# Week 4 Lab Instructions
# Histology

| Activity | Deliverable | Points |
|---|---|---|
| Part A | Activity- Lab Worksheet: Histology | 20 |
| Part B | Completed Histology Tables | 10 |

## Part A
## Step 1: Read the Entire Lab Packet

1.0– Read through the laboratory packet – SEE ATTACHED SHEETS

## Part A
## Step 2: Come to the Lab with Proper PPE

**BACKGROUND:**
Primary tissue types are epithelial, connective, muscular, and nervous. Specific tissue types are the subcategories of the primary types. When identifying a specific tissue type, use the full name of the tissue, e.g. simple columnar epithelial tissue, not just simple columnar.

**Primary Tissue Type: Epithelial**

**Characteristics**: cellular, polar, avascular, regenerative
**Function**: protection, absorption, secretion, sensation
**Location**: covers all internal