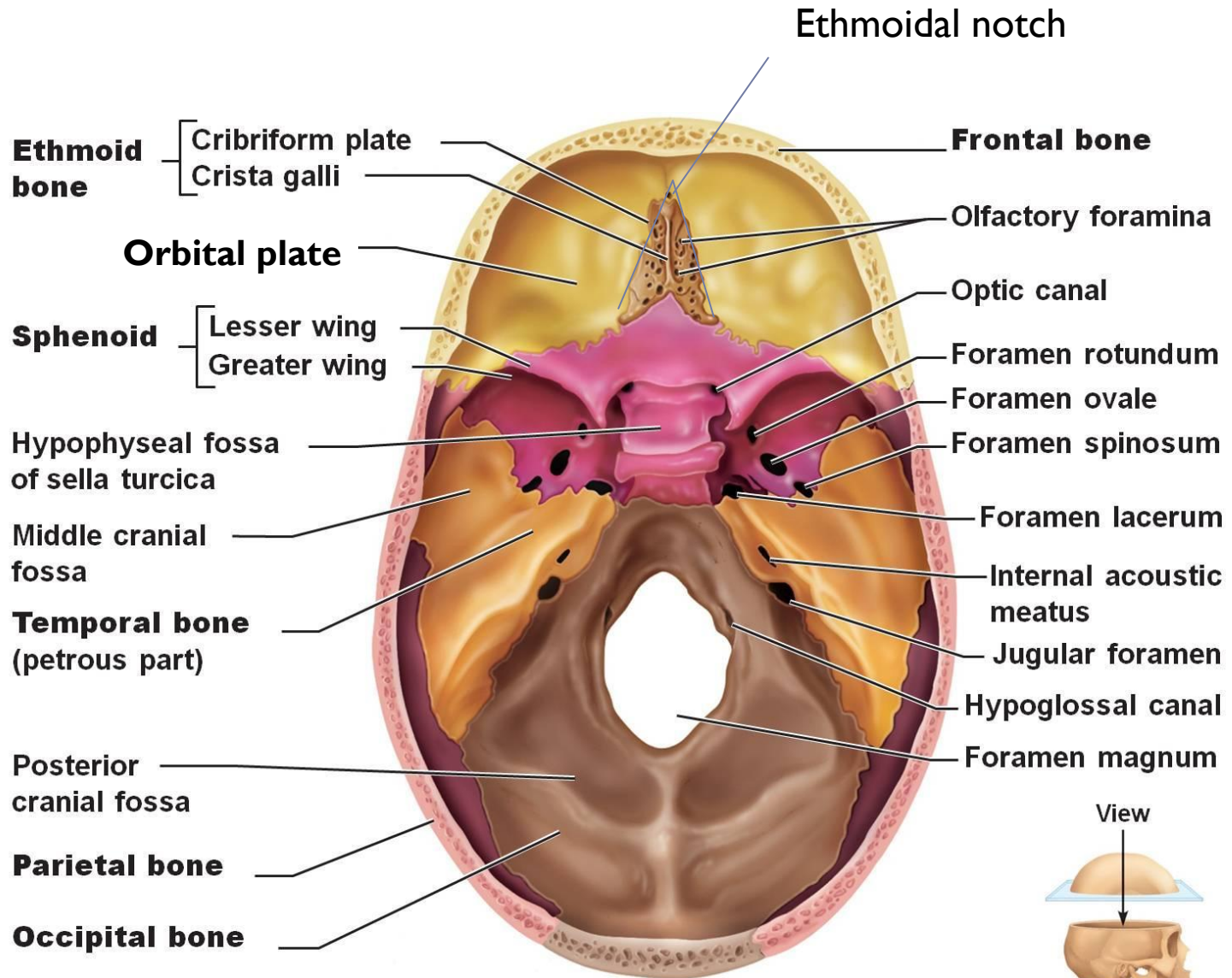


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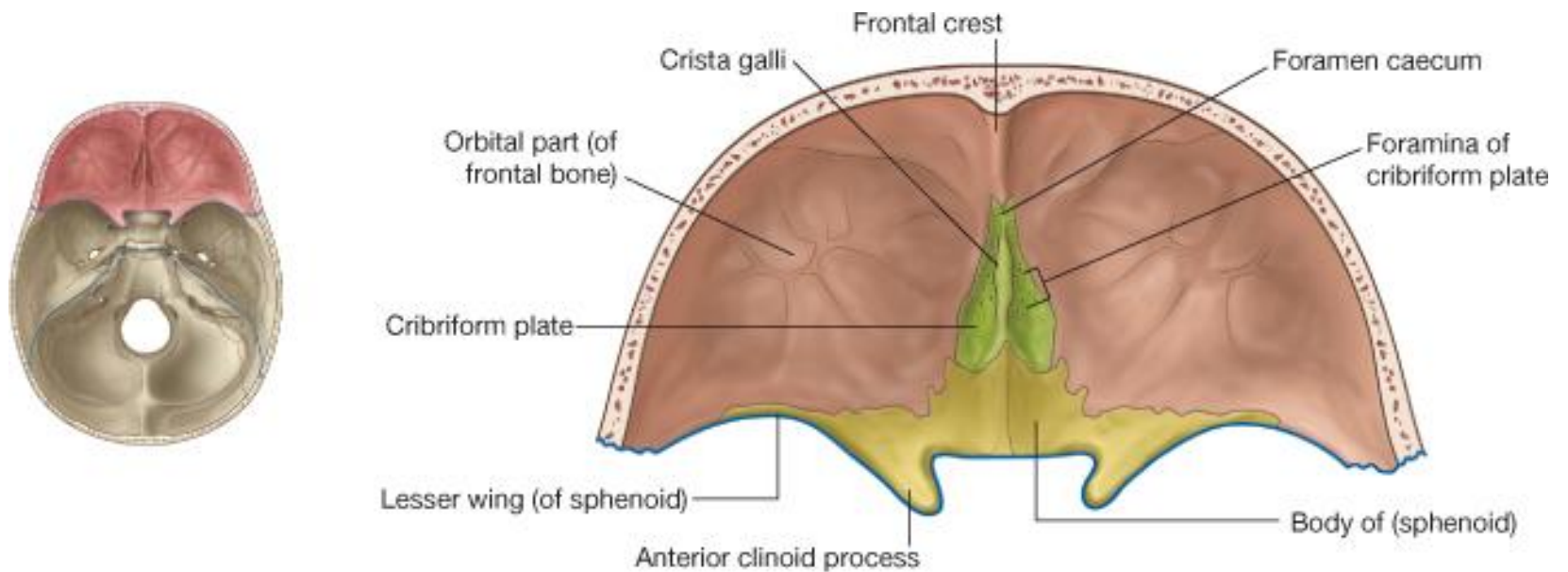
B



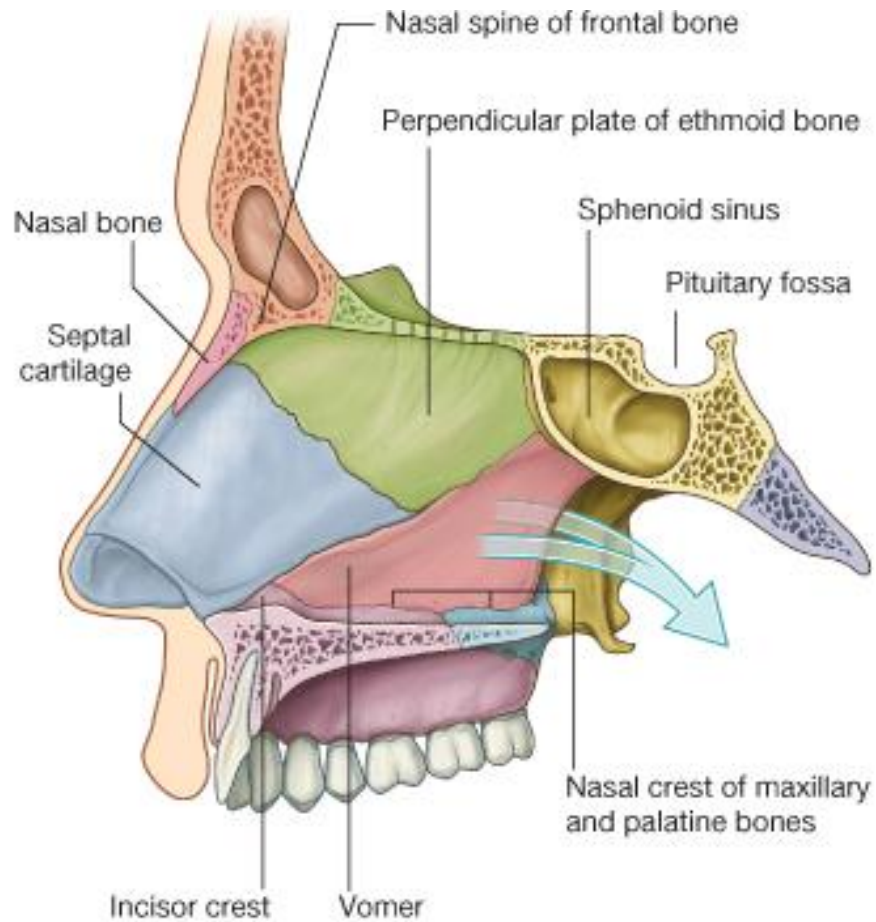
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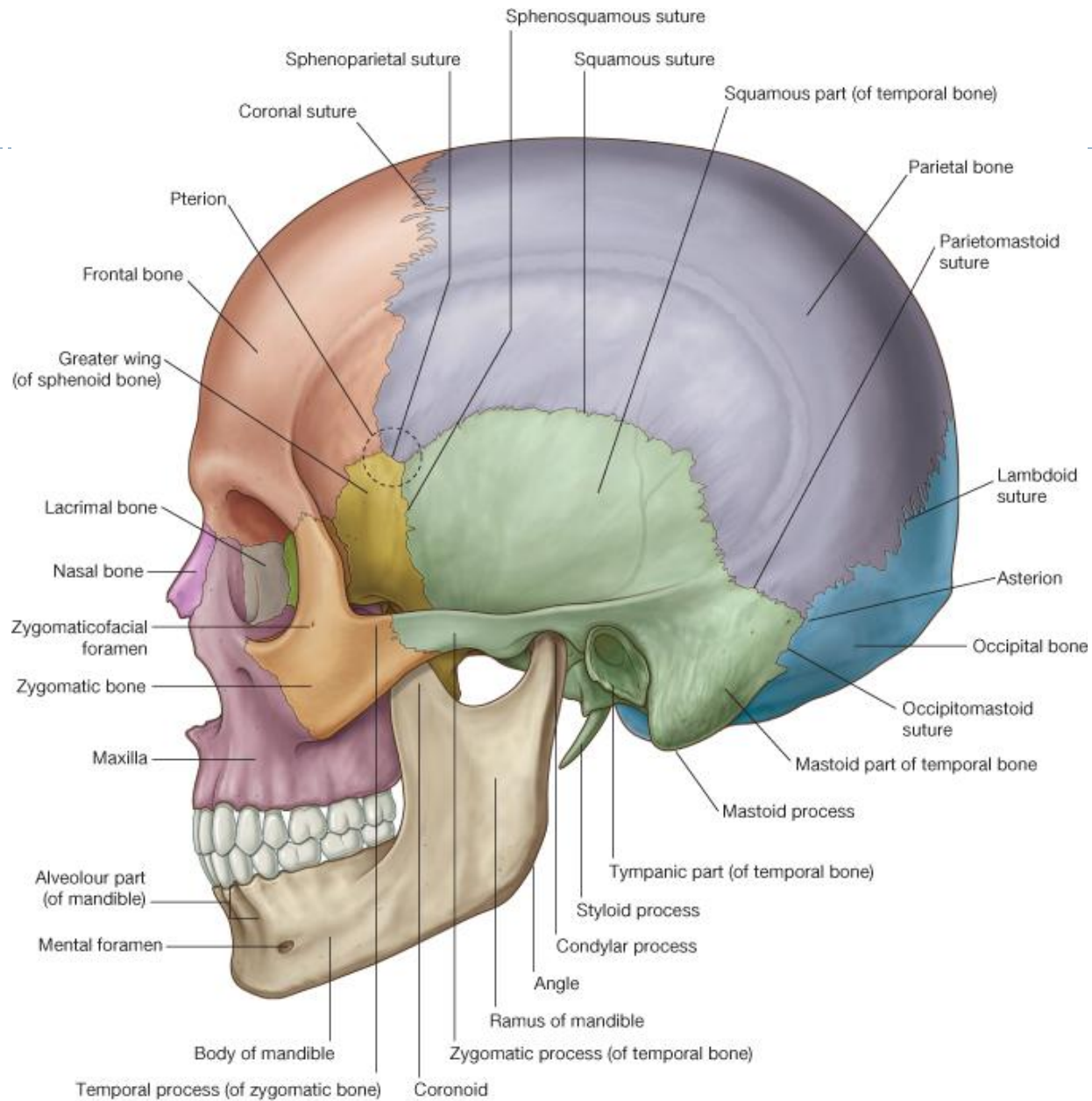
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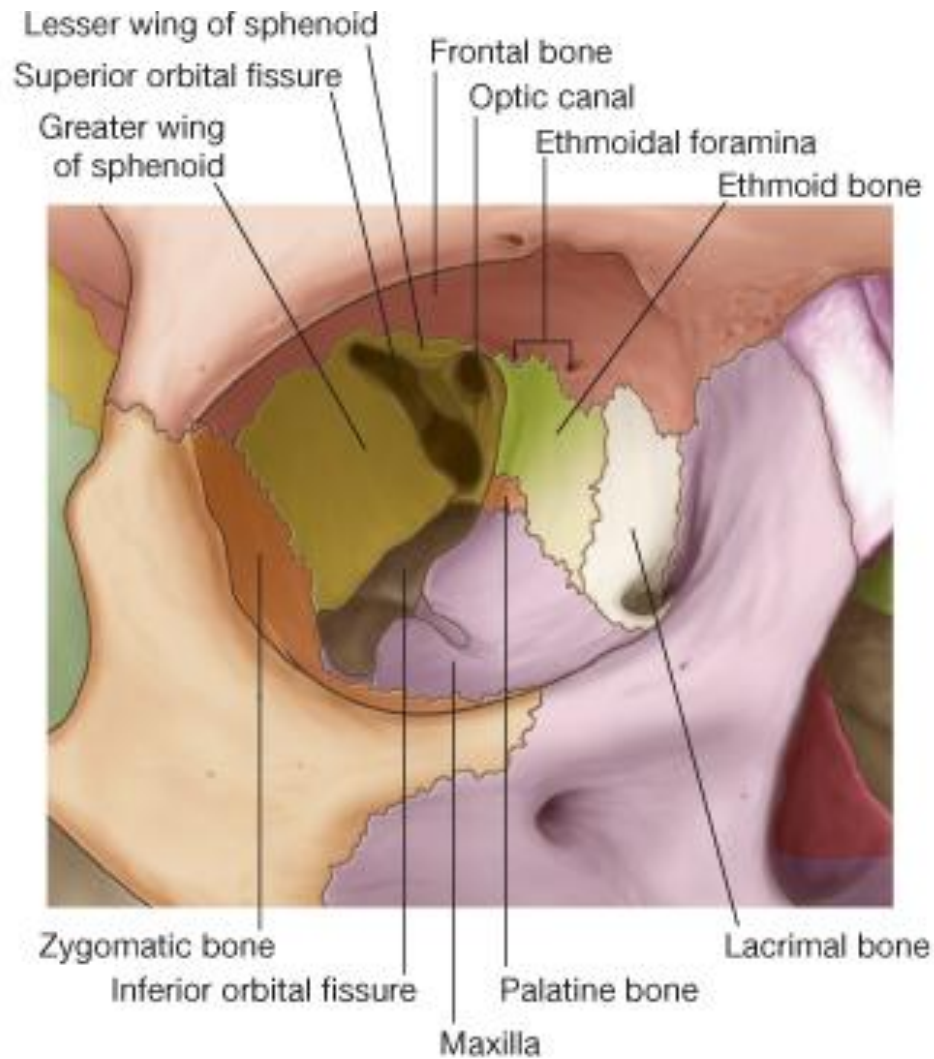


