

Bones and Features of the Skull - Cranium and Face

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Bones of the Cranium

The **cranium** is made up of 8 bones: 2 (paired) parietal bones • 2 (paired) temporal bones • frontal bone • occipital bone • sphenoid bone • ethmoid bone

The **frontal bone** is located on the anterior cranium and includes the following features:

- It makes up the roof of the eye orbits.
- Inside the skull, it forms the anterior cranial fossa, which contains the frontal lobes of the cerebrum.
- It has the supraorbital foramen, where the supraorbital artery and nerve pass out of the skull onto the forehead.
- It contains the frontal sinus (part of the paranasal sinuses).
- It makes up (with the parietal bone) of the anterior fontanelle.

The paired **parietal bones** make up the top and lateral aspects of the cranium.

The **occipital bone** is located on the back of the cranium and includes the following features:

- Internally, it forms the posterior cranial fossa where the occipital lobe of the brain sits.
- It contains the foramen magnum – the passageway between the vertebral column and the cranial cavity.
- It has the external occipital protuberance.

The paired **temporal bones** are located on either side of the cranium, inferior to the parietal bones and contain the following features:

- zygomatic process (posterior portion of the zygomatic arch).
- mandibular fossa (underneath the zygomatic process where the jaw articulates with the cranium via the posterior condyle). This is the temporomandibular joint – TMJ.
- external auditory meatus (external ear canal).
- styloid process (a muscle attachment site).
- mastoid process (the lump behind the ears where neck muscles are anchored).
- stylomastoid foramen (between the styloid and mastoid processes, where the facial nerves leave the skull)
- posterior part of the middle cranial fossa (where the temporal lobes of the brain sit).
- jugular foramen (the most posterior foramen, where the internal jugular vein enters the brain).
- carotid canal (opening where internal carotid artery enters. It passes so close to the inner ear, you can sometimes hear the blood thundering past).
- foramen lacerum (a jagged opening allowing some nerve passage).
- internal acoustic meatus (in the medial cranial fossa – which contains the internal auditory artery, facial nerve and the vestibulocochlear nerve).

