Welcome to Gross and Developmental Anatomy

M1 – Anatomy

Gross Anatomy Faculty:

Dr. Richard Krieg  Dr. Milton Sholley  Dr. David Simpson

Gross Anatomy Faculty:

Dr. Alex Meredith  Dr. Steve Gudas  Dr. Jeff Dupree  Dr. Alex Meredith

Gross Anatomy Faculty:

Dr. Michael Peters  Dr. Jiepei Zhu

Dr. Melissa McGinn

M4 Teaching Assistants: for weeks 1-4

Cassandra Aboy  Kunle Idowu
Don Arthur  Nabia Ikram
Sonia Bahlani  Peter Jones
James Ebertowski  Jimmy Sismanis
Kenny Ewane  Lucia Smith
Lauren Huddle  Abram Tirona
M4 Teaching Assistants: for weeks 5-9

To be named

Approaches to Studying Gross Anatomy

- **Systemic:** Study of a single functional system at a time, throughout the body
- **Regional:** Study of multiple systems (muscles, nerves, vessels, UG, GI, endocrine organs) by region

We Learn Gross Anatomy by

1. **DISSECTING THE CADAVER**
2. Hearing lectures
3. Self Instruction: Textbooks and Atlases
   - Syllabus
   - "Head to Toe" Computer Aided Learning

Books

- *Essential Clinical Anatomy*, Moore and Agur
- *Grant's Atlas of Anatomy*: many figures referenced in syllabus
- *Grant's Dissector* -- daily dissection guide
- *Case Studies in Anatomy*: Lachman
- *Atlas of Human Anatomy*: Netter

Computer Programs in CBIL

- Question Banks (with hints & explanations)
  - Drs. Sholley & Seibel's "Head to Toe" (Review Questions on Back, Extremities, Thorax, Abdomen)
  - Dr. Seibel's Head & Neck Review (~1000 questions)

Examinations and Grading

- 4 Exams (3Gross, 1Development)
- Each Gross exam has Written and Practical Parts of equal weight
- Grading is by %CORRECT; each exam is weighted in approximate proportion to time in the schedule
- see Grade Worksheet in Syllabus
Begin with:

Anatomical Positions
Syllabus: p. 22

Osteology

Bones to be studied at this time:
- scapula
- clavicle
- typical cervical vertebra
- typical thoracic vertebra

“Figure 2 repeated” – p. 29
Bony Landmarks

Skull & Cervical Spine

- External occipital protuberance
- Mastoid process
- Spinous process of C7 (vertebra prominens)

Joint Movements:

Movements of the Scapula

- Elevation
- Depression
- Protraction (Abduction)
- Retraction (Adduction)
- Upward Rotation
- Downward Rotation
Elevation of the Scapula
(Shrugging the shoulders)

Depression of the Scapula
(Lowering the shoulders)
Important for crutch walking when force of body weight is borne on arms.

Protraction of the Scapula
(As if preparing to hug a large person.)

Retraction of the Scapula
(Trying to make shoulder blades touch each other.)

Upward Rotation of the Scapula
(Required to reach over one’s head)

Downward Rotation of the Scapula
(Return from raising arm over head.)
Movements at the Glenohumeral (Shoulder) Joint

- Flexion
- Extension
- Abduction
- Adduction
- Medial (internal) & Lateral (external) rotation
- Circumduction

Deep Fascia
Thoracolumbar Fascia

Deep fascia ensheathes each muscle individually, and compartmentalizes groups.

As the “thoracolumbar fascia” it gives origin to latissimus dorsi muscle.

Cutaneous Neurovascular Bundles run in Superficial Fascia

Segmental nerve, artery, vein

Layer 1: Skin, Superficial Fascia
Superficial fascia = fat. Clean down to deep fascia

Thoracolumbar Fascia
Attaches to spinous and transverse processes forming a compartment around deep back muscles

Organization of the Muscles of the shoulder
- Extrinsic
- Intrinsic
What to learn about Muscles

- Name -- let the name help you
- Origin, Insertion -- visualize it
- Action -- often deduced from knowing origin and insertion
- Innervation -- always specific
- Blood Supply -- generalize to any nearby artery (not specific)

Superficial Layer of extrinsic shoulder muscles

- **Trapezius**
- **Latissimus dorsi**

Trapezius

- **Origin (O):** Skull, Spines of cervical and thoracic vertebrae
- **Insertion (I):** Clavicle, acromion process, spine of scapula
- **Action (A):** elevate, depress, retract, upwardly rotate scapula; rotate head opposite
- **Nerve (N):** Spinal Accessory (if injured, shoulder droops)

Latissimus Dorsi

- **Origin (O):** Spines of lower Thoracic & lumbar vertebrae, iliac crest
- **Insertion (I):** Intertubercular groove of humerus
- **Nerve (N):** Thoracodorsal n.
- **Action (A):** Adduct, medially rotate, extend arm
- **Artery:** Thoracodorsal artery

Deep Layer of Extrinsic Shoulder Muscles

- **Levator Scapulae**
- **Rhomboid Major**
- **Rhomboid Minor**
- **Serratus Anterior**

Levator Scapulae

- **Origin (O):** posterior tubercles of transverse processes of cervical vertebrae
- **Insertion (I):** Superior angle of scapula
- **Nerve (N):** dorsal scapular (& cervical plexus)
- **Action (A):** Elevate medial border of scapula; downwardly rotate scapula
Rhomboid Major & Minor

O: Spines of lower cervical & upper thoracic vertebrae
I: Medial border of scapula: minor at spine; major below
N: Dorsal Scapular (n. to the rhomboids)
A: Elevate medial border & **downwardly rotate** scapula

Serratus Anterior

O: ribs. I: costal surface, medial border of scapula
N: Long Thoracic (winged scapula if injured)
A: Upward rotate, protract scapula

Two Back Muscles which are not Shoulder Muscles

Serratus Posterior Superior
Serratus Posterior Inferior

Serratus Posterior Superior and Inferior

O: Vertebral spines
I: Ribs
A: Weak
N: Intercostal nerves:
   (ventral primary rami)

Superficial & Deep Branches of the Transverse Cervical artery

- Branches arise at a fork around the Levator Scapulae
- Superficial branch lies deep to Trapezius with Accessory nerve
- Deep branch runs deep to levator and rhomboids with dorsal scapular nerve

Artery of Interest: Transverse Cervical

- Branch of the Thyrocervical trunk from the subclavian
- Branches:
  - Superficial
  - Deep
The Team

M4s please stay for a minute at the end of the lecture