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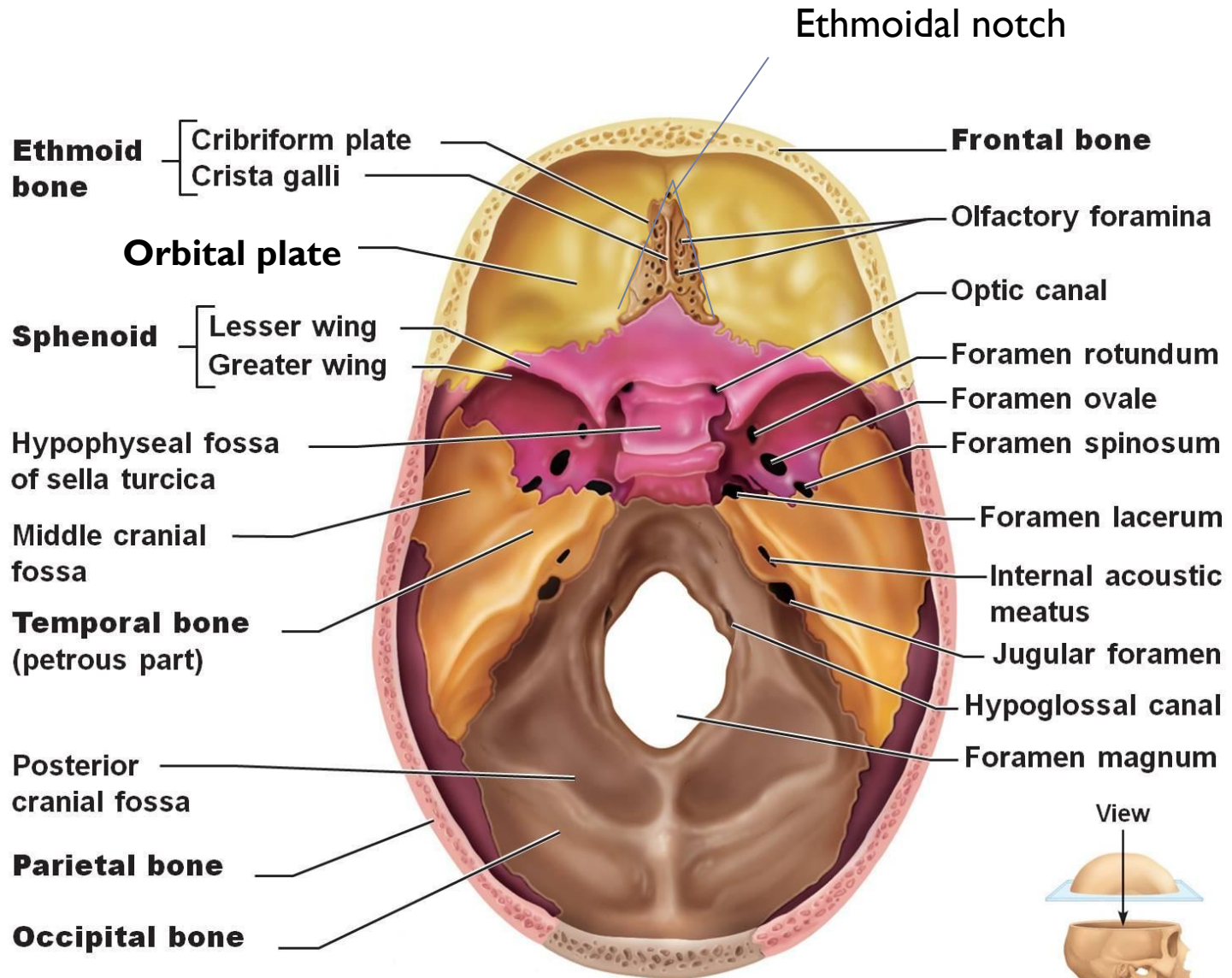




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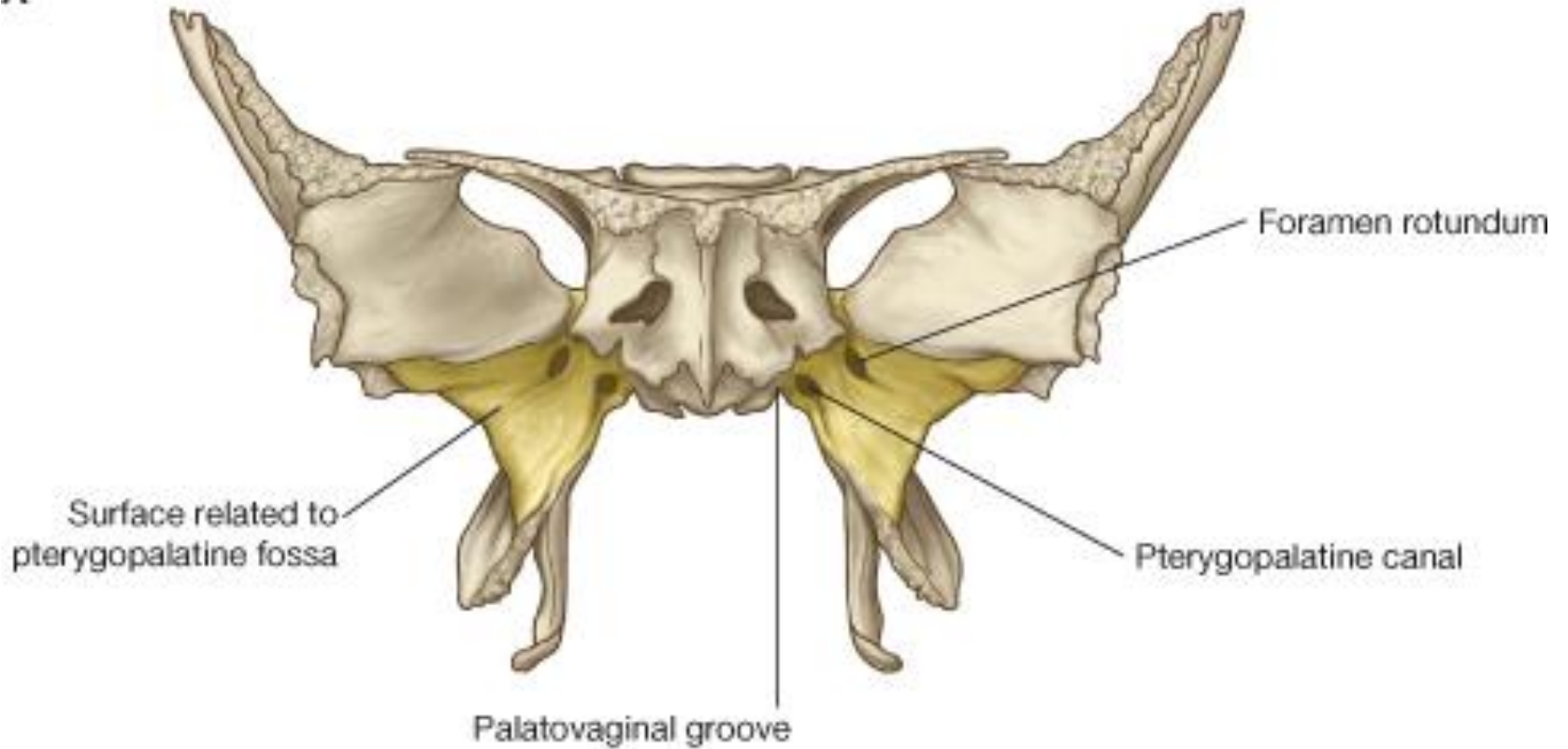


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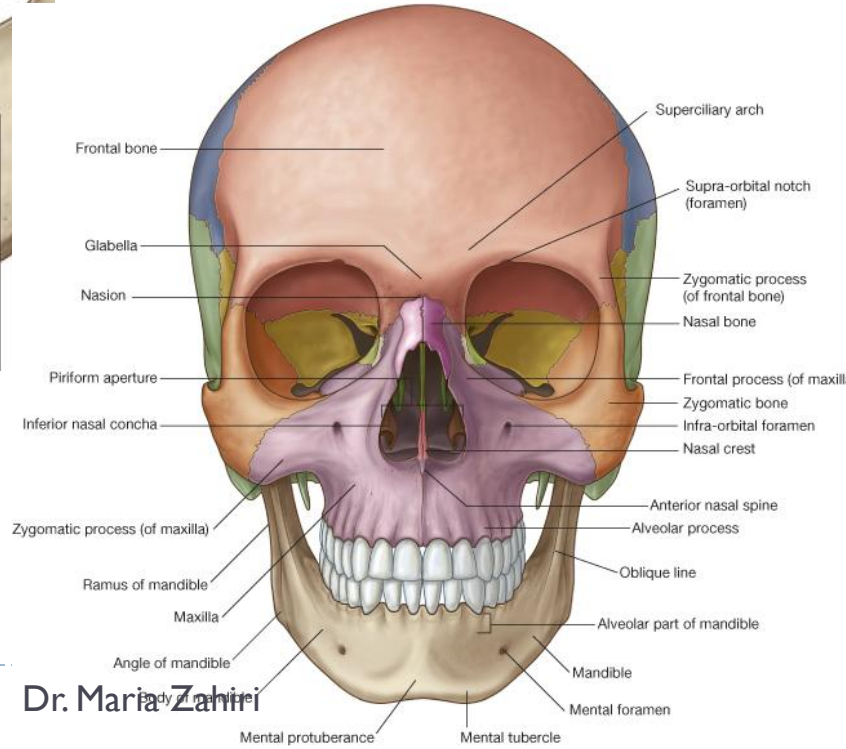
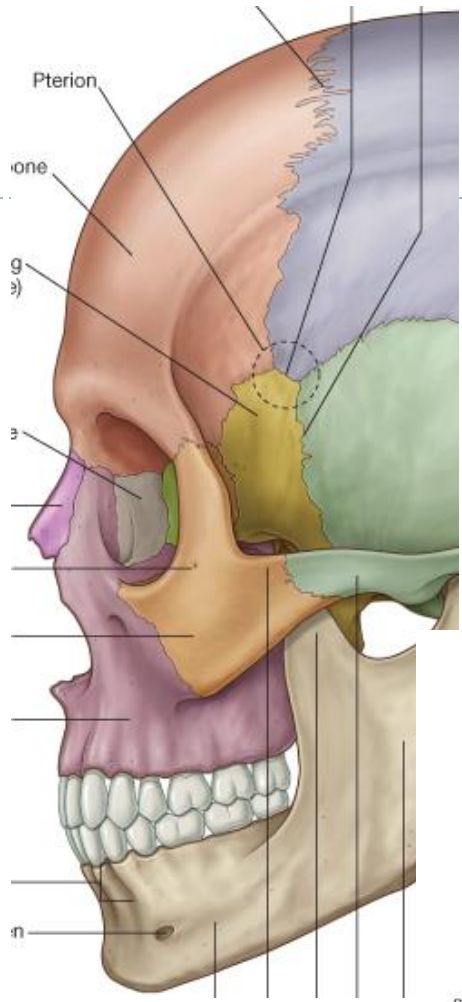
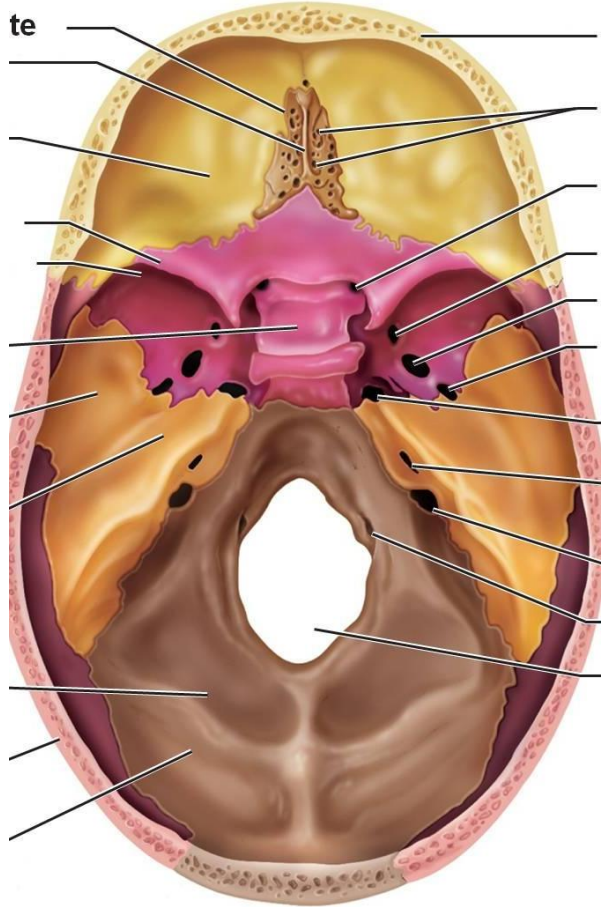