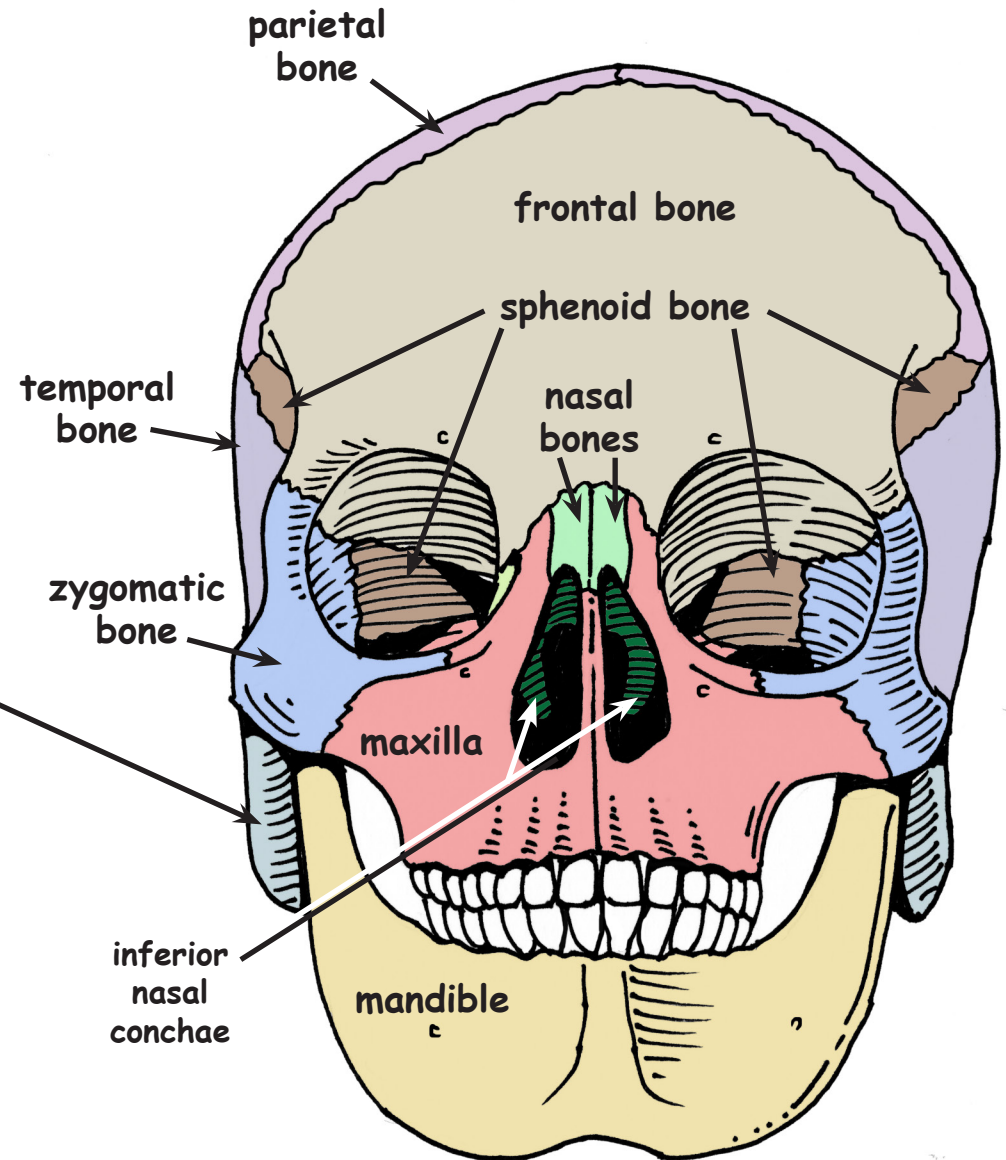
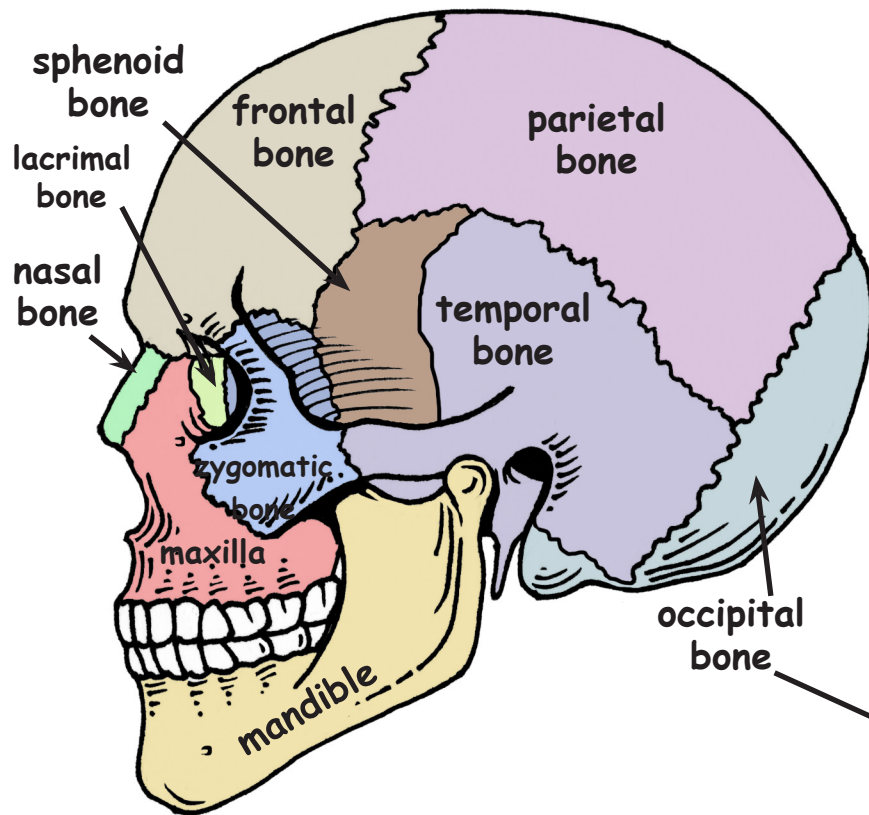
The **sphenoid bone** contains the following features:

