

Week 1a – Introduction:

Macroscopic anatomy: split into surface (superficial markings & internal structures), systemic (systems of the body e.g. digestive system) & developmental anatomy.

Cytology: cellular anatomy.

Histology: tissue anatomy.

Planes of reference:

Midsagittal plane: splits the body into left and right parts.

Coronal/frontal plane: splits the body into anterior (front) and posterior (back) parts.

Horizontal/transverse plane: separates the body into superior (top) & inferior (bottom) parts.

Directional terms:

Ventral – front/anterior.

Dorsal – back/posterior.

Palmar & dorsal surfaces: in relation to the hands.

Proximal: toward an attached base.

Distal: away from an attached base.

Superficial & deep: relative distance from the surface of the body.

Superior: closer to the head.

Inferior: closer to the feet.

Internal & external: relative distance of a structure from the centre of an organ/body.

Ipsilateral/contralateral: same side vs. opposite side.

Supine: laying face up.

Prone: laying face down.

Muscle origins & insertions:

- **Origin:** the fixed end of a muscle. Proximal. The less moveable end.
- **Insertion:** distal. Most moveable.

Muscle contraction:

Isometric contraction: muscle contraction with no change in length.

Isotonic contraction: can be either concentric or eccentric contraction. A concentric contraction is where a muscle shortens in length under tension. Eccentric contraction is where a muscle lengthens under tension.

Week 1b:

Functions of the skeleton:

- Support
- Protection/body cavities
- Movement/leverage
- Storage (minerals & fat)
- Blood cell formation

Classification of bones:

- ⇒ **Long bones:** are relatively long & slender. E.g. humerus, femur, radius, ulna.
- ⇒ **Short bones:** are small & boxy. Often found grouped together. E.g. carpal bones in the wrist, tarsal bones in the ankle.
- ⇒ **Flat bones:** have thin, roughly parallel surfaces. Provide protection for underlying soft tissue. Also offer extensive surface area for muscle attachment. E.g. ribs, parietal bone, sternum, scapula, cranium.
- ⇒ **Irregular bones:** Have complex shapes with short, flat, notched or rigid surfaces. E.g. vertebra, bones of the pelvis, several bones of the skull.
- ⇒ **Sesamoid bones:** Are generally small, flat, and somewhat shaped like a sesame seed. They develop inside tendons. Are most commonly located near joints. E.g. the patella, the body lump in the wrist.
- ⇒ **Sutural bones:** wormian (intra-sutural) bones. Are small, flat & irregularly shaped. Found between the flat bones of the skull and add strength to the skull to reduce fracture. E.g. the sutures in the skull.

Bony Landmarks:

- **Articulating surfaces:**
 - Condyle: a large smooth rounded knob.
 - Facet: a small, flat articular surface.
 - Head: the prominent round head of a bone.
- **Bony openings:**
 - Foramen: a rounded opening or passageway in a bone for blood vessels or nerves.
- **Depressions:**
 - Fossa: a shallow depression.
 - Sulcus: a small groove.
- **Non-articulating surface:**
 - Epicondyle: a projection adjacent to a condyle.
 - Ramus: a flat, angular section of a bone.
 - Trochanter: a massive body process (projection/outgrowth) found on the femur.
 - Tubercle: a small round bony process (projection/outgrowth).
 - Tuberosity: a large, roughened process (projection/outgrowth)

The Axial Skeleton:

- There are 80 bones in the **axial skeleton**. The axial skeleton consists of the skull (and associated bones), the thoracic cage & the vertebral column.
- Adjusts positions of the head, neck & trunk.
- Performs respiratory motions.
- Stabilises and positions the appendicular skeleton.

Cranial Bones:

- Parietal x 2
- Temporal x 2
- Frontal x 1
- Occipital x 1
- Sphenoid x 1
- Ethmoid x 1

*Note: **x 2 = paired bones. x 1 = unpaired.**

- **Parietal bone:** forms part of the superior and lateral surfaces of the cranium. It articulates with one another, as well as the occipital, temporal, frontal & sphenoid bones. Its landmarks/regions include the superior and inferior temporal lines, which are the attachment site for the temporalis muscle.
- **Temporal bone:** forms part of the lateral walls of the cranium and Zygomatic arches. It articulates with the mandible, as well as the Zygomatic, sphenoid, parietal and occipital bones of the cranium. It surrounds and protects the inner ear. It acts as the attachment site for muscles that close the jaw and move the head. Its landmarks include the Zygomatic process & arch, mandibular fossa, mastoid process, styloid process, external auditory meatus.
- **Frontal bone:** forms the anterior portion of the cranium, and the roof of the eye sockets. It articulates with the parietal, sphenoid, ethmoid, nasal, lacrimal, maxillary and zygomatic bones. Its landmarks include the superior temporal line, supraorbital margin, lacrimal fossa, & the frontal sinuses.
- **Occipital bone:** forms the posterior & inferior surfaces of the cranium. Articulates with parietal, temporal & sphenoid bones, as well as the first cervical vertebra (the atlas). Its landmarks include the external occipital protuberance, external occipital crest, occipital condyles, & foramen magnum.
- **Sphenoid bone:** forms part of the floor of the cranium. It unites the cranial & facial bones, and strengthens the sides of the skull. It articulates with all other cranial bones. Its landmarks include the greater & lesser wings.
- **Ethmoid bone:** forms the anteromedial floor of the cranium. It also functions as the roof of the nasal cavity, part of the nasal septum, and as the medial orbital wall. It articulates with the front bone & the sphenoid. Its landmarks include the cribriform plate, paired lateral masses, and the perpendicular plate.
- **Hyoid bone:** supports the larynx & tongue, and acts as the attachment site for muscles of the larynx & pharynx. The hyoid bone is suspended from the temporal bone by ligaments & muscles. It has a body, and greater & lesser horns.

Facial Bones:

- Nasal x 2
- Maxillae x 2
- Zygomatic x 2
- Lacrimal x 2
- Palatine x 2
- Nasal concha x 2
- Vomer x 1
- Mandible x 1