(a) Superior view of the skull, calvaria removed

A



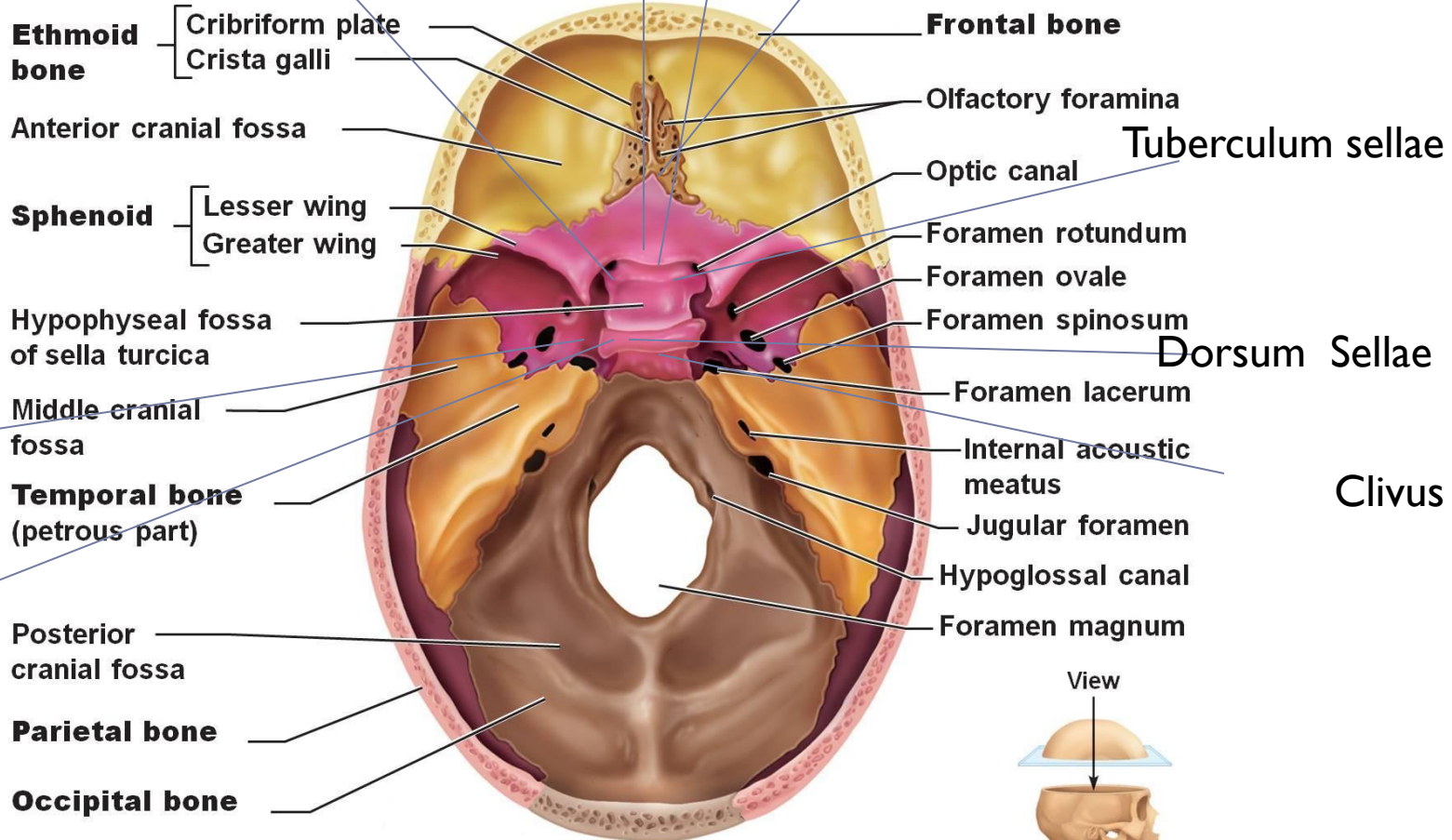
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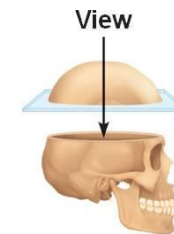
Dr. Maria Zahiri

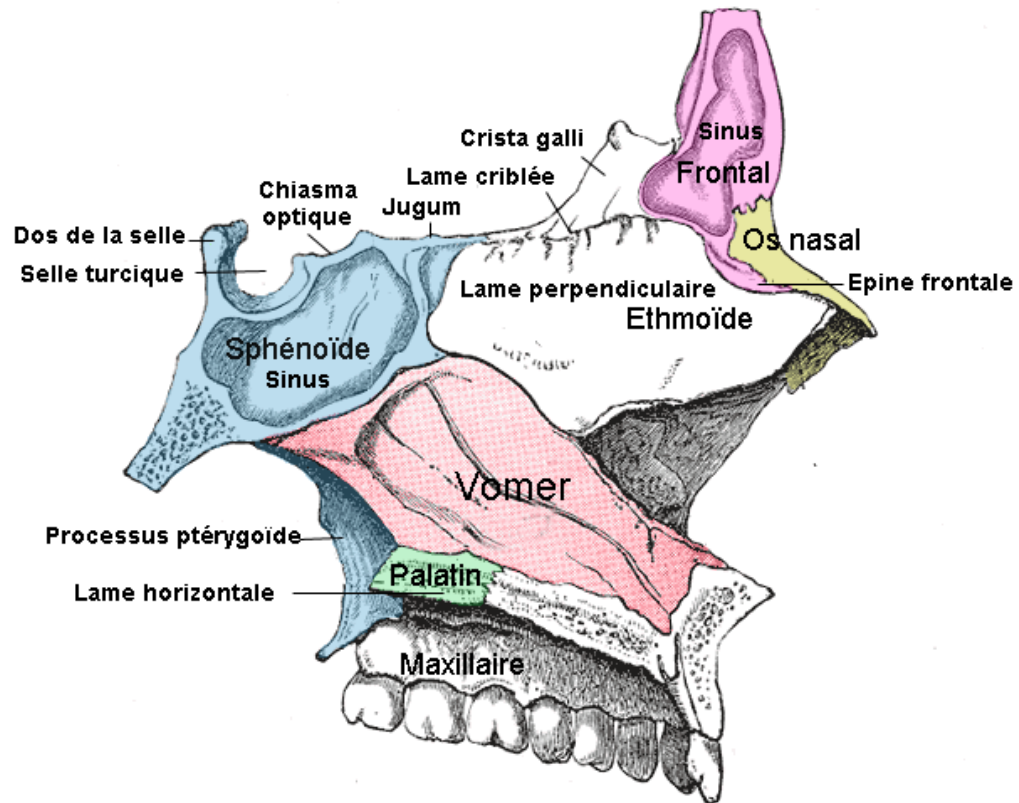
mid. Clinoid process Jugum Ethmoidal Spine