- It forms the paired sphenoid sinuses.
- It forms the sella turcica (where the pituitary gland sits).
- It forms the anterior portion of the middle cranial fossa.
- It has the optic foramina (where the optic nerve and ophthalmic artery pass).
- It has the superior orbital fissure (where the cranial nerve to the eye muscles pass).
- It has the foramen rotundum (small round hole).
- It has the foramen ovale (large oval hole).
- It has the foramen spinosum (small hole).

The **ethmoid bone** is located between the nasal bones of the face and has the following features:

- It forms the crista galli on top (superiorly) – the “cock’s comb.”
- It forms the cribriform plate (a horizontal plate beneath the crista galli). It is full of holes (olfactory foramina) where the olfactory nerves pass to pick up smell.
- It forms the perpendicular plate (which projects down to be part of the nasal septum).
- It has the ethmoid sinuses (part of the paranasal sinuses)
- It forms the superior and middle nasal conchae (extending laterally and inferiorly)

Bones of the Skull - Cranium and Face



Bones of the Cranium:

- 2 (paired) parietal bones
- 2 (paired) temporal bones
- frontal bone
- occipital bone
- sphenoid bone
- ethmoid bone

Bones of the Face:

- 2 (paired) maxillary bones
- 2 (paired) zygomatic bones
- 2 (paired) nasal bones
- 2 (paired) lacrimal bones
- 2 (paired) palatine bones
- 2 (paired) inferior nasal conchae

Bones of the Face

The **face** is made up of 14 bones: mandible • vomer • 2 (paired) maxillary bones • 2 (paired) zygomatic bones • 2 (paired) nasal bones • 2 (paired) lacrimal bones • 2 (paired) palatine bones • 2 (paired) inferior nasal conchae

The **mandible** (lower jaw) is the largest strongest bone of the face and contains the following features:

- mandibular angle (angle of the jaw below the ear).
- coronoid process (anterior process which is the attachment site for the temporalis muscle which elevates the jaw during chewing).
- mandibular condyle (posterior process - part of the TMJ and articulates with the mandibular fossa on the zygomatic process of the temporal bone).
- mandibular notch (between the two processes).
- alveolar margin (where the lower teeth are inserted).
- mandibular foramina (inside the ramus of the mandible) there the nerves to the jaw pass.
- mental foramina (on the anterior and lateral (outside) mandible) where the blood vessels and nerves to the chin and upper lip pass.

The paired **maxillary bones** are fused medially and contain the following features:

- They make up the upper jaw and central face.
- They form the alveolar margin (where the upper teeth are inserted).
- They include the palatine processes (the hard palate) that projects posteriorly.
- They include the frontal processes (medial and inferior eye orbit by the bridge of the nose).
- They form the maxillary sinuses (the largest part of the paranasal sinuses between the orbits and the upper teeth).
- They form the zygomatic processes (the anterior part of the zygomatic arch).
- They have the inferior orbital fissure (inside the orbit where the vagal nerve and zygomatic nerve and blood vessels pass).
- They include the infraorbital foramen (where the infraorbital nerve and arteries to the face run).

The paired **zygomatic bones** (malar bones/cheek bones) sit between the zygomatic processes of the maxilla and temporal bone.

The paired **nasal bones** make up the bridge of the nose.

