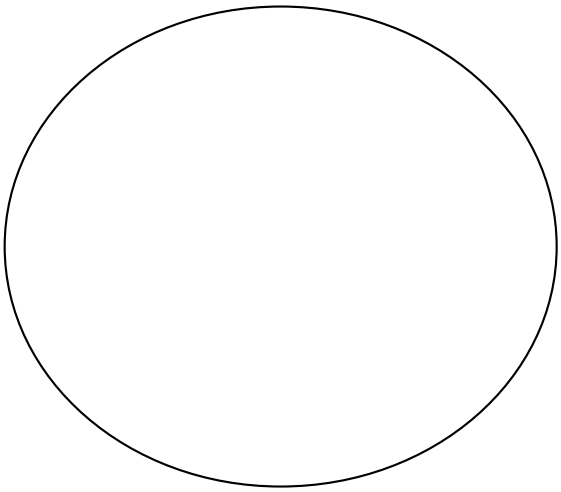
MUSCLE IDENTIFICATION

Skeletal muscle histology:

- Obtain a slide of skeletal muscle tissue. Sketch the slide in the space provided below.
- Identify and label the following structures: striation, skeletal muscle fiber, nucleus, A-band, I band, draw an arrow which indicates the direction of shortening upon contraction.



Skeletal muscle identification:

- You will be required to identify each of the following muscles or associated structures on the cadavers and/or models in lab.
- If the table is shaded in a particular box, it means you are not responsible for that particular origin or insertion.
- Muscle actions are required for each muscle.
- Remember: Spelling is important! Practice writing and rewriting the names of each muscle and associated structure.
- **You are NOT responsible for the nerve innervating each muscle until you do the nervous system exercises in laboratory. Note: CN = cranial nerve**

AXIAL MUSCLES: *have both their origins and insertions on the axial skeleton*

TABLE 1. MUSCLES OF FACIAL EXPRESSION

NAME	ACTION	NERVE
1. frontalis (frontal belly of occipitofrontalis)	Draws scalp forward, raises eyebrows, wrinkles forehead	Facial (CNVII)
2. occipitalis (occipital belly of occipitofrontalis)	Draws scalp backward	Facial (CNVII)
2. orbicularis oris	Compresses and purses lips (kiss muscle)	Facial (CNVII)
3. orbicularis oculi	Closes eye (blink muscle)	Facial (CNVII)
4. platysma	Pulls lower lip inferiorly, tense skin of neck	Facial (CNVII)
5. zygomaticus	Pulls corners of mouth superiorly, smiling muscle	Facial (CNVII)

TABLE 2. MUSCLES OF MASTICATION (CHEWING)

NAME	ATTACHMENT (ORIGIN)	ATTACHMENT (INSERTION)	ACTION	NERVE
1. temporalis	Parietal and frontal bones	Coronoid process of mandible	Elevates and retracts mandible	Trigeminal (CNV)
2. masseter	Zygomatic arch	Angle and ramus of mandible	Elevates and protracts mandible; jaw closure	Trigeminal (CNV)

TABLE 3. NECK MUSCLES

NAME	ATTACHMENT (ORIGIN)	ATTACHMENT (INSERTION)	ACTION	NERVE
1. sternocleidomastoid	Sternum and clavicle	Mastoid process of temporal bone	one side: lateral flexion with rotation of head to opposite side both sides: flexes head & neck	Accessory Nerve (CNXI)
2. splenius capitus and cervicis	Ligamentum nuchae(the connective tissue covering the spinal processes fothe cervical vertebrae)	Occipital bone & mastoid process of temporal bone	one side: turns head to same side both sides: extends head & neck	Dorsal rami of cervical spinal nerves

TABLE 4. MUSCLES OF RESPIRATION

NAME	ACTION	NERVE
1. external intercostals	elevates ribs during normal inspiration	Ventral rami of thoracic spinal nerves
2. internal intercostals	depresses ribs during forced exhalation; antagonist to external intercostals	Ventral rami of thoracic spinal nerves
3. diaphragm	contraction depresses(flattens) diaphragm and expands the thoracic cavity during normal inspiration	Phrenic nerves (from cervical plexus)