Sulcus chiasmatic

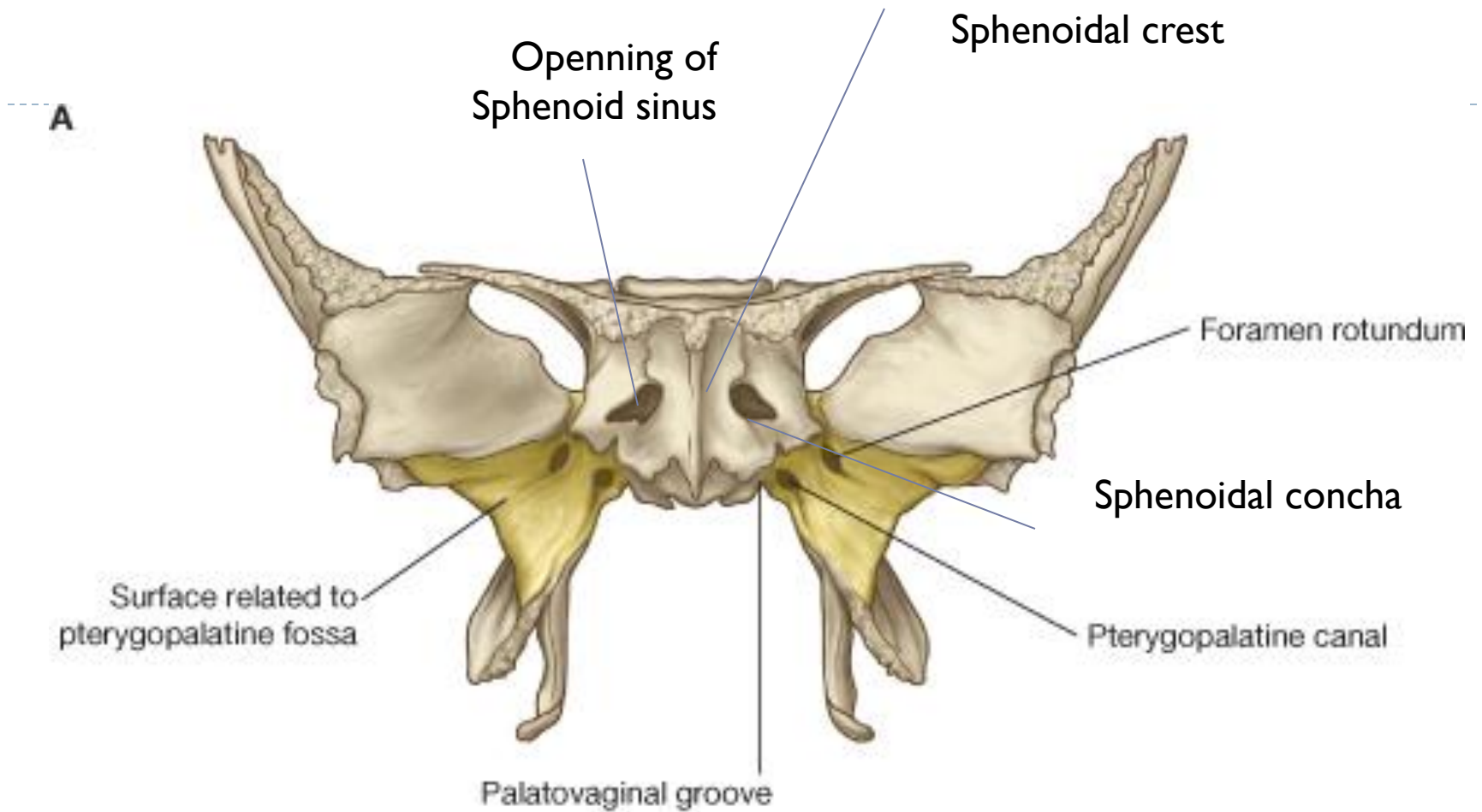


(a) Superior view of the skull, calvaria removed

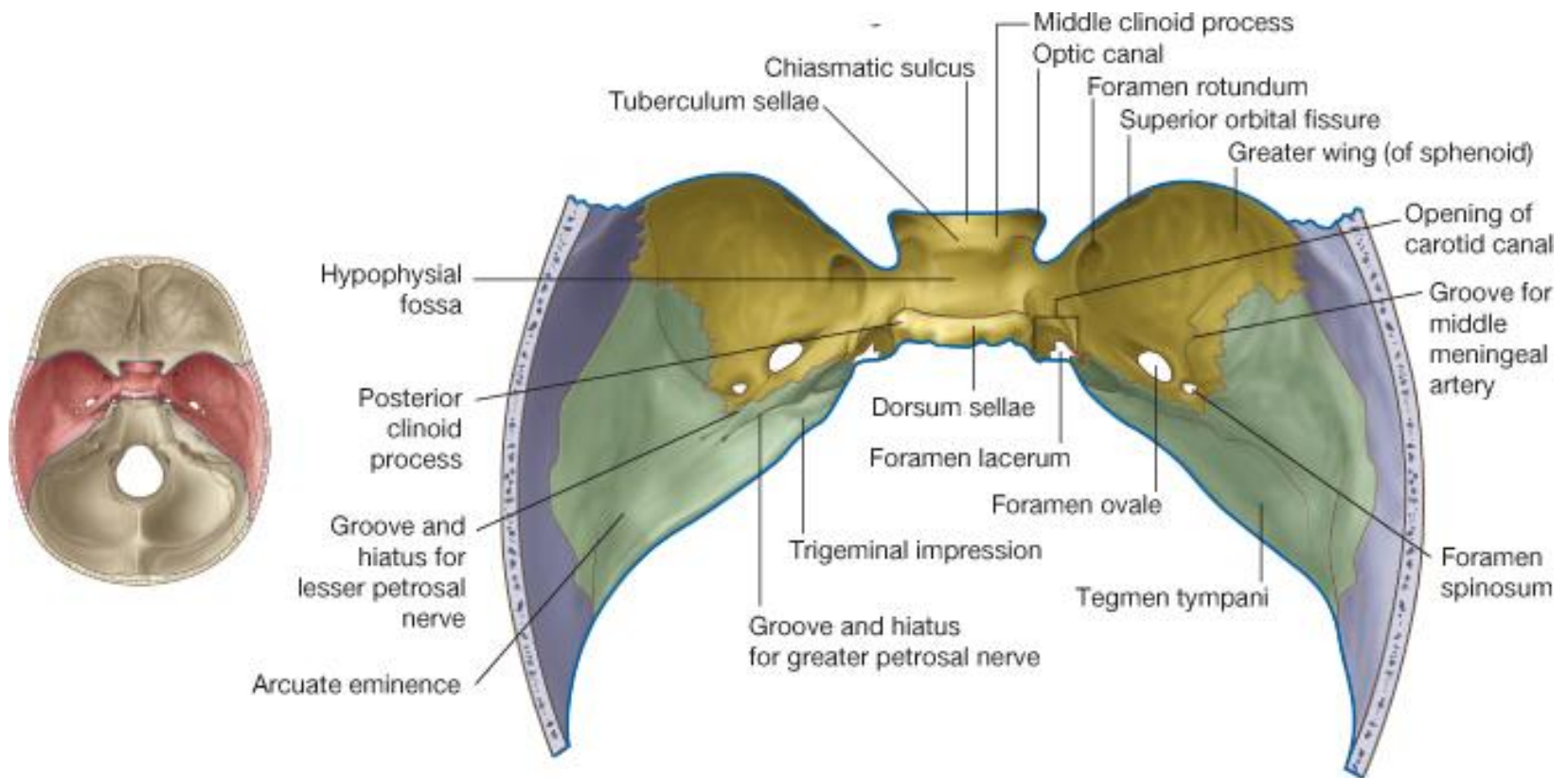




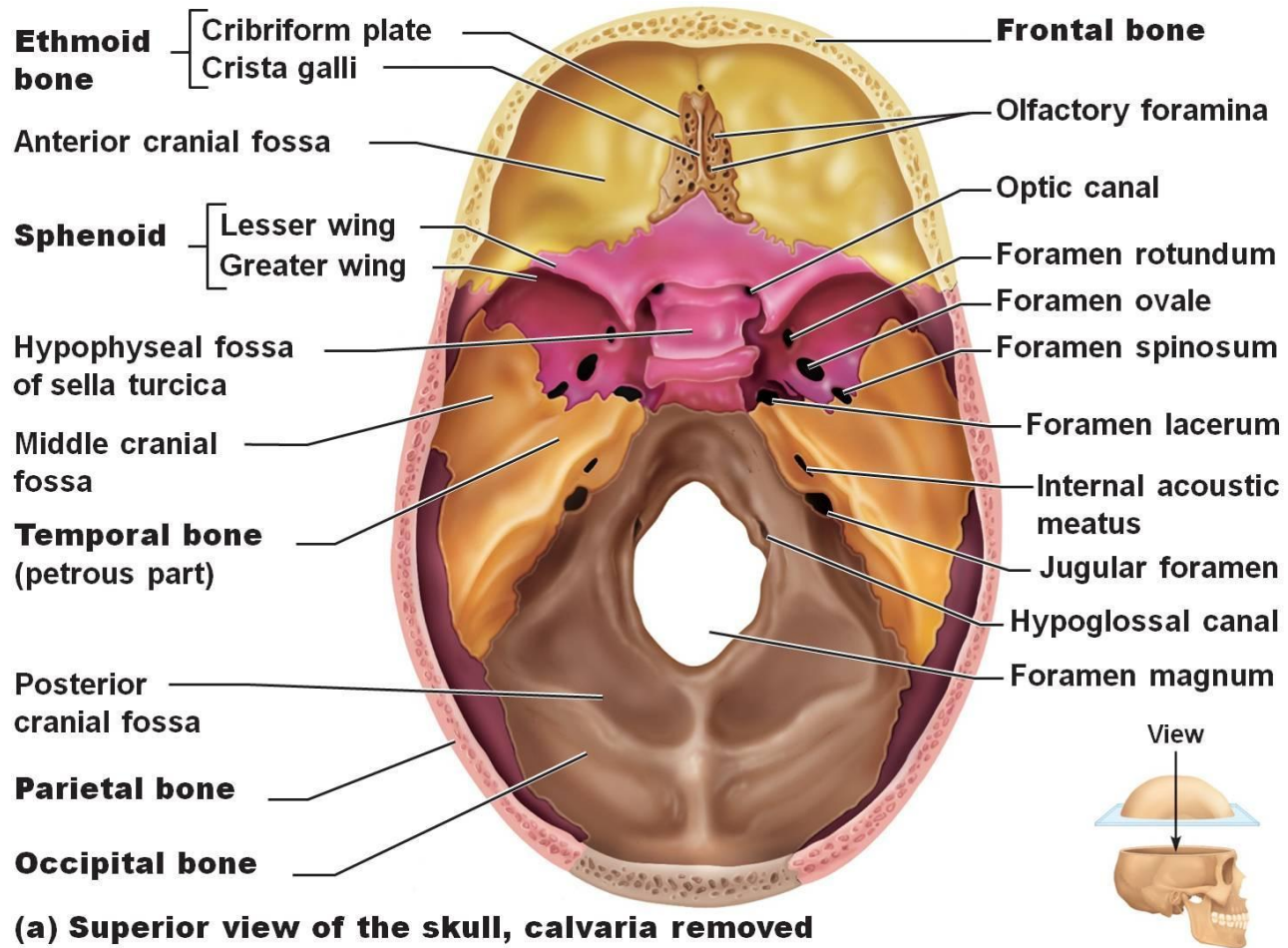
Vomer
(vue latérale droite)

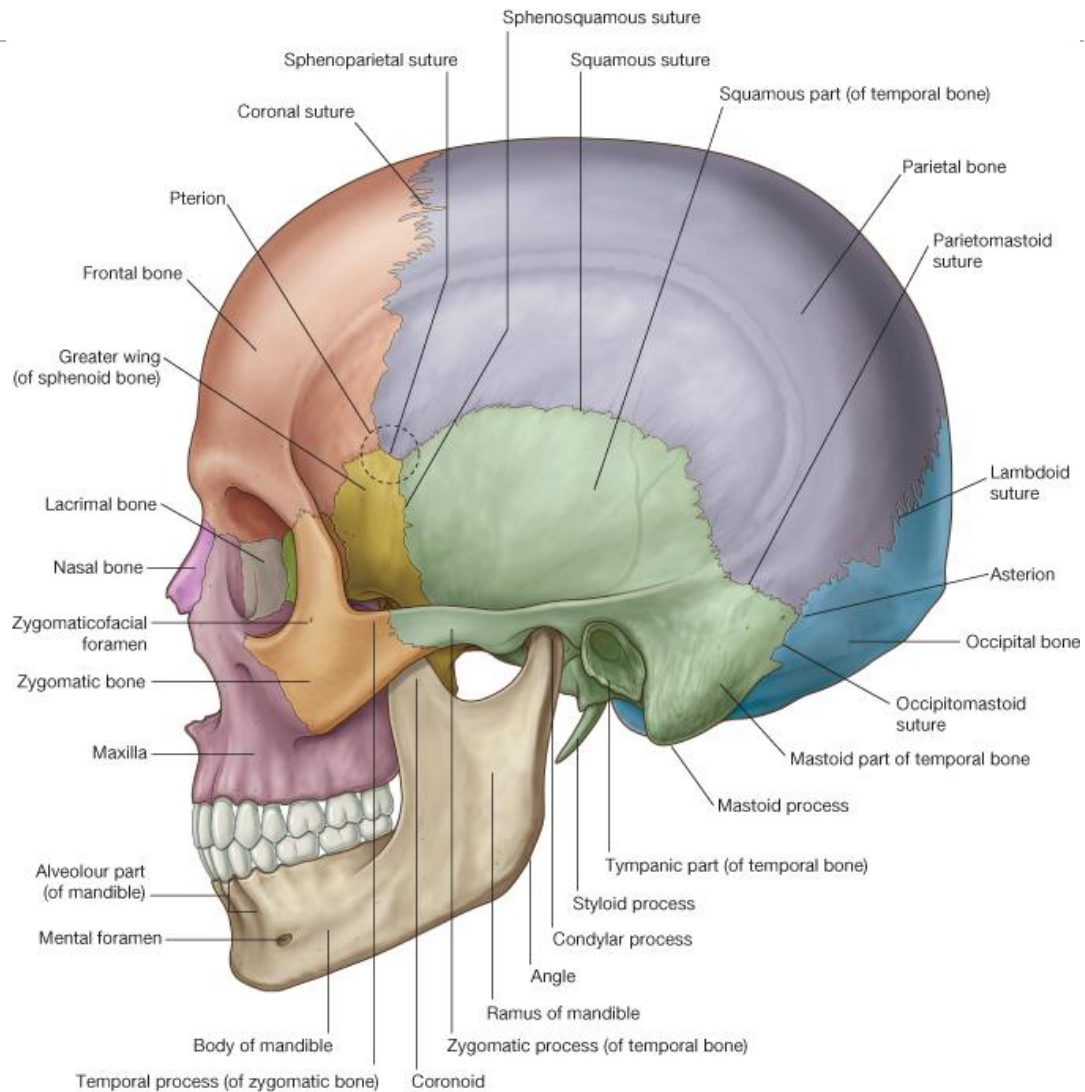


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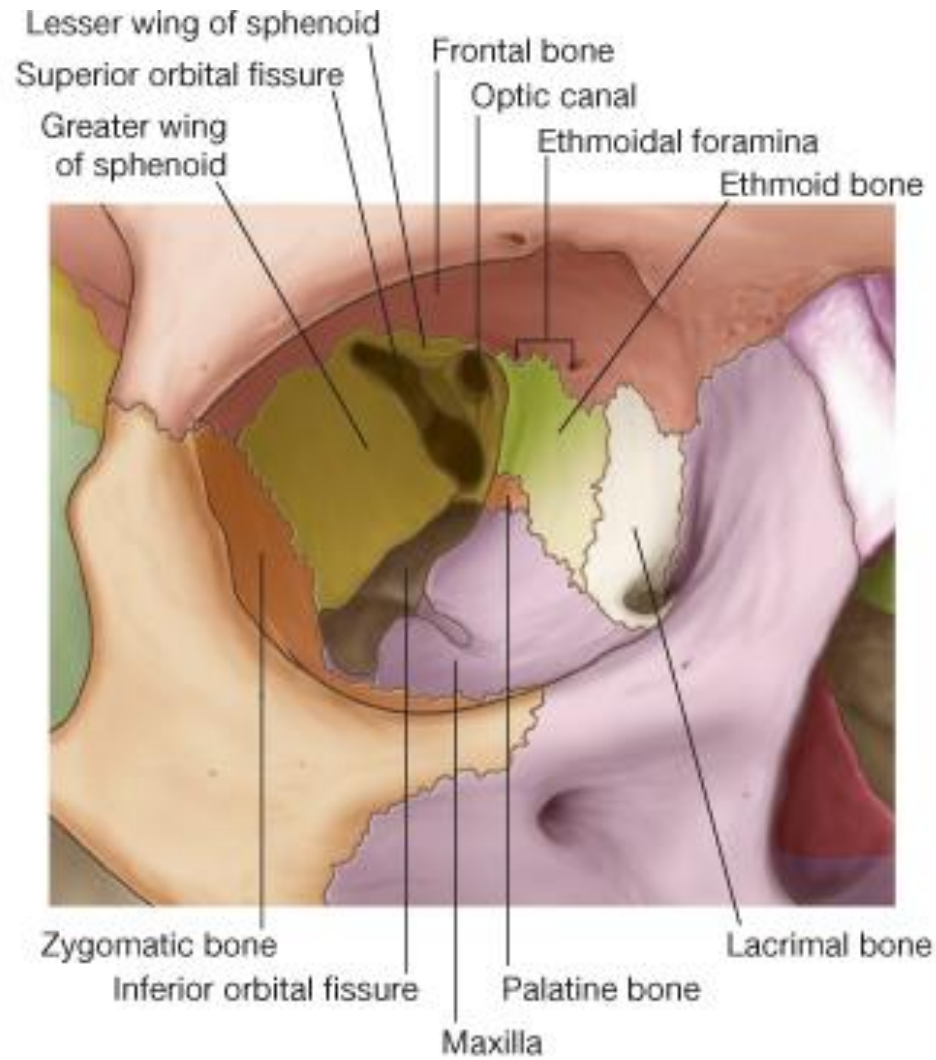


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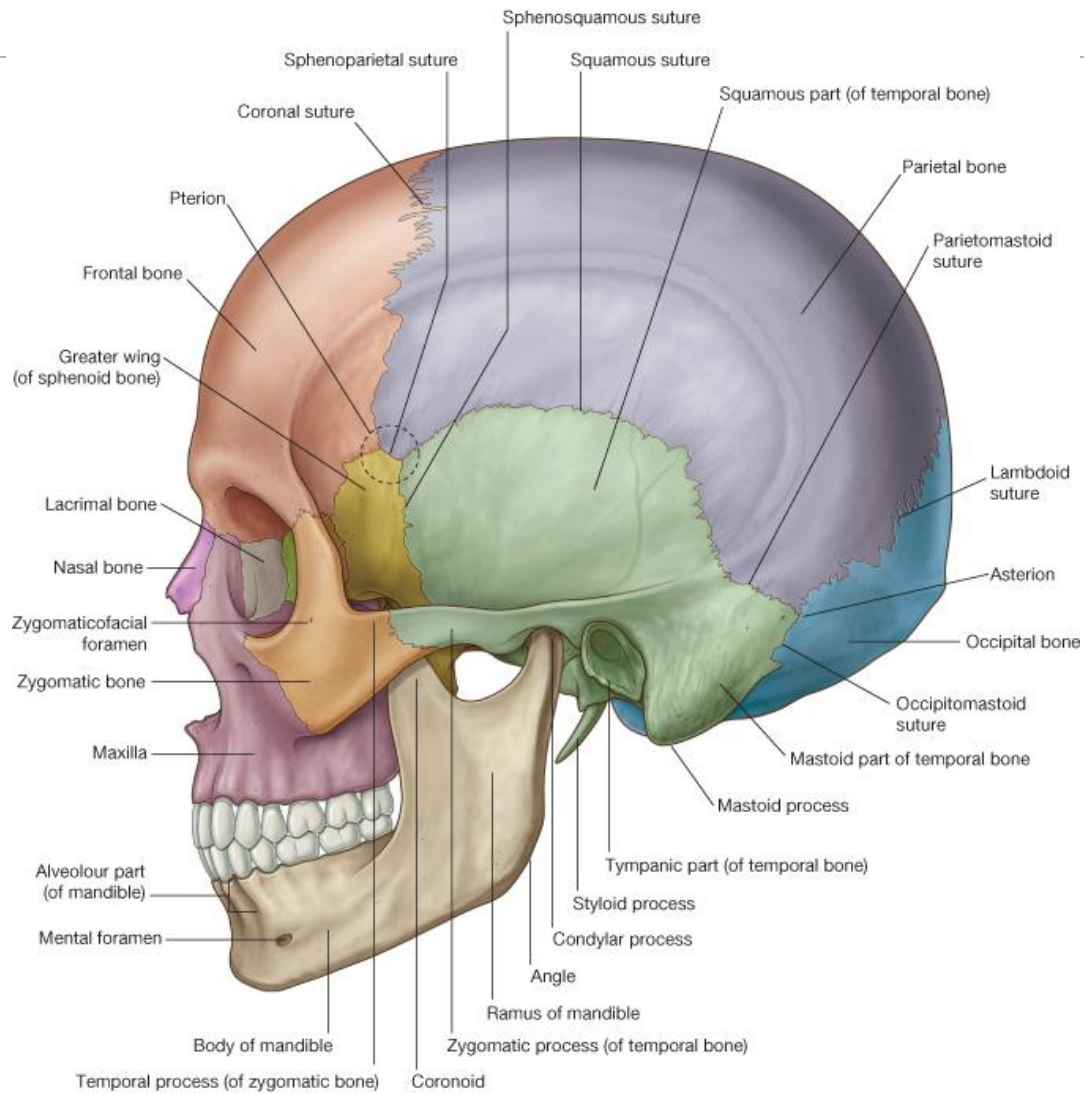




