7

The Skeleton: Part A

The Axial Skeleton
• Consists of 80 bones
• Three major regions
  • Skull
  • Vertebral column
  • Thoracic cage

The Skull
• Two sets of bones
  1. Cranial bones
     • Enclose the brain in the cranial cavity
     • Cranial vault (calvaria)
     • Cranial base: anterior, middle, and posterior cranial fossae
     • Provide sites of attachment for head and neck muscles
  2. Facial bones
     • Framework of face
     • Cavities for special sense organs for sight, taste, and smell
     • Openings for air and food passage
     • Sites of attachment for teeth and muscles of facial expression

Cranial Bones
• Frontal bone
• Parietal bones (2)
• Occipital bone
• Temporal bones (2)
• Sphenoid bone
• Ethmoid bone

Frontal Bone
• Anterior portion of cranium
• Most of anterior cranial fossa
• Superior wall of orbits
• Contains air-filled frontal sinus

**Parietal Bones and Major Associated Sutures**
• Superior and lateral aspects of cranial vault
• Four sutures mark the articulations of parietal bones with frontal, occipital, and temporal bones:
  1. Coronal suture—between parietal bones and frontal bone
  2. Sagittal suture—between right and left parietal bones
  3. Lambdoid suture—between parietal bones and occipital bone
  4. Squamous (squamosal) sutures—between parietal and temporal bones on each side of skull

**Occipital Bone**
• Most of skull’s posterior wall and posterior cranial fossa
• Articulates with 1st vertebra
• Sites of attachment for the ligamentum nuchae and many neck and back muscles

**Temporal Bones**
• Inferolateral aspects of skull and parts of cranial floor
• Four major regions
  • Squamous
  • Tympanic
  • Mastoid
  • Petrous

**Sphenoid Bone**
• Complex, bat-shaped bone
• Keystone bone
  • Articulates with all other cranial bones
• Three pairs of processes
  • Greater wings
  • Lesser wings
  • Pterygoid processes

**Ethmoid Bone**
• Deepest skull bone
• Superior part of nasal septum, roof of nasal cavities
• Contributes to medial wall of orbits

**Sutural Bones**
• Tiny irregularly shaped bones that appear within sutures

**Facial Bones**
• Mandible
• Maxillary bones (maxillae) (2)
• Zygomatic bones (2)
• Nasal bones (2)
• Lacrimal bones (2)
• Palatine bones (2)
• Vomer
• Inferior nasal conchae (2)

**Mandible**
• Lower jaw
• Largest, strongest bone of face
• Temporomandibular joint: only freely movable joint in skull

**Maxillary Bones**
• Medially fused to form upper jaw and central portion of facial skeleton
• Keystone bones
  • Articulate with all other facial bones except mandible

**Zygomatic Bones**
• Cheekbones
• Inferolateral margins of orbits

**Nasal Bones and Lacrimal Bones**
• Nasal bones
  • Form bridge of nose
• Lacrimal bones
  • In medial walls of orbits
  • Lacrimal fossa houses lacrimal sac

**Palatine Bones and Vomer**
• Palatine bones
  • Posterior one-third of hard palate
  • Posterolateral walls of the nasal cavity
  • Small part of the orbits
• Vomer
  • Plow shaped
• Lower part of nasal septum

**Inferior Nasal Conchae**
• Form part of lateral walls of nasal cavity

**Orbits**
• Encase eyes and lacrimal glands
• Sites of attachment for eye muscles
• Formed by parts of seven bones (next slide)

**Nasal Cavity**
• Roof, lateral walls, and floor formed by parts of four bones
  • Ethmoid
  • Palatine bones
  • Maxillary bones
  • Inferior nasal conchae
• Nasal septum of bone and hyaline cartilage
  • Ethmoid
  • Vomer
  • Anterior septal cartilage

**Paranasal Sinuses**
• Mucosa-lined, air-filled spaces
• Lighten the skull
• Enhance resonance of voice
• Found in frontal, sphenoid, ethmoid, and maxillary bones

**Hyoid Bone**
• Not a bone of the skull
• Does not articulate directly with another bone
• Site of attachment for muscles of swallowing and speech