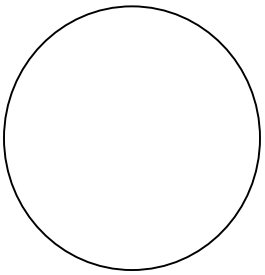
Lab 10: Muscle Tissue and Selected Muscles

Unit 7: Muscle Tissue & Muscular System (p. 153-180)

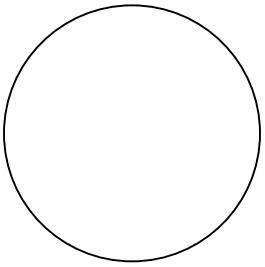
Ex. 7-1: Skeletal Muscle Anatomy & Muscle Tissue, p. 161

Muscle Tissue | **Sketch View of Muscle Tissue Under High Power**

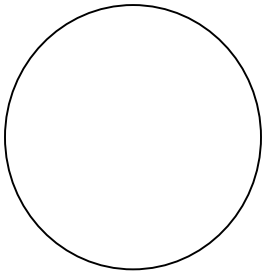
Skeletal muscle:



Cardiac muscle:



Smooth muscle



MUSCLE LIST

Exercise 7-2: Skeletal Muscles, p. 165

Locate these muscles on models, charts in the lab and on the APR on the computer.
Know the origin, insertion and action for each of the following muscles:

Muscle	Origin	Insertion	Action
1. Temporalis [mastication]	**temporal bone**	**Coronoid process of mandible**	**closes jaw**
2. Orbicularis oris [facial expression]	**maxilla, mandible**	**Lips**	**Closes and protrudes lips for speaking, kissing, whistling**
3. Lateral rectus [extrinsic eye muscle]	**tendinous ring of eye orbit**	**lateral eyeball**	**moves eye laterally**
4.Sternocleidomastoid [neck]	**sternum and clavicle**	**mastoid process**	**flexes neck forward (if both contract)**
5. Deltoid [shoulder joint]	**acromion process & spine of scapula, clavicle**	**deltoid tuberosity (humerus)**	**flexion, abduction & extension of arm**
6. Trapezius [posterior shoulder]	**occipital bone, spinous processes-thoracic vert.**	**clavicle, scapula (acromion process and spine)**	**elevate, retract, depress scapula**
7. Triceps Brachii [posterior arm]	**scapula, inferior to glenoid cavity; posterior surface of humerus**	**Olecranon process of ulna**	**extension of forearm**
8. Rectus abdominis [abdominal wall]	**pubic symphysis**	**Xiphoid process; costal cartilges of ribs 5-7**	**Flexion of vertebral column**
9. Gluteus maximus [gluteal region]	**ilium, sacrum, coccyx**	**fascia lata (iliotibial tract)**	**hip extension (climb stairs)**
10. Gastrocnemius [leg muscle]	**condyles of femur**	**Calcaneus (via calcaneal tendon)**	**Plantar flexion of foot; flexion of knee**

Bio 103: Computer Exercise – Anatomy & Physiology Revealed (APR)

Muscles

A. See your Lab Instructor to sign logbook for use of laptop and CD in the lab room.
B. Insert Anatomy & Physiology Revealed (APR) cd into cd drive and allow it to autoplay.
C. To enlarge image: right click on desk top → Properties→ Settings→Screen Resolution→ click and drag screen setting to 1024x768 pixels.

Muscles

1. Select system → **Muscular.** Select Dissection (scalpel icon) → Select Topic (**Head and Neck)** → Select view (**Lateral**)→ Hit Green Go button →Select structure (**Muscle**) → Muscles of Chewing and Swallowing →Select **Temporalis** (layer 3) →Then click on animation icon.

2. Select **Change topic/view**→ check out the remaining muscles on your lab handout. View the animations for each muscle.