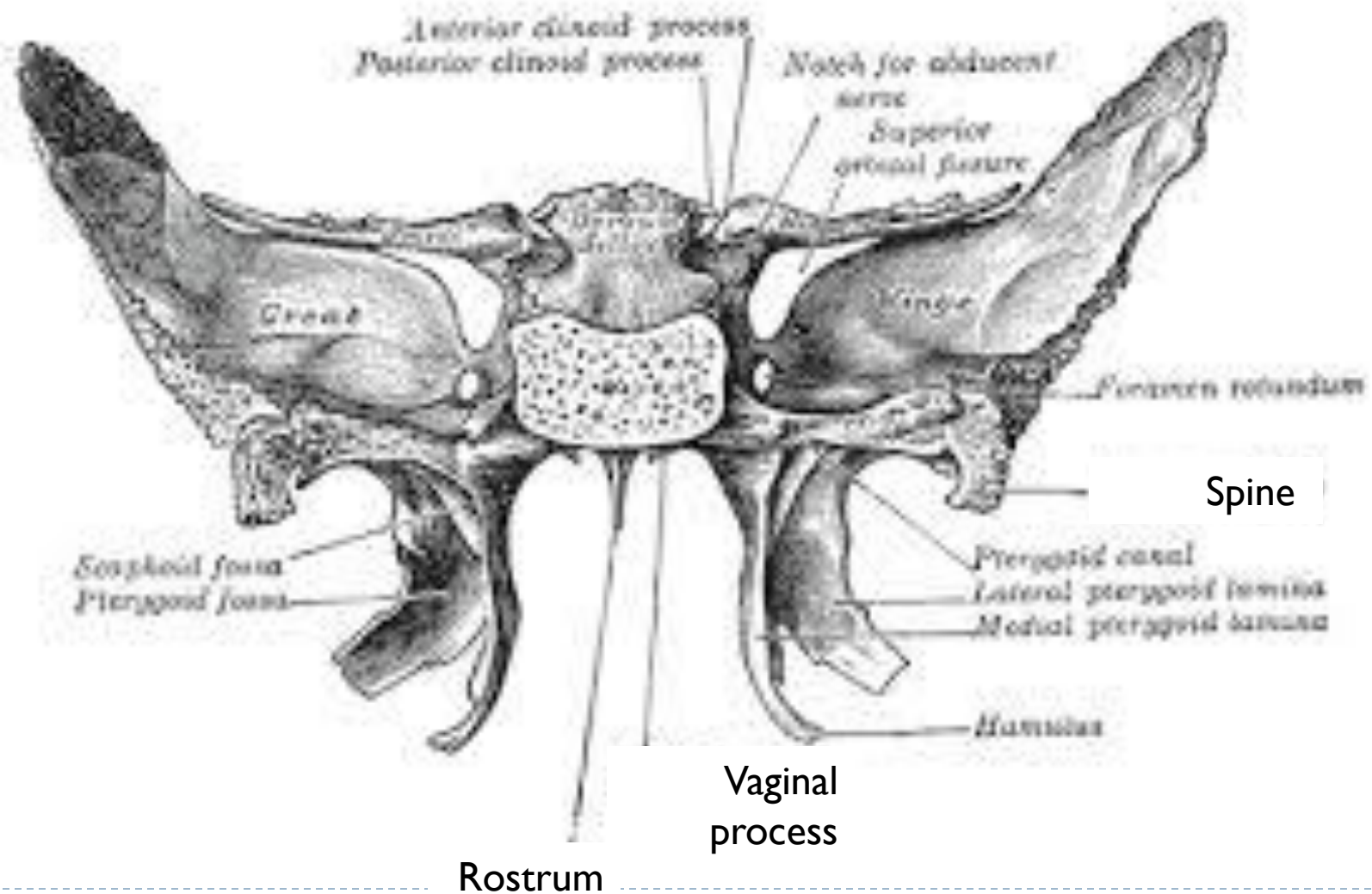
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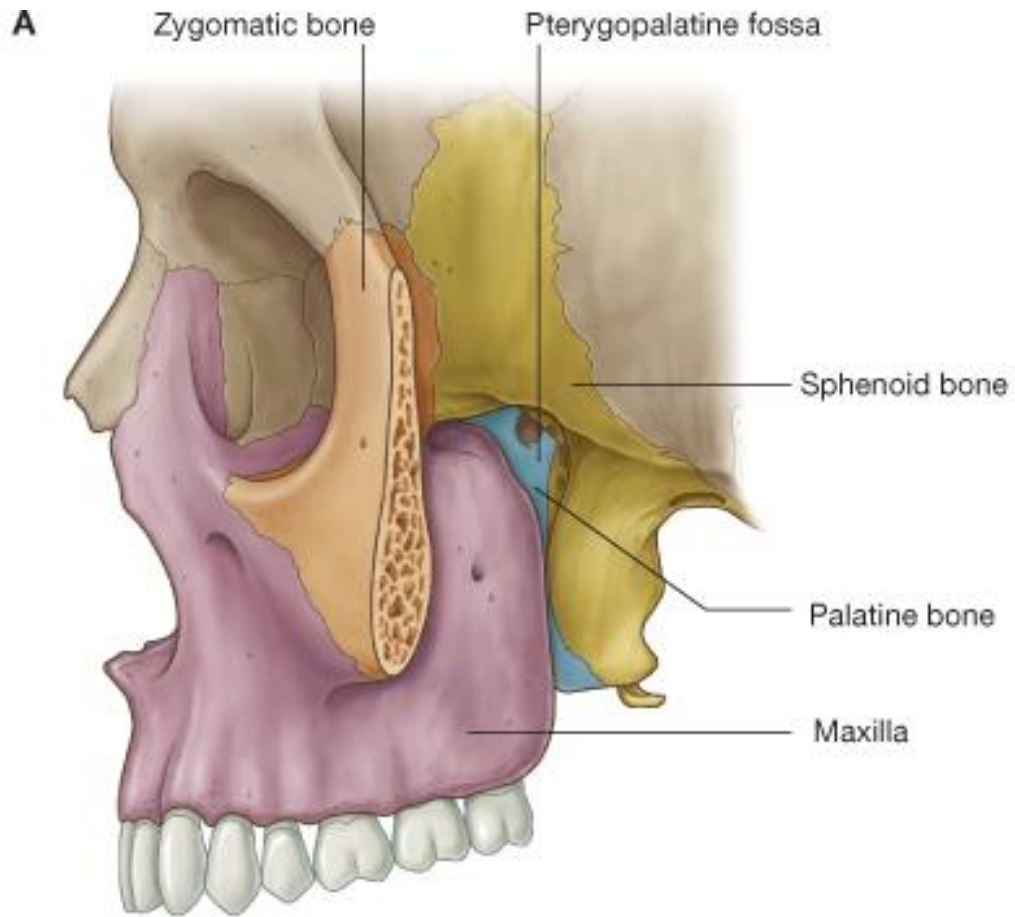


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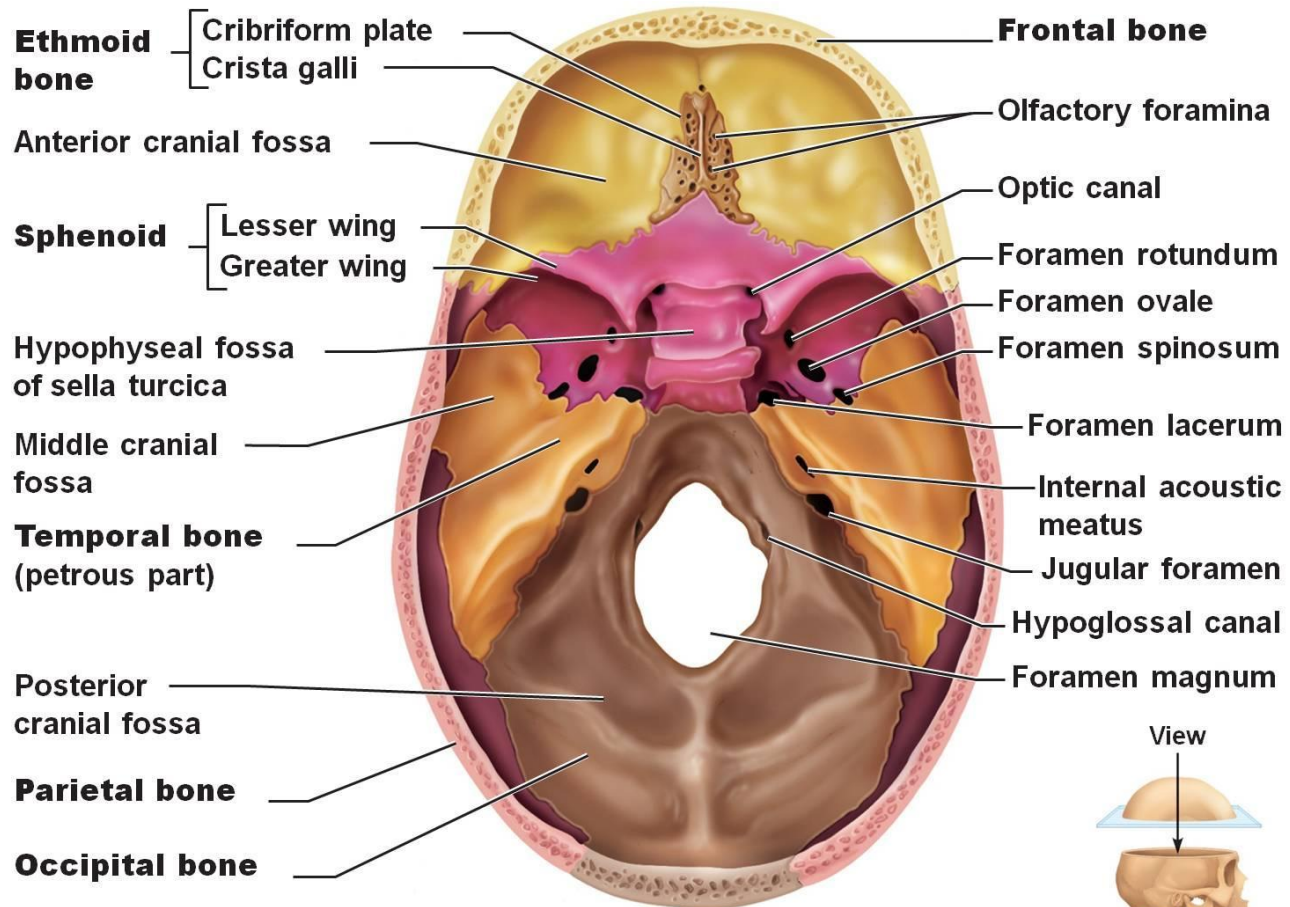
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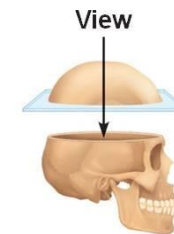