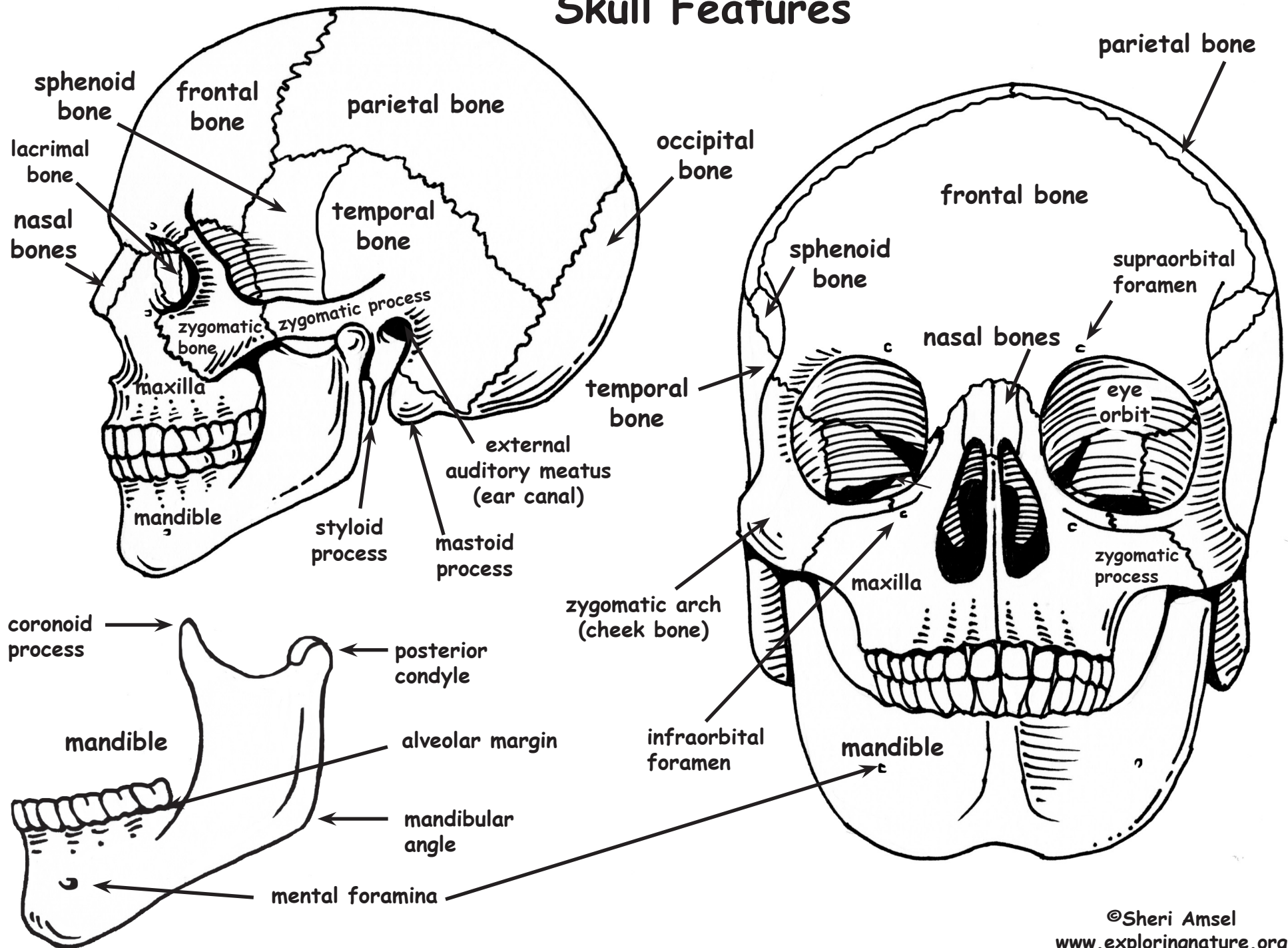
The paired **lacrimal bones** are made up of the medial walls of each orbit with a lateral “sulcus” through which tears can drain into the nasal cavities (which is why you get a runny nose when your eyes tear).

The paired **palatine bones** are inside the skull made up of the horizontal plate (which is the posterior portion of the hard palate) and the posterior, lateral wall of the nasal cavity.