   - Head & neck → Facial expression
     Anterior view → Go
     - Orbicularis oris (layer 2)
     - Sternocleidomastoid (layer 3)

     Lateral view →Go
     - Temporalis
     - Extrinsic eye muscle (lateral rectus)

Answer the following questions:

1) Which of the above muscles is a muscle of mastication? _____
2) Name the muscle that abducts the eyeball? _____
3) Which muscles originate on the sternum and clavicle? _____ _____
4) Which muscle is used in kissing? _____
5) Name the muscle used to lower the head: _____

- Back→ Posterior view → Go
    - Trapezius
    - Triceps brachii
    - Gluteus maximus
- Abdomen →
  Anterior view → Go
    - Rectus Abdominis
- Thorax → Anterior view → Go
    - Pectoralis major
- Muscles that act on the knee →Hip and thigh → Anterior → Go
    - Quadriceps femoris (rectus femoris)

Check out the animations for the actions of these muscles.

6) What is the action of the "six-pack"? _____

7) Which muscle is used to walk up stairs? _____

8) Which muscle is involved with plantar flexion? _____

9) Which muscle is involved with extension of the forearm? _____

10) Which muscle inserts on the elbow? _____

11) Name the muscle that moves the scapula: _____

Histology (microscope icon)

Check out the three muscle tissues:

Skeletal, Cardiac, and Smooth muscle

Don't forget to eject the CD prior to closing down the laptop!

Lab 11: Eye and Ear

Unit 9: General & Special Senses (p. 223- 245)

Exercise 9-1: Anatomy of Eye and Vision, p. 229

Locate the following structures on models, charts, and ***sheep eye**:

The EYE

*Extrinsic Muscles

*Conjunctiva

Lacrimal Gland

Nasolacrimal duct

Fibrous tunic:
- *Cornea
- *Sclera

Vascular tunic:
- *Iris
- *Pupil
- *Ciliary body
- *Choroid

Sensory (Neural) tunic: *Retina
- Rods
- Cones
- Macula lutea
- Fovea centralis
- Optic nerve (CN II)

*Lens

*Optic disk

*Aqueous humor

*Vitreous humor

Visual Tests:

Blind Spot:

Near-Point Accommodation:

Visual Acuity (Snellen Chart):

Color Blindness (Ishihara color plates):

THE EAR

Exercise 9-2: Anatomy of Ear, Hearing, & Equilibrium, p. 234

Locate the following structures on models and charts:

External Ear

- Auricle (Pinna)
- External acoustic canal
- Tympanic membrane

Middle Ear

- Ossicles (Malleus, Incus, Stapes)
- Oval window
- Auditory (Eustachian) tube

Inner Ear

- Semicircular canals
- Vestibule
- Cochlea
  - Organ of Corti (Spiral organ)
- Vestibulocochlear (Auditory) Nerve (CN VIII)

Hearing & Equilibrium Tests:

Weber Test:

Rinne Test:

Romberg Test:

Bio 103: Computer Exercise – Anatomy & Physiology Revealed (APR)

Special Senses

The Ear

1. Select system → **Nervous.** Select Dissection (scalpel icon).
   Select Topic →**Hearing/Balance**. Select view →**Lateral**→ Hit Green Go button. Select structure type→ **Sense Organs**. Select structures from the structure list as they correspond to the lab handout. View the animations as you proceed through the structure list.

   Structure list : **Sense organs**
   - Auricle
   - Cochlea
   - Semicircular ducts (or canals)
   - Tympanic membrane

Answer the following questions:

1) What is the function of the structure know as the auricle or pinna?

   _____

2) Which organ helps to maintain balance and equilibrium? _____
3) Which of the ossicles is attached directly to the "eardrum"? _____
4) Which structure contains the spiral organ of Corti? _____

Structure list: **Nerves → Vestibulocochlear nerve**

5) Which cranial foramina does this nerve pass through? _____
6) This nerve is cranial nerve CN _____.
   (Remember to use Roman numerals!)