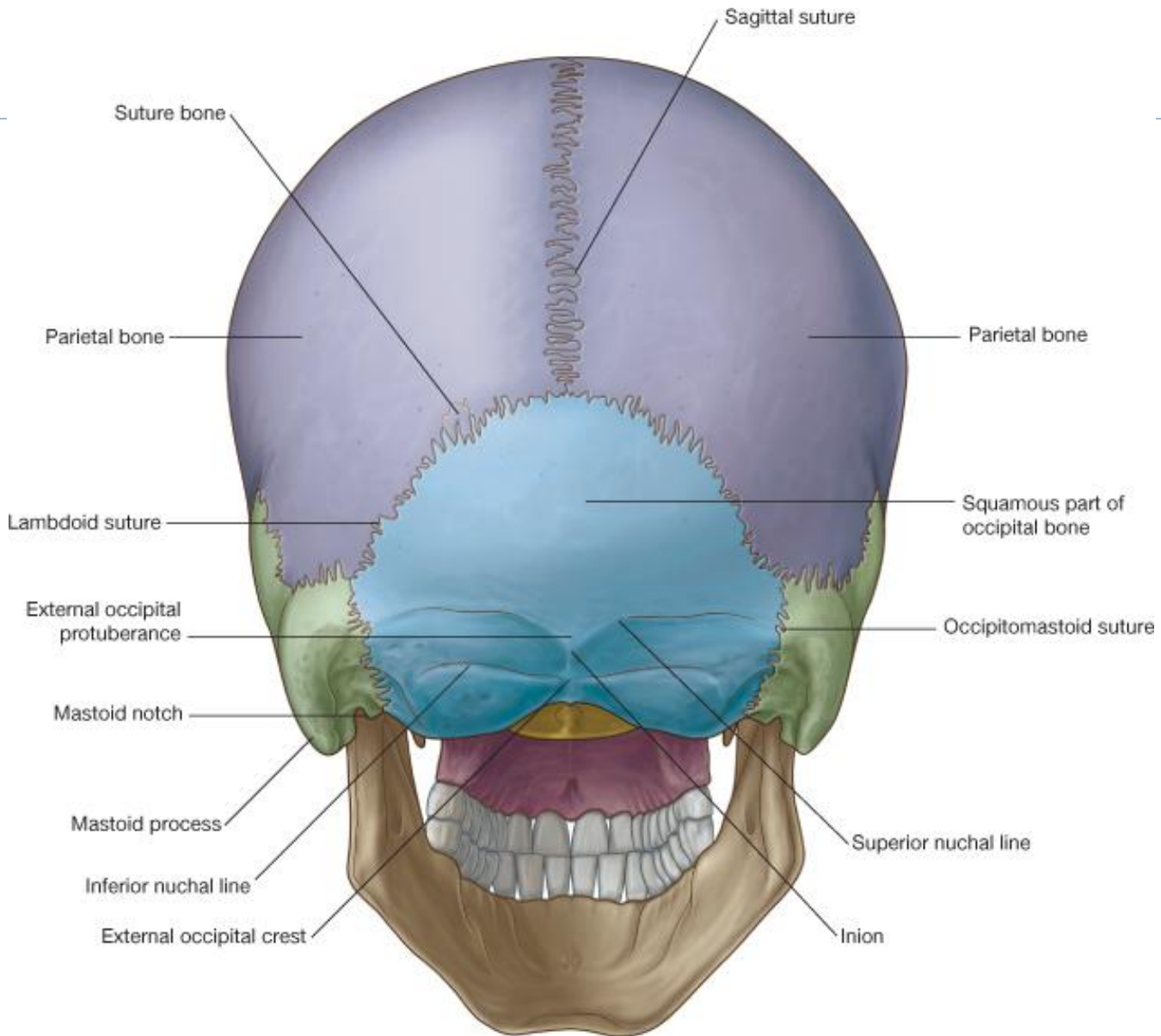
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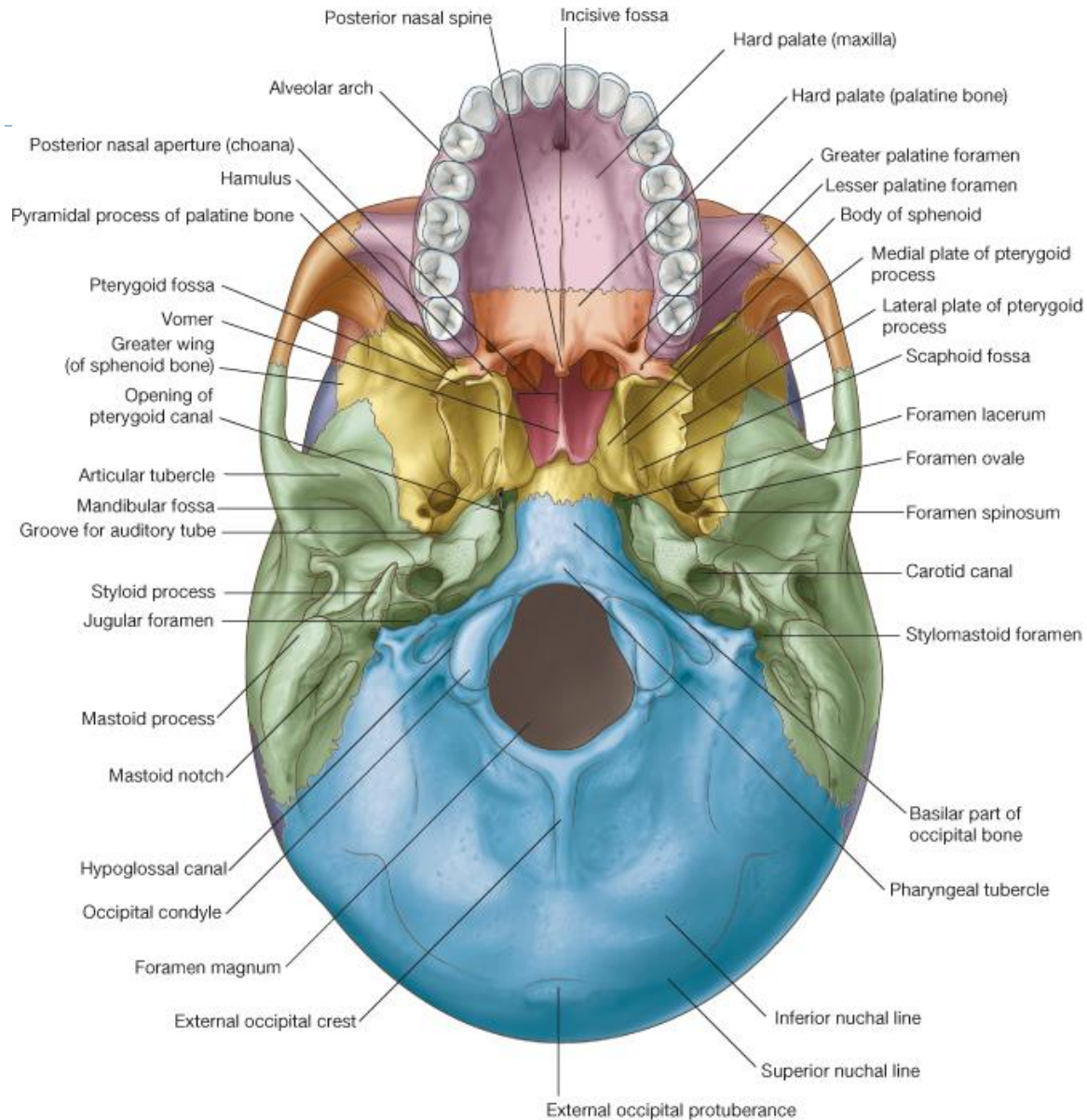
-
- ▶ **8 Cranial Bones:**
 - ▶ 1 x Frontal Bone
 - ▶ 1 x Ethmoid Bone
 - ▶ 1 x Sphenoid Bone
 - ▶ **1 x Occipital Bone**
 - ▶ 2 x Temporal Bones
 - ▶ 2 x Parietal Bones

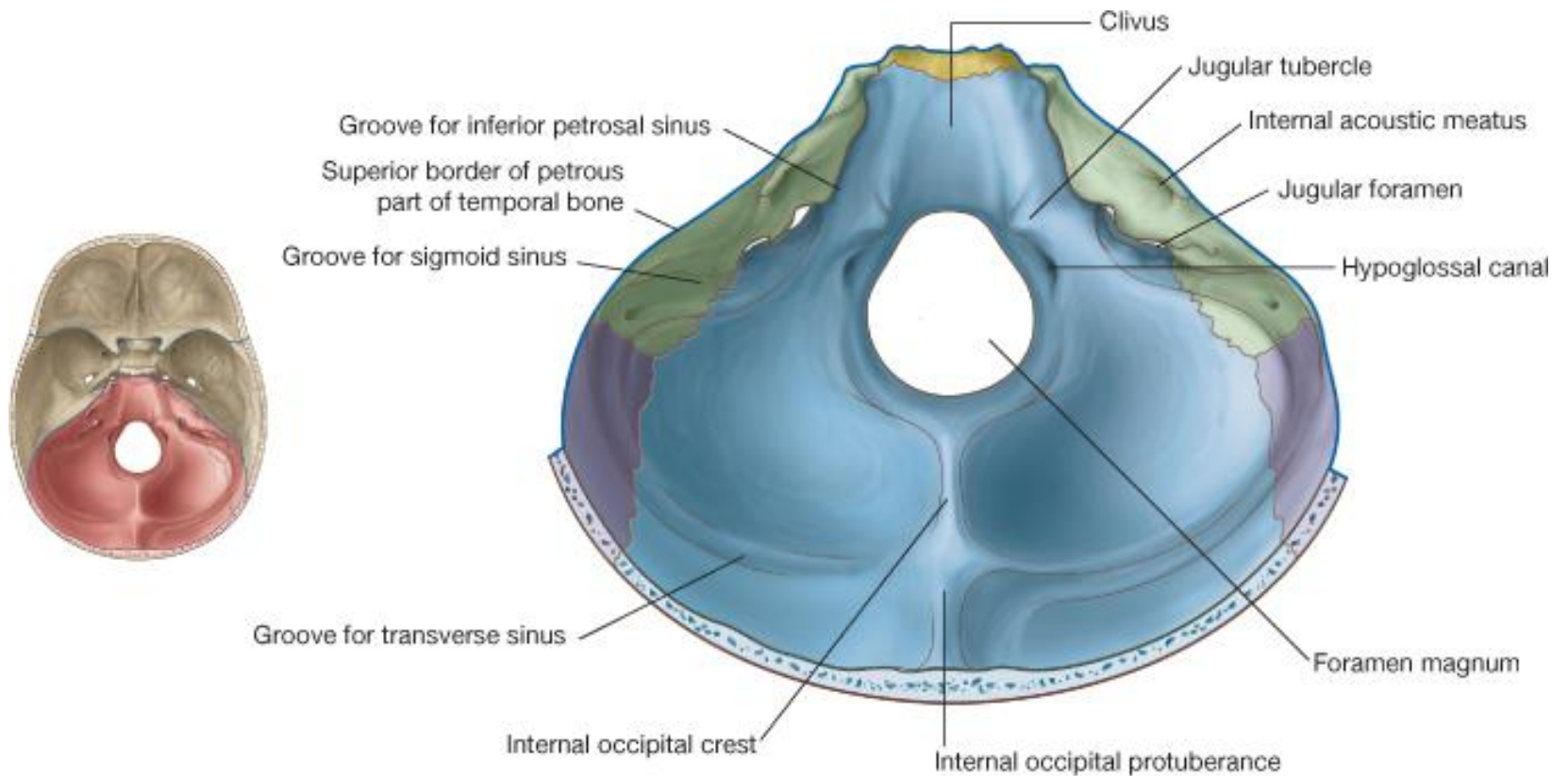


(a) Superior view of the skull, calvaria removed









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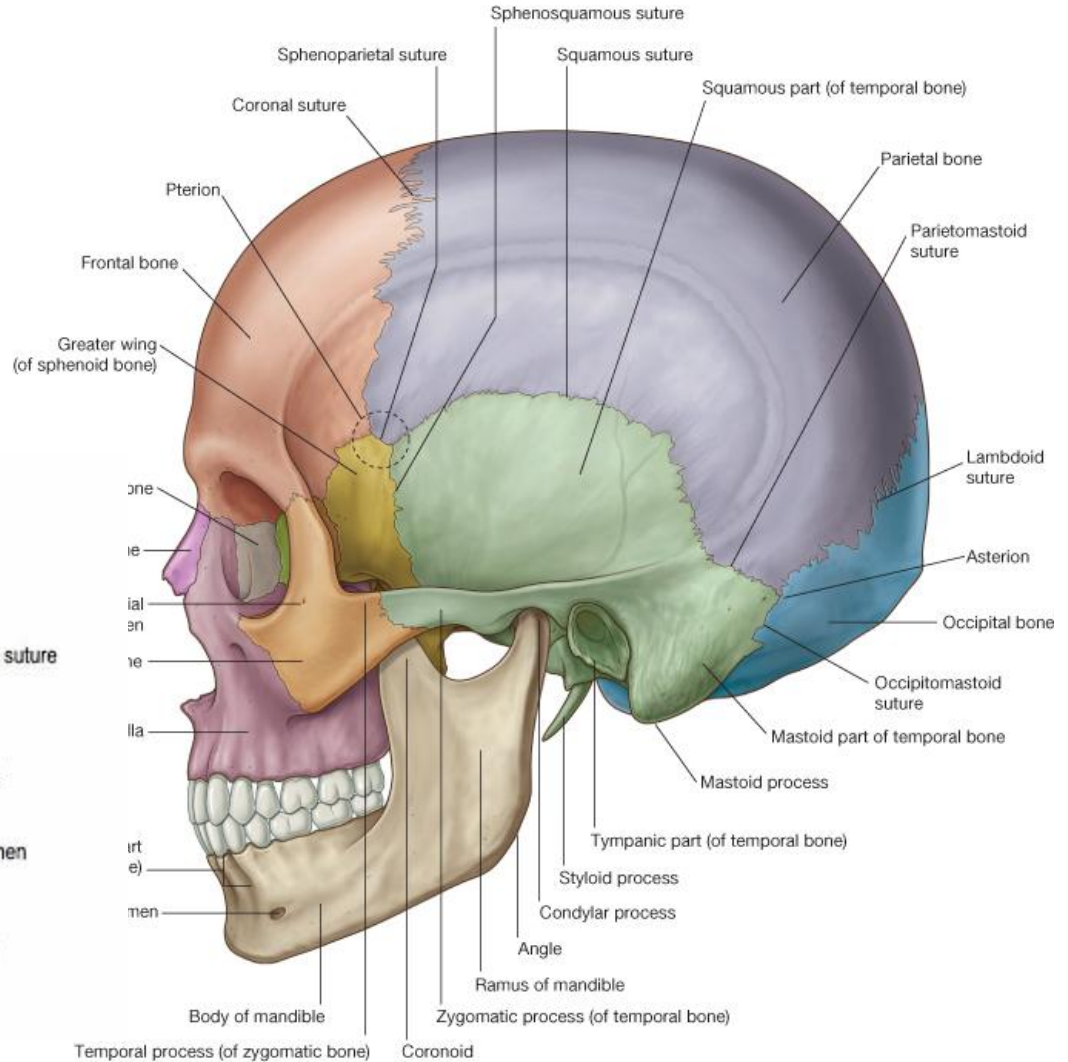
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 - ▶ 2 x Parietal Bones

Squamous

Pteromastoid

Tympanic

Styloid process

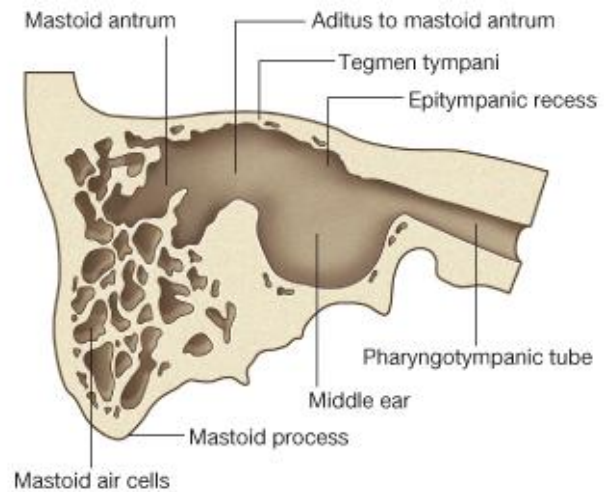
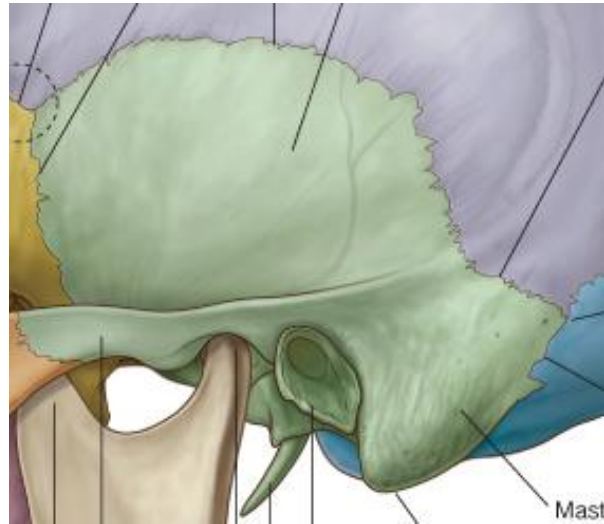