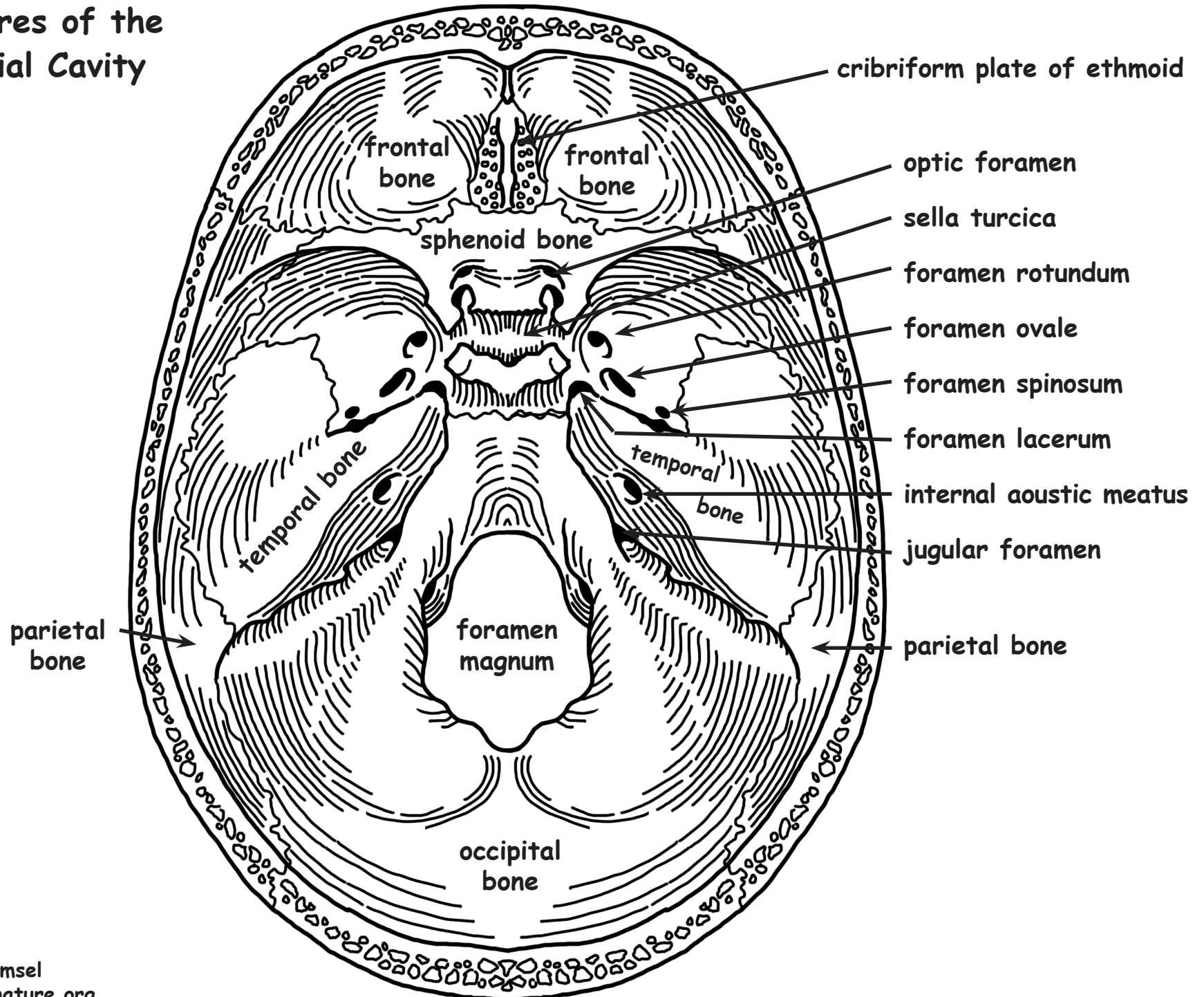
The **vomer** is the plow-shaped bone within the nasal cavity that makes up part of the nasal septum.

