Vancouver Community College
Biology 1120
Instructor Maria Morlin

March 2021– hybrid course

Lab summaries:

- Brain Dissection
- Reflexes and Reactions (not in report)
- Senses
- Eye Dissection

Outline

Objectives, methods and resources for:

- Brain dissection
- Reflexes and reactions lab
- Senses lab
- Eye dissection

Brain dissection

Objectives

1. Locate and identify important external anatomical landmarks on the intact sheep brain.
2. Locate and identify important internal anatomical structures on the bisected sheep brain.
3. Use dissecting tools and follow safety protocol.
4. Relate structures to their function.

Methods

1. Methods are described in the A&P lab manual.
2. We watched a sheep brain dissection.
3. Students used the resources provided to find form and function of brain structures.

Review the following structures & function of the following (use sites on next page)

External

Cerebrum

Left and right cerebral hemispheres

Skull and dura mater

Pia mater

Cerebellum

Pons

Medulla oblongata

Spinal cord

Longitudinal fissure

Frontal lobe

Sulcus

Gyrus

Temporal lobe

Parietal lobe

Occipital lobe

Olfactory bulbs

Pituitary gland

Pyriform lobe

Cerebral peduncle

Pyramidal tract

Internal

Corpus callosum

Cerebrum

Spinal cord

Medulla oblongata

Pons

Cerebellum

Hypothalamus

Pituitary gland

Optic chiasm

Thalamus

Pineal body

Midbrain

Third ventricle

Cerebral aquaduct

Fourth ventricle

Septum pellucidum

Fourth ventricle

Trochlear nerve

Inferior colliculus

Hippocampus

Use these resources for review

- We watched this video of a brain dissection: https://www.youtube.com/watch?v=-fDWH4_5DhI

- Review a brain dissection with labelled photos here:

https://www.biologycorner.com/anatomy/sheepbrain/sheep_dissection.html

- This is a good site for functions, https://people.wou.edu/~lemastm/Teaching/BI335/Laboratory%2001%20-%20Brain%20Anatomy.pdf

Reflexes and reactions lab (remote)

Objectives

- Investigate neural responses to voluntary functions and reflexes
- Apply tests used to diagnose damage to nervous system.
- Collect data for a lab report
- For the quiz coming up, you only need to review the reflexes (except the patellar), not the reactions

Methods

1. Methods are described in the A&P lab manual.
2. We viewed lab demonstrator videos for some tests.
3. Instructor and students attempted some tests at home (with varying degrees of success ☺)

Review the application of reflex and reaction tests in the lab manual (resources next page)

Reflexes

Patellar reflex (excluded in quiz)

Achilles reflex

Plantar reflex

Pupillary reflex

Ciliospinal reflex

Nystagmus

Reactions (Excluded in quiz)

Visual cues and handedness

Auditory cues

Tactile cues

Use these VCC videos to review how tests are performed

- VCC videos specific to reflexes and reactions are titled AP1120 RR ….)

https://www.youtube.com/playlist?list=PL3eh3yRNbgJ_D023LtszATa3p84wT-pnw

Senses lab (remote)

Objectives

- Investigate a number of senses, including hearing.
- Focus is mostly on visual testing.
- Become familiar with terminology around the senses.
- For the quiz coming up, focus on what we did on Backchannel Chat.

Methods

1. We used Backchannel Chat. Students followed instructions given by the instructor, and answered polling questions.
2. Students used a variety of online tests this time (no access to the lab).

Review investigation of the following senses

- Vision
- Hearing
- Proprioception

Read the following in the lab manual for explanation these tests (pg 48-53)

- Visual acuity
- Astigmatism
- Eye dominance
- Proprioception

Use these resources for review – this is basically what we did on Backchannel Chat including polling questions

- **Rods and Cones** – phototransduction.
  - https://www.youtube.com/watch?v=dhd2fja0LZ4
- Where does phototransduction primarily take place?
  - Photoreceptor cells, brain cells
- In the dark, sodium ions flow into rod cells
  - True false
- In the light, a decrease of neurotransmitter acts as a signal that light is present
  - True false
- Rhodopsin is made up of:
  - Opsin and retinal, collagen and vitamin a

- **Colour blindness**:
  - https://www.colormatters.com/color-and-va ision/what-is-color-blindness
- The most common kind of colour blindness is:
  - Red-green, blue red, green blue
- More males 1/12 have colour blindness that females because it is inherited as a recessive trait on the:
  - X chromosome, Y chromosome

- **Hearing**: The interactive ear: https://www.amplifon.com/uk/interactive-ear/index.html

- Make a flow chart from this interactive activity. Draw the flow chart with six boxes. Write Pinna in the first box, and auditory nerve in the last box. Start with the outer ear. Click on the little blue + sign and a circle comes up. Drag the circle to the right from the pinna to the auditory nerve, writing each structure in your chart. Here are the structures: put them in order in your chart. Upload the picture.
  - Pinna, ear canal, eardrum, ossicles, fluid of the cochlea, auditory nerve
- Put your cursor over the dots and see what all the structures are called and their function. As a treasure hunt exercise find the following and note the function. Find the facial nerve. Go to the middle ear and find the auditory or eustachian tube, the incus, the malleus. No go to the inner ear and find the: semicircular canals and the cochlea, and write down their functions

Look through a triangle of their hands **for eye dominance**, demonstration shown here:
https://www.youtube.com/watch?v=4Gbkca4RM-4

Which is your dominant eye?

https://www.essilor.com/en/vision-tests/test-your-vision/

Do these eye tests. **Visual acuity, astigmatism, light sensitivity, near vision 1, colour vision.**

Questions: What does the test with the radiating dark lines test?
Astigmatism. Visual Acuity

(Light sensitivity is if your eyes experience discomfort in bright light)

After images

https://faculty.washington.edu/chudler/after.html

Receptors for certain wavelengths get saturated, so you can't see those colours for a few seconds.

Test your proprioception.

On a piece of paper, write your name with your eyes open once,
Write your name with your eyes closed once.

Field Sobriety Tests. (police officers use)

Close your eyes. Touch your nose with each of your index fingers.

Sequential finger touching. With your eyes closed, touch each of your fingers to your thumb, starting with your forefinger.

Here is a 1.5 minute video on proprioception
https://www.youtube.com/watch?v=PMm7G0il5oc

If you are a dancer, you always practice in a mirror because your prioprioception can be 15% off.

Eye dissection (remote)

Objectives

1. Locate and identify important external anatomical landmarks on the cow or sheep eye.
2. Locate and identify important internal anatomical structures of the cow or sheep eye.
3. Relate structures to their function.

Methods

1. In lieu of going to the lab, students looked at a video of an eye dissection: https://www.exploratorium.edu/learning_studio/cow_eye/step01.html

2. Then students did an online quiz: https://www.sporcle.com/games/smac17/human-eye-anatomy

Review structures & functions of the following eye structures (use resources on following page and the lab manual for functions)

External

Eyelids

Eyelashes

Iris

Pupil

Sclera

Cornea

Muscles:

Superior and inferior oblique

Superior, inferior, lateral and medial rectus muscles

Internal

Anterior and posterior chambers

Aqueous humor

Vitreous humor

Lens

Suspensory ligaments

Ciliary body

Choroid

Retina

Optic nerve

Fovea centralis

Use these resources for review

- Review the eye dissection you watched:

https://www.biologycorner.com/anatomy/sheepbrain/sheep_dissection.html

- This is a pretty good site for dissection photos. Functions can be found in the lab manual.

https://science.jburroughs.org/resources/skeleton/eye/eyedissection.html