Squamous

Pteromastoid

Tympanic

Styloid process

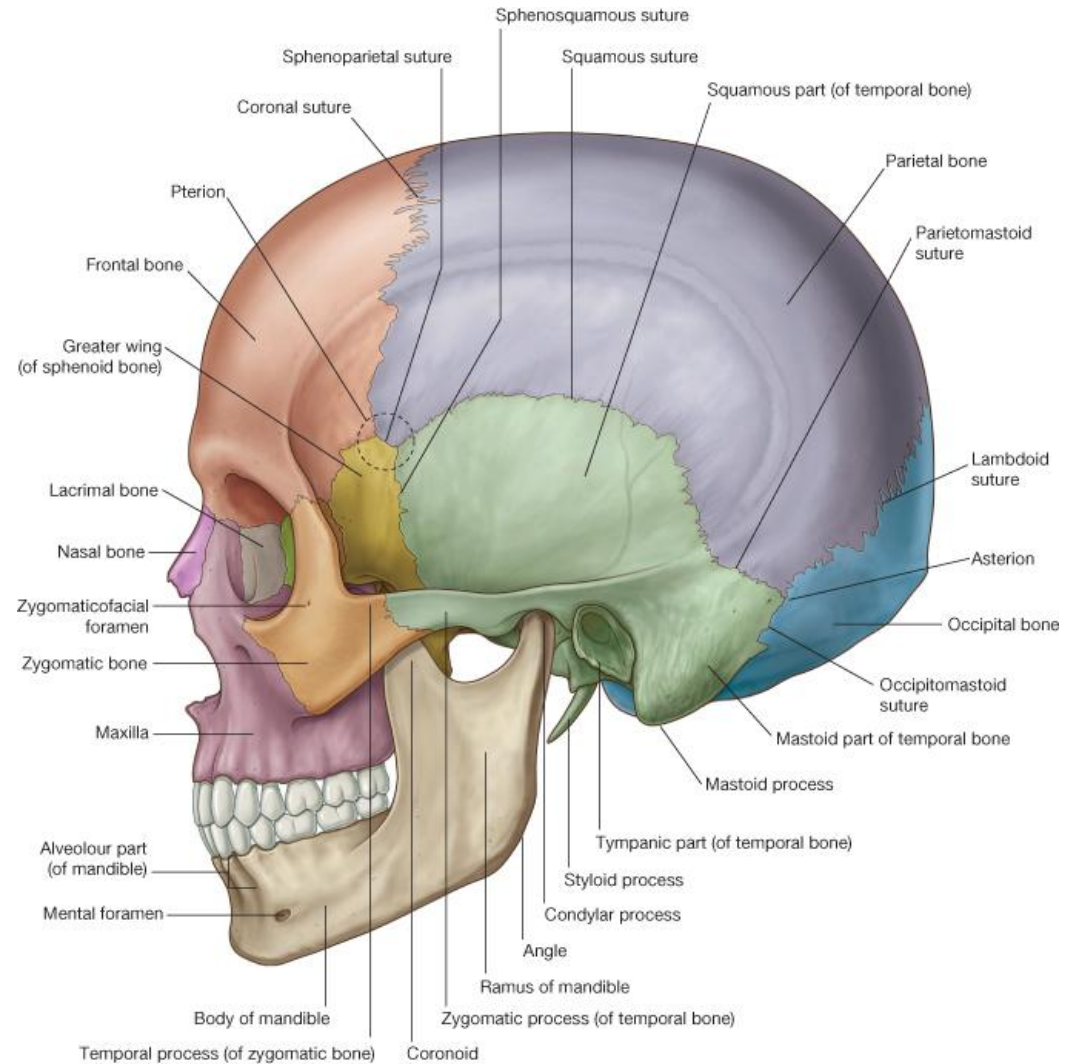


Squamous

Pteromastoid

Tympanic

Styloid process



Squamous

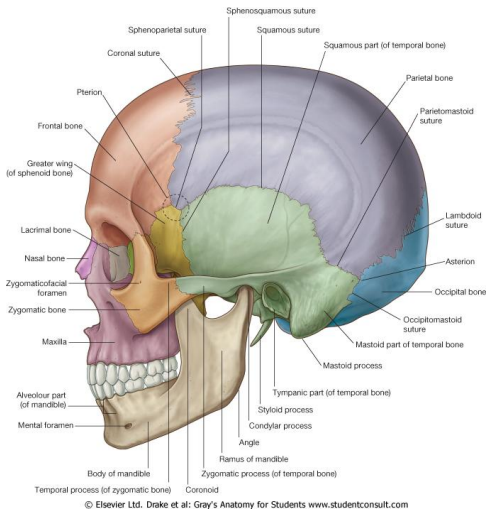
Pteromastoid

Tympanic

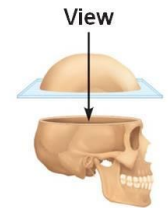
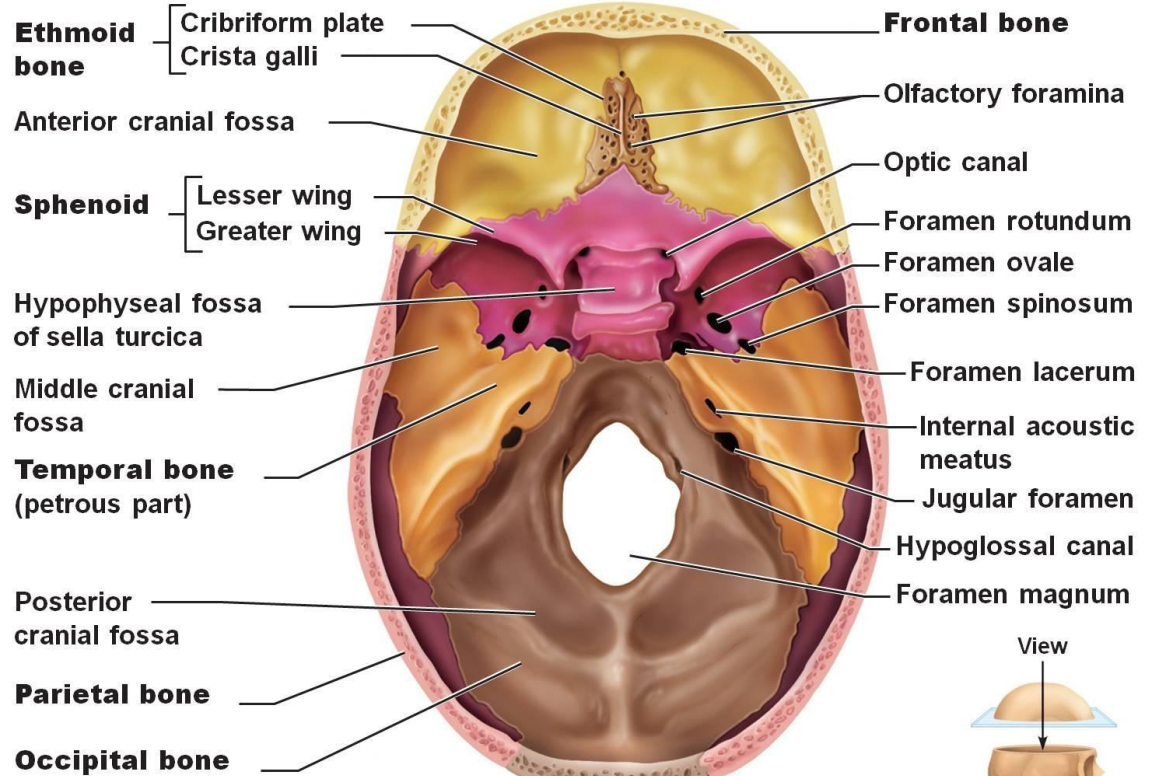
Styloid processt

Petrous

3 surface (ant., pos. & inf.)
3 margin (sup & pos & ant.)



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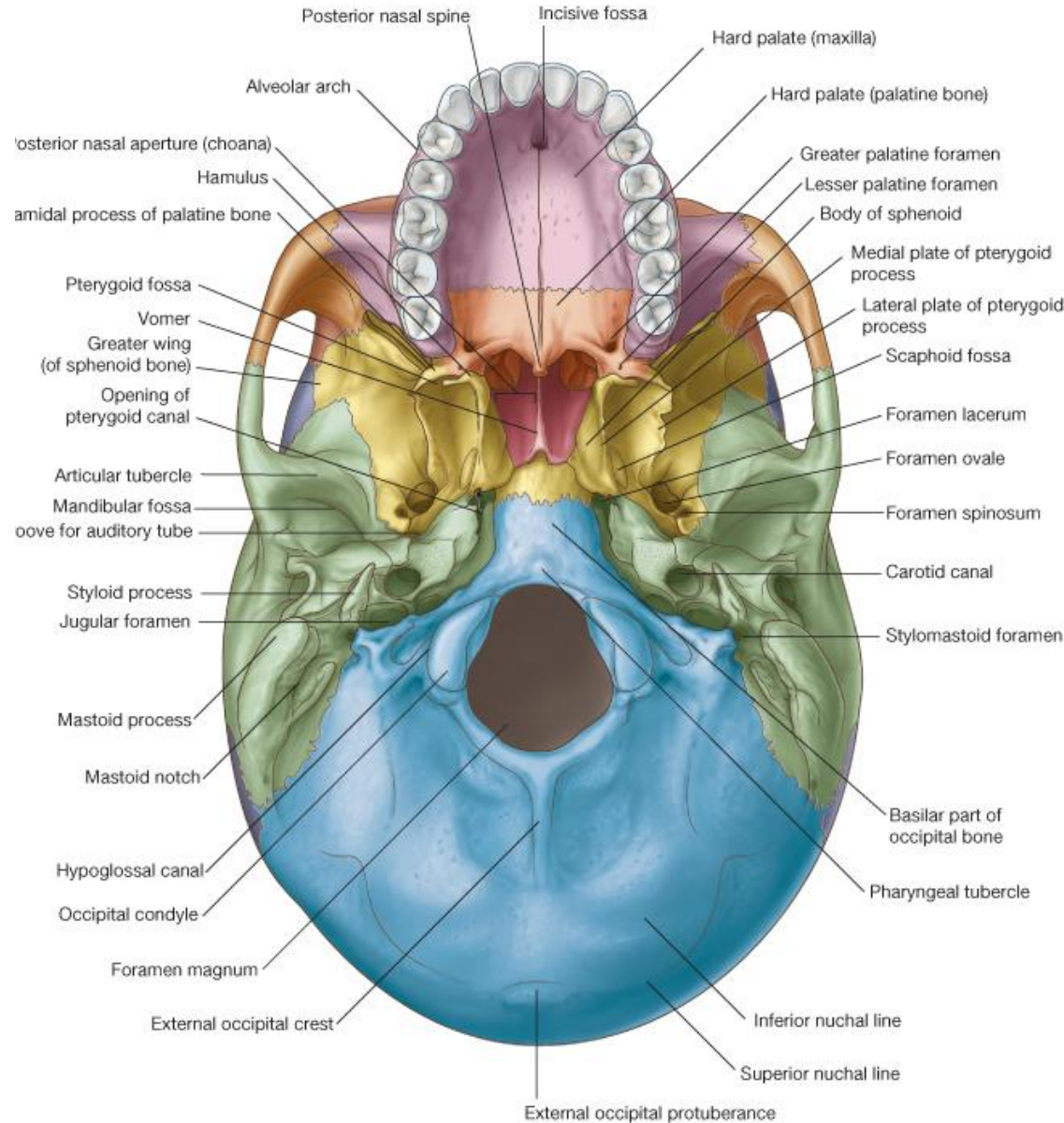
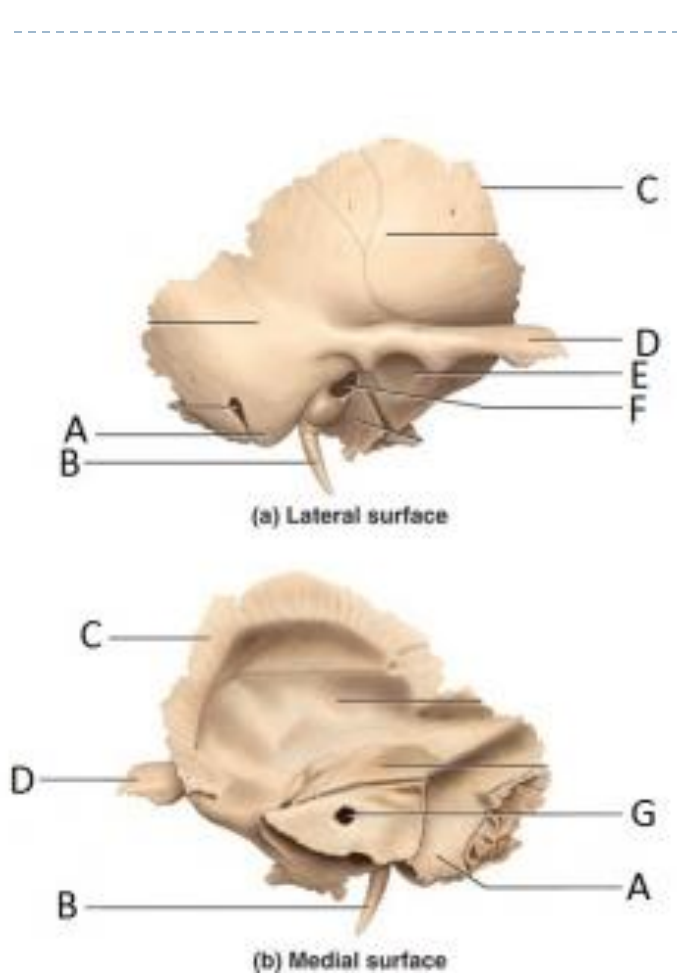
(a) Superior view of the skull, calvaria removed