The **inferior nasal conchae** form the lateral walls of the nasal cavity below the middle conchae of the ethmoid bone.

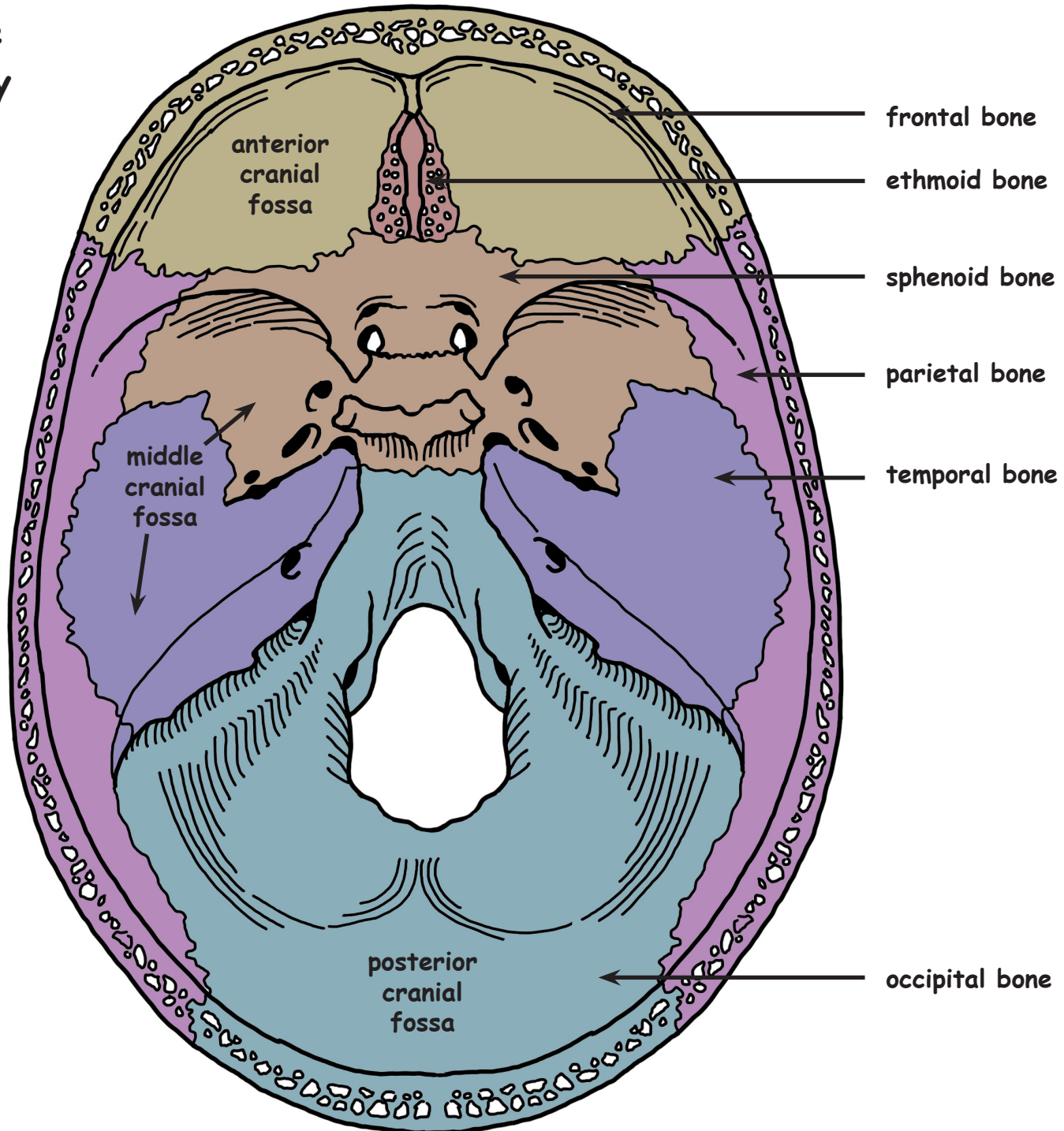