The Eye

2. Change topic/view → Select Topic →**Vision**. Select view →**Eye-lateral**→ Hit Green Go button. Select structure type→ **Special Senses**. Select structures from the structure list as they correspond to the lab handout. View the animations as you proceed through the structure list.

Structure list: **Sense Organs**

- Anterior chamber
- Choroid
- Ciliary body
- Cornea
- Iris
- Lens
- Pupil
- Sclera

Answer the following questions:

1) Where is the anterior chamber located and what does it contain?
   _____

2) The image is perceived in which lobe of the brain? _____

3) Which layer of the eyeball helps to prevent scattering of light rays?
   _____

4) Which structure protects the anterior part of the eye? _____

5) Which structure regulates the thickness of the lens? _____

6) Muscles within the _____ regulate the size of the pupil.

Structure list: **Nerves →**

- Optic disk
- Optic nerve
- Retina

7) The optic nerve is CN _____.

8) The crossing of the optic nerves in the brain is called _____.

9) Where is the "blind spot" located? _____

10) The photoreceptors are located in the _____.

Don't forget to eject the CD prior to closing down the laptop!

LAB 12: Nerve Tissue, Nerves, Spinal Cord, and Brain

Unit 8: Nervous System (p. 181-221)

Ex. 8-1: Nervous Tissue, p. 191
Ex. 8-2: Anatomy of the Brain, p. 195
Ex. 8-3: Spinal Cord, p. 203

Giant Multipolar Neuron slide:
- cell body or soma
- processes

Motor Neuron model:
- cell body or soma
- dendrites
- axon
- Schwann cell
- nodes of Ranvier

Spinal Cord slide:
- gray matter
- white matter
- central canal

Spinal Cord model:
- gray matter
- white matter
- central canal
- dorsal (posterior) root ganglion
- ventral (anterior) root

Brain (human brain model and sheep brain)
- meninges (dura mater, arachnoid, pia mater)
- cerebrum
  - hemispheres (right & left)
  - longitudinal fissure
  - lobes (frontal, parietal, temporal, occipital)
  - sulci (valleys)
  - gyri (hills)
- olfactory bulbs and tracts
- optic chiasma
- cerebellum
  - arbor vitae
- pons
- medulla oblongata
- corpora quadrigemina
  - superior colliculi
  - inferior colliculi
- corpus callosum
- pineal gland
- thalamus
- hypothalamus
- infundibulum
- pituitary gland

LAB 13: Cranial Nerves

Unit 8: Nervous System

Ex. 8-4: Cranial Nerves (p. 206-219)

Name	Test for Nerve Function	Major Function
I. **OLFACTORY**		**S** only: Smell
II. **OPTIC**		**S** only: Vision
III. **OCULOMOTOR**		S: Receptors that influence pupil size **M**: Muscles that move eye (*except* sup. oblique, lat. rectus)
IV. **TROCHLEAR**		S: Muscle sense (eye muscles) **M**: Superior oblique eye muscle
V. **TRIGEMINAL**		S: Sensations of head, face M: Muscles of mastication
VI. **ABDUCENS**		S: Muscle sense (eye muscles) **M**: Lateral rectus eye muscle
VII. **FACIAL**		S: Tastebuds (ant. 2/3 tongue) M: Muscles for facial expressions
VIII. **VESTIBULOCOCHLEAR** (or AUDITORY)		**S** only: Hearing & equilibrium
IX. **GLOSSOPHARYNGEAL**		S: Tastebuds (post. 1/3 tongue) Detects BP in the carotid a. M: Salivary glands & muscles for swallowing
X. **VAGUS**		S: Pharynx, thoracic & abdominal viscera M: Major PSN nerve to thoracic & abdominal viscera
XI. **ACCESSORY** (SPINAL)		S: Proprioception from head, neck, shoulder muscles **M**: Head & shoulder movements
XII. **HYPOGLOSSAL**		S: Proprioception from tongue **M**: Tongue movement & swallowing

S = Sensory
M = Motor