Squamous

Pteromastoid

Tympanic

Styloid process

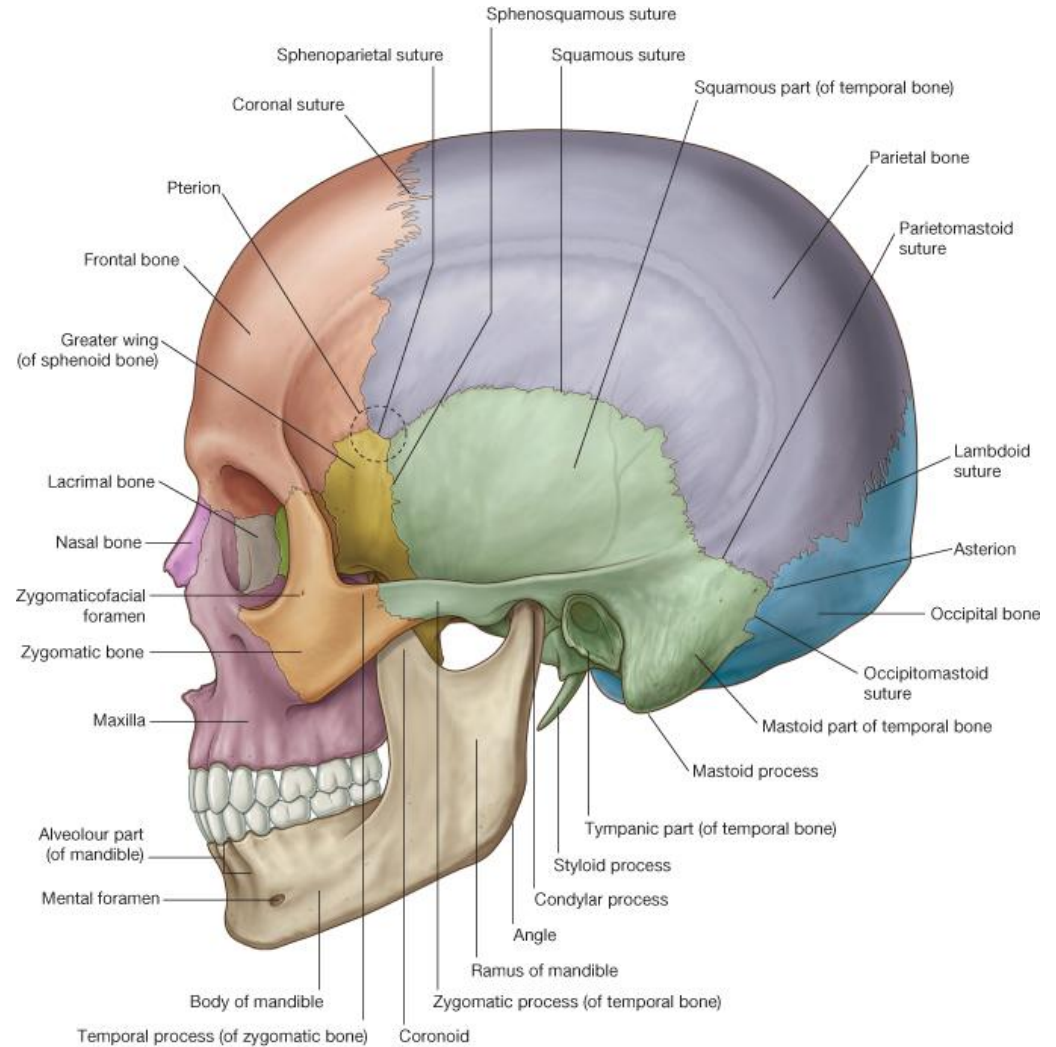


Squamous

Pteromastoid

Tympanic

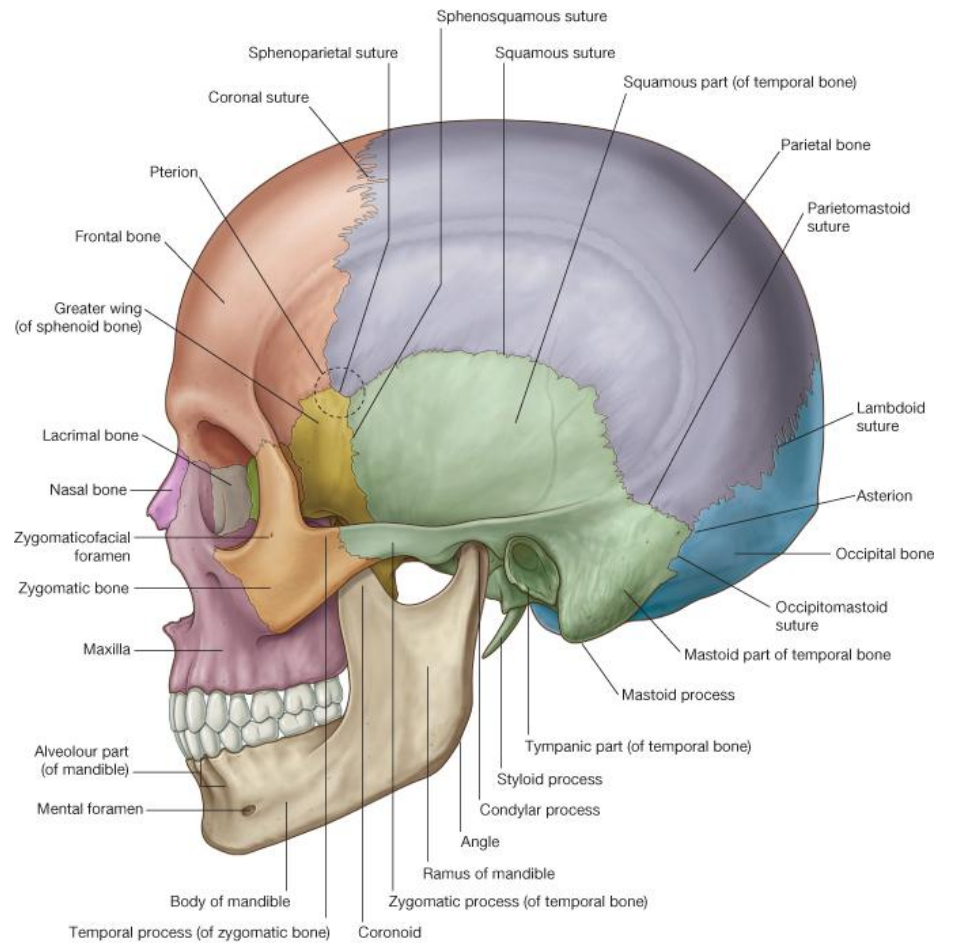
Styloid process



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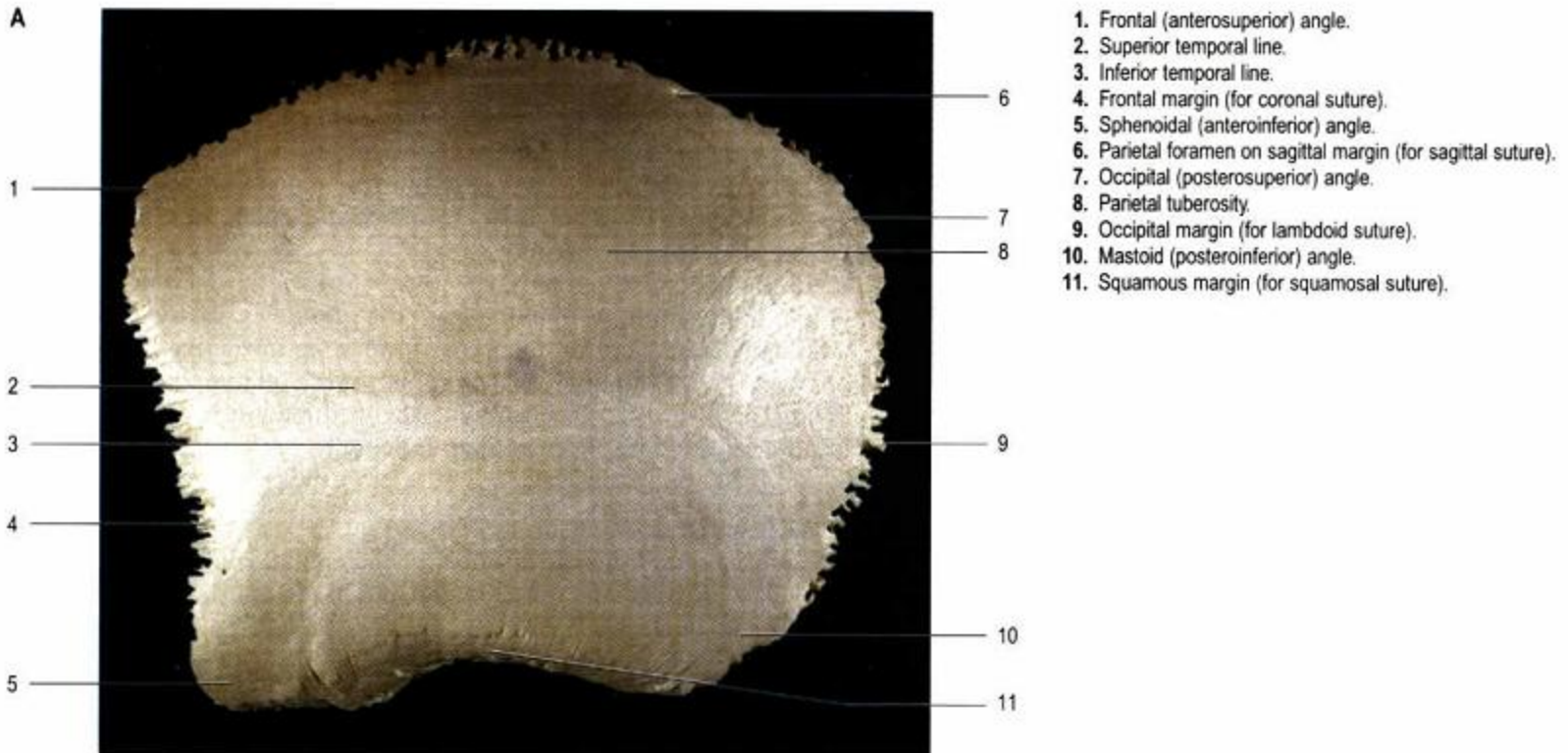
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 - ▶ 1 x Sphenoid Bone
 - ▶ 1 x Occipital Bone
 - ▶ 2 x Temporal Bones
 - ▶ **2 x Parietal Bones**



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2 surface (int. & ext)

- Is convex•
- Parietal tuber•
- Sup. & inf. Temporal line•
- Parietal foramen•



2 surface (int. & ext)

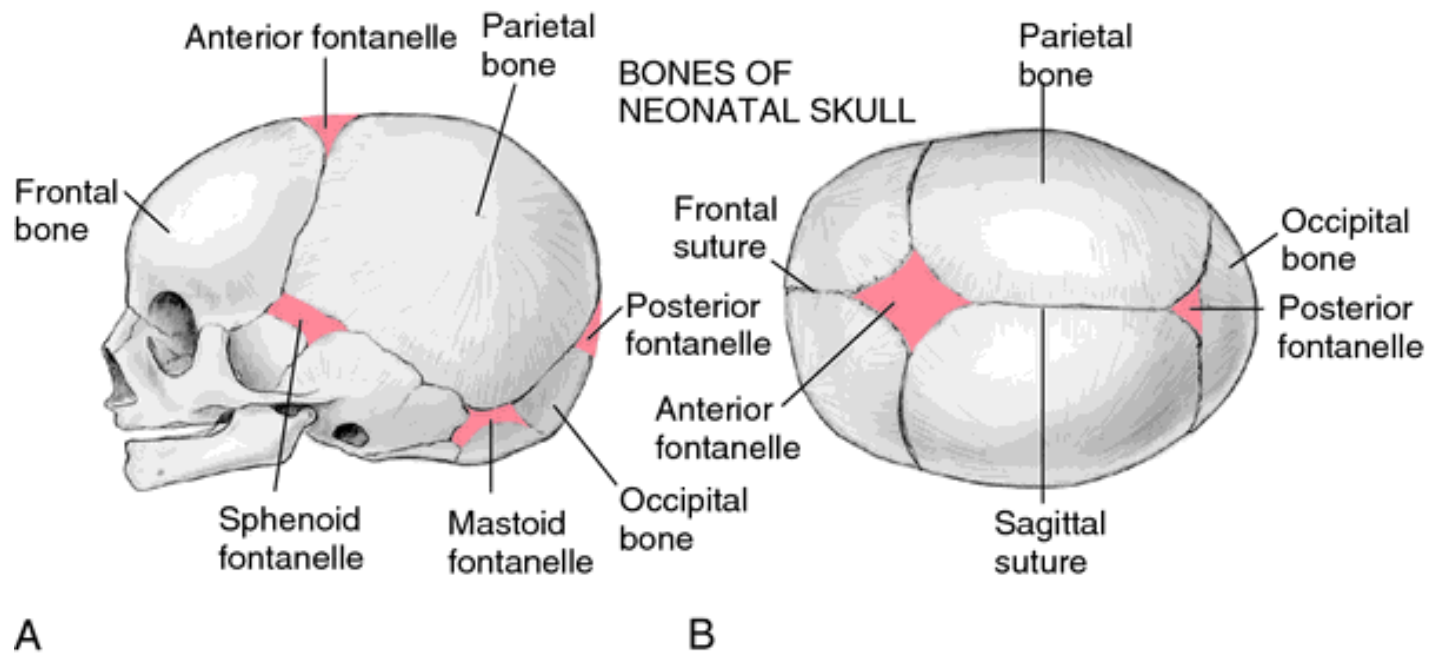
Sup sagittal sinus•
Meningeal vesseles impression•
Granular foveola•

B



1. Parietal foramen.
2. Groove for superior sagittal sinus.
3. Groove for sigmoid sinus.
4. Groove for middle meningeal vessels.

fontanelle



Don't wait for extraordinary opportunities. Seize common occasions and make them great.

Orison Swett Marden