Skull Features

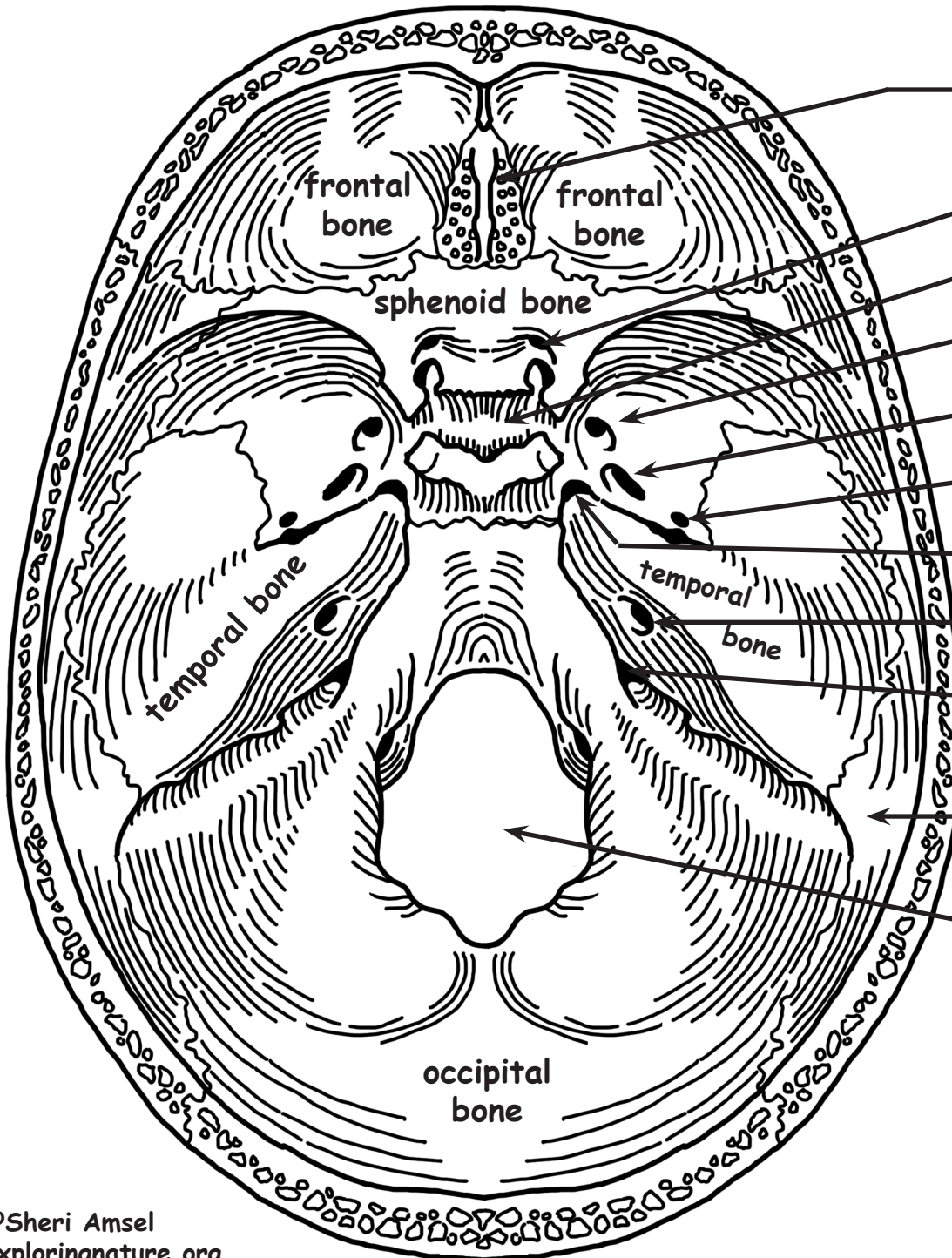


Features of the Cranial Cavity



Bones of the Cranial Cavity





Name the Features of
the Cranial Cavity