TABLE 5. MUSCLES OF THE ABDOMINAL WALL

NAME	ACTION	NERVE
1. external obliques	both sides: flexes vertebral column & compresses abdominal wall one side: lateral flexion of vertebral column	Ventral rami of thoracic spinal nerves
2. internal obliques	both sides: flexes vertebral column & compresses abdominal wall one side: lateral flexion of vertebral column	Ventral rami of thoracic spinal nerves
3. rectus abdominis	flexes vertebral column & compresses abdominal wall	Ventral rami of thoracic spinal nerves
4. transversus abdominis	both sides: flexes vertebral column & compresses abdominal wall one side: lateral flexion of vertebral column	Ventral rami of thoracic spinal nerves
5. inguinal ligament (associated structure)		

***APPENDICULAR MUSCLES*: control the movement of the upper and lower limbs, pelvic and pectoral girdles**

TABLE 6. SUPERFICIAL UPPER BODY MUSCLES

NAME	ACTION	NERVE (FROM BRACHIAL PLEXUS, EXCEPT CNXI)
Muscles that are attached only to the axial skeleton and thus move the pectoral girdle		
1. trapezius	Superior: Elevates clavicle; adducts rotates, elevates and Inferiordepresses scapula; extends head	Accessory nerve (CN XI)
2. serratus anterior	Protracts & stabilizes scapula	Long thoracic
3. pectoralis minor	Protracts and depresses scapula	Medial pectoral
Muscles that attach to the axial skeleton and to the humerus. These muscles move the glenohumeral joint.		
1. ROTATOR CUFF MUSCLES (4 MUSCLES)		
A. supraspinatus	Stabilize and rotate glenohumeral joint	
B. infraspinatus		
C. subscapularis		
D. teres minor		
2. teres major	Extends, adducts, and medially rotates arm	
3. latissimus dorsi	Extends, adducts, and medially rotates arm; draws arm inferiorly and posteriorly (swimming, climbing rope, hammering)	Thoracodorsal
4. deltoid	Abducts, flexes, extends, and rotates arm	Axillary
5. pectoralis major	Flexes, adducts, and medially rotates arm	Lateral pectoral and medial pectoral

TABLE 7. ANTERIOR COMPARTMENT OF THE ARM

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (BRACHIAL PLEXUS)
1. biceps brachii				
long head	supraglenoid tubercle of scapula	radial tuberosity	flexes arm (genohumeral joint); flexes and supinates forearm (elbow joint); [lifts radius]	Musculocutaneous
short head	coracoid process of scapula			
2. coracobrachialis	coracoid process of scapula	middle medial shaft of humerus	adducts and flexes arm (glenohumeral jnt)	Musculocutaneous
3. brachialis	Distal, anterior surface of humerus	Coronoid process of ulna	flexes forearm(elbow jnt) [lifts ulna]	Musculocutaneous

TABLE 8. POSTERIOR COMPARTMENT OF THE ARM

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (BRACHIAL PLEXUS)
1. triceps brachii (long, lateral, and medial heads)				
long head	infraglenoid tubercle	Olecranon process of ulna	Extends forearm and assists in arm adduction	Radial
lateral head	posterior shaft of humerus			
medial head	posterior shaft of humerus distal to radial groove			

TABLE 9. ANTERIOR COMPARTMENT OF THE FOREARM

NAME	ACTION	NERVE
1. pronator teres	Pronates hand	Median
2. flexor carpi radialis	Flexes wrist and abducts hand	Median
3. palmaris longus	Weak wrist flexor; tenses fascia of palm	Median
4. flexor carpi ulnaris	Flexes wrist and adducts hand	Ulnar
5. flexor digitorum superficialis	Flexes proximal interphalangeal joint	Median
6. flexor retinaculum (associated structure)		

TABLE 10. POSTERIOR COMPARTMENT OF THE FOREARM

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (BRACHIAL PLEXUS)
1. brachioradialis (long and short heads)	Lateral supracondylar ridge of humerus	Styloid process of radius	Flexes forearm (elbow joint)	Radial
2. extensor carpi radialis longus			Extends wrist, abducts hand	Radial
3. extensor carpi ulnaris			Extends wrist, adducts hand	Radial
4. abductor policis longus			Abducts thumb; extends wrist	Radial
5. extensor policis longus			Extends MP and IP joints of thumb; extends wrist	Radial

