Material Not Covered in Lecture

• Osteology (dry lecture – Today and Thursday)
  -Gray’s pp. 26-47
  -Gray’s dissector, pp. 3-9

• Attachments/Movements of Superficial and Deep Back muscles (wet lab – Tuesday and Thursday)
  -Gray’s pp. 47-62
  -Gray’s dissector, pp. 10-36

Material Covered in Lecture

• Functions, Features and Components of the Back

• Superficial Anatomy of the Back (Syllabus p. 12; Gray’s pp. 89-94)
  -Critical structures
  -Clinical correlates

• Superficial Back Muscles (Syllabus p. 13; Gray’s pp. 47-53)
  -Basic anatomy, innervation and blood supply

• Deep Back Muscles (Syllabus pp. 14-15; Gray’s pp. 54-60)
  -Basic anatomy and innervation

• Suboccipital Triangle (Syllabus pp. 14-15; Gray’s pp. 60-62)
  -Boundaries, contents and innervation
What are the Functions of the Back?

**Support**
- carries and positions the head
- transmit forces through the pelvis to the lower limbs
- braces and maneuvers the upper limbs

**Movement**
- extrinsic muscles of the back move the upper limbs
- intrinsic muscles of the back maintain posture and move the vertebral column

**Protection**
- Vertebral column protects the spinal cord and proximal portions of the spinal nerves

What are the Component Parts of the Back?

**Bones**
- vertebrae

**Muscles**
- extrinsic muscles involved with movements of the upper limbs
- intrinsic muscles support and move the vertebral column

**Vertebral Canal**
- When you place the vertebrae together, you form the vertebral canal

**Spinal Nerves**
- small, posterior rami innervate the back
- larger, anterior rami innervate the rest of the body

**Dermatomes and myotomes**
- dermatomes - area of skin supplied by a single nerve or spinal cord level
- myotomes - region of skeletal muscle that is innervated by a single nerve or spinal cord level
What are the Key Features of the Back?

1. Long vertebral column and short spinal cord
2. Intervertebral foramina
   - each spinal nerve exits the vertebral canal laterally through an intervertebral foramen
3. Innervation of the back
   - posterior branches of spinal nerves innervate the intrinsic muscles of the back
   - anterior branches of spinal nerves innervate the extrinsic muscles of the back
A 23 year old woman is punctured in the back by a sharp, thin object. The puncture occurs on the right side of the back, just lateral to the thoracic vertebra and medial to the right scapula. The object penetrates the 5th intercostal space, muscles of the back and ultimately hits a vital organ. You determine that the organ most likely hit in this case is the following:

A. Liver  100%
B. Heart
C. Right lung
D. Spleen
E. Right Kidney
Cutaneous Innervation of the Superficial Back

Muscles of the Back

- **Extrinsic (Superficial)**
  - Superficial
    - Trapezius
    - Latissimus Dorsi
    - Levator Scapulae
    - Rhomboids
  - Intermediate
    - Serratus Posterior

- **Intrinsic (Deep)**
  - Superficial
    - Splenius muscles
  - Intermediate
    - Erector spinae
  - Deep
    - Transversospinal

Syllabus p. 12
Trapezius

Innervation of the Trapezius
Blood Supply of the Trapezius

Dissection Guide p. 19
Blood Supply of the Trapezius

Latissimus Dorsi
Blood Supply of the Latissimus Dorsi

Levator Scapulae and Rhomboids
Innervation of the Levator Scapulae and Rhomboids

Dorsal Scapular Nerve

A 33 year old woman undergoes a lymph node biopsy of her deep cervical lymph nodes on the left side of her neck. Immediately following surgery she complains of weakness in her left shoulder. On exam, the left shoulder droops and she is unable to raise the point of her shoulder. She denies numbness in her left shoulder, back and neck. What nerve appears to have inadvertently been cut during the biopsy?

