

BIO141-Human Anatomy and Physiology I | 2023

Spinal Cord and Spinal Nerves

Spinal Cord

Case Study “Pain in the Back”

Here we have a patient with a herniated disc that is putting pressure on the sciatic nerve. Students will work through the lab to learn more about the anatomy of a herniated disc. They will also learn the location, and function of the sciatic nerve.

Activity 1 – Structure of the Spinal Cord (students work in pairs)

Students will first label the cross section of the spinal cord. They will likely need a quick run through of these structures as a class. They will label the longitudinal image in their lab manual. They should check their answers with the instruction book. They will complete the table with the function of each structure and color in the model with the sensory and motor areas. Please be sure to check this activity to be sure they colored the sensory and motor areas correctly.

Materials needed for each tray: Spinal cord cross section model (1 per tray), terminology binder,

In the lab: Box of colored pencils

Activity 2 – Histology of the Spinal Cord (individually)

Students will view the cross section of the spinal cord microscope slide and draw it at low power and then focus on the central canal and ependymal cells at high power. Please be sure that they label their images.

Materials needed for each tray: Microscope slide of spinal cord, lens paper, isopropyl alcohol

Activity 3 – Spinal Nerve Structure and Function (students work in pairs)

Students will again identify the structures on the spinal cord model – this is a repeat and is practice. Then, they will label the general reflex arc in their lab manual and trace the sensory and motor pathways in different colors. They will need your initials on this activity.

Materials needed: spinal cord cross-section model, terminology binder

In lab: Box of colored pencils

Activity 4 – Identification of the Major Spinal Nerves and Their Motor Functions (students work in pairs)

Students can work in pairs on this activity to label the upper spinal nerves and the lower spinal nerves. In the lab, they will then be coloring the muscles of the arm and leg innervated by the different nerves.

Materials needed: muscles instruction book

In lab: Box of colored pencils

Activity 5 – Somatic and Autonomic Reflex Arcs (Students work in pairs)

BIO141-Human Anatomy and Physiology I | 2023

Spinal Cord and Spinal Nerves

Students will first label the reflex arcs. They will then use the reflex hammer to test the patellar reflex and then the penlight to test the pupillary reflex. Their focus on the pupillary reflex should be on the symmetry of this reflex.

Materials needed: penlight, reflex hammer

Activity 6 – Spinal Nerve Pathways (student work in pairs)

Student will likely need a “chalk talk” on this before they complete this activity. They will then be labelling the upper and lower motor neurons and the 1st, 2nd and 3rd order neurons in the lab.

Materials needed: box of colored pencils

Lab Clean-up Instructions

Students must clean the lab benches with the disinfectant solution. Please have them place all models and charts back on the side and back lab benches.