TABLE 11. ANTERIOR COMPARTMENT OF THE THIGH

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (LUMBAR PLEXUS)
1. sartorius	Anterior superior iliac spine	Tibial tuberosity, medial side	Flexe, abducts,s and laterally rotates thigh; flexes leg and rotates leg medially (sitting crosslegged on floor)	Femoral
QUADRICEPS FEMORIS GROUP: FOUR MUSCLES WITH A COMMON INSERTION POINT				
2. rectus femoris	Anterior inferior iliac spine	Patella via quadriceps tendon and then tibial tuberosity via patellar ligament	Extends leg; flexes thigh	Femoral
3. vastus lateralis			Exends leg	Femoral
4. vastus medialis			Exends leg	Femoral
5. vastus intermedius			Exends leg	Femoral

TABLE 12. ILIOPSOAS GROUP

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (LUMBAR PLEXUS)
1. iliacus	Iliac fossa	Lesser trochanter of femur	Flexes thigh	Femoral
2. psoas major	T_{12}-L_5 vertebrae	Lesser trochanter of femur	Flexes thigh	Branches of lumbar plexus

TABLE 13. MEDIAL COMPARTMENT OF THE THIGH

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (LUMBAR PLEXUS)
1. pectineus			Adducts thigh; flexes (weak) thigh	Femoral or obturator
2. adductor longus			Adducts thigh; flexes(weak) thigh	Obturator
3. adductor magnus			Adducts thigh; flexes or extends and laterally rotates thigh depending on starting position	Obturator nerve and tibial division of sciatic nerve
4. adductor brevis			Adducts thigh	Obturator
5. gracilis	Inferior ramus and body of pubis	Upper medial surface of tibia	Adducts & flexes (weak) thigh; flexes leg	Obturator

TABLE 14. POSTERIOR COMPARTMENT OF THE THIGH

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (SACRAL PLEXUS)
HAMSTRINGS GROUP: (3 MUSCLES)				
1. semitendinosus	Ischial tuberosity	Proximal medial surface of tibia	Extends thigh & flexes leg; medially rotates leg	Tibial division of sciatic nerve
2. semimembranosus	Ischial tuberosity	Medial condyle of tibia	Extends thigh & flexes leg; medially rotates leg	Tibial division of sciatic nerve
3. biceps femoris (long head)	Ischial tuberosity	Head of fibula	Extends thigh; flexes and laterally rotates leg	Tibial division of sciatic nerve

TABLE 15. GLUTEAL MUSCLES

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (SACRAL PLEXUS)
1. gluteus maximus	Iliac crest, sacrum, coccyx	Iliotibial tract of tensor fascia lata; linea aspera of femur	Extends thigh; laterally rotates thigh	Inferior gluteal
2. gluteus medius	Iliac crest	Greater trochanter of femur	Abducts thigh; medially rotates thigh	Superior gluteal
3. gluteus minimus	Lateral surface of ilium	Greater trochanter of femur	Abducts thigh; medially rotates thigh	Superior gluteal
4. tensor fascia latae	Iliac crest & anterior superior iliac spine	Iliotibial band	Abducts thigh; medially rotates thigh	Superior gluteal
5. iliotibial tract (associated structure)				

TABLE 16. ANTERIOR COMPARTMENT OF THE LEG

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (SACRAL PLEXUS)
1. tibialis anterior	Lateral condyle and proximal shaft of tibia	Metatarsal I and first (medial) cuneiform	Dorsiflexes foot; inverts foot	Deep fibular
2. extensor digitorum longus			Extends toes 2-5; dorsiflexes foot	Deep fibular
3. extensor hallucis longus			Extends great toe; dorsiflexes foot	Deep fibular

TABLE 17. LATERAL COMPARTMENT OF THE LEG

NAME	ACTION	NERVE (SACRAL PLEXUS)
1. fibularis (peroneus) longus	Everts foot; weak plantar flexor	Superficial fibular
2. fibularis (peroneus) brevis	Everts foot; weak plantar flexor	Superficial fibular

TABLE 18. POSTERIOR COMPARTMENT OF THE LEG

NAME	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	ACTION	NERVE (SACRAL PLEXUS)
1. gastrocnemius	Lateral and medial condyles of femur	Calcaneus via Achilles (calcaneal) tendon	Plantar flexes foot and flexes leg	Tibial
2. soleus	Head and proximal shaft of fibula; medial border of tibia	Calcaneus via Achilles (calcaneal) tendon	Plantar flexes foot	Tibial
3. Tibialis posteror			Plantar flexes foot; inverts foot	Tibial
4. Flexor digitorum longus			Plantar flexes foot; flexes toes 2-5	Tibial
5. Flexor hallucis longus			Plantar flexes foot; flexes joints of great toe	Tibial