A. Greater occipital n.  
B. Spinal n. C3  
C. Dorsal scapular n.  
D. Spinal accessory n. (Cranial Nerve XI)  
E. Cutaneous nn. of the back (dorsal primary rami)
A 33 year old woman undergoes a lymph node biopsy of her deep cervical lymph nodes on the left side of her neck. Immediately following surgery she complains of weakness in her left shoulder. On exam, the left shoulder droops and she is unable to raise the point of her shoulder. She denies numbness in her left shoulder, back and neck. In most peripheral nerve injuries, there is usually a characteristic sensory loss, producing numbness in a specific area. Which of the following best explains why there is no numbness in this case?

A. The motor part of CN XI must have been damaged, while the sensory part remained intact
B. The spinal accessory n. is unique among peripheral nerves in that it does not carry any sensory fibers
C. Sensory nerve fibers are absent in the trapezius
D. The spinal accessory n. is associated with C3 and C4 dorsal primary rami before it passes through the foramen magnum
E. The greater occipital n., which sends proprioceptive fibers to the trapezius m. and allows for coordinated movement, was damaged during the procedure
A 53 year old bodybuilder who takes anabolic steroids suddenly notices that he is unable to pull his body up while doing a pull up. The attending physician determines that the bodybuilder’s ____________ n. is degenerating due to steroid use that has resulted in a nerve palsy.

A. Spinal accessory n.  
B. Long thoracic n.  
C. Dorsal scapular n.  
D. Thoracodorsal n.  
E. Posterior intercostal n.

Muscles of the Back

- **Extrinsic (Superficial)**
  - Superficial
    - Trapezius
    - Latissimus Dorsi
    - Levator Scapulae
    - Rhomboids
  - Intermediate
    - Serratus Posterior

- **Intrinsic (Deep)**
  - Superficial
    - Splenius muscles
  - Intermediate
    - Erector spinae
  - Deep
    - Transversospinal
Transitioning to the Deep Muscles of the Back
Transitioning to the Deep Muscles of the Back

Spleenius and Erector Spinae Muscles
During a spinal surgery to fuse two of the vertebrae together, the surgeon accidentally severs the posterior ramus of one of the spinal nerves. Which of the following muscles would be the LEAST LIKELY to be affected if a posterior ramus is severed?

A. Iliocostalis m.
B. Splenius capitis m.
C. Rotatores m.
D. Serratus posterior inferior m.
E. Spinalis m.

Dissection Guide p. 12
SCREEN 2

Superficial Landmarks of the Back

- Root ~ T3
- Inferior angle ~ T7
- Iliac Crest ~ L4-5

Syllabus p. 12
Why Surface Anatomy Is So Important!!!!
Innervation of the Trapezius

Figure 14–1. Schematic of the cranial and spinal portions of CN XI.
Accessory Nerve Syndromes

Course of spinal XI nerve
Paralyzed trapezius

Syllabus p. 13
Blood Supply of the Trapezius
Blood Supply of the Trapezius

- Sternoclavicular joint
- Trapezius muscle
- Middle scalene muscle
- Phrenic nerve
- Transverse cervical artery
- Brachial plexus
- Suprascapular artery
- Anterior scalene muscle
- 3rd part of subclavian artery
- 1st part of subclavian artery
- External jugular vein
- Clavicle
- Subclavian vein
- Internal jugular vein
- Common carotid artery
- Inferior thyroid artery
- Vagus nerve
- Thyrocervical trunk

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Dissection Guide p. 19
Innervation of the Latissimus Dorsi

Blood Supply of the Latissimus Dorsi
Blood Supply of the Levator Scapulae and Rhomboids

Dissection Guide p. 21
Transversospinalis Muscle Group

- Semispinalis m.
- Multifidus m.
- Rotatores mm.: Major
- Rotatores mm.: Minor
- Vertebral column muscles
Innervation of the Suboccipital Region

Posterior rami of C1, C2, C3
Blood Supply to the Suboccipital Region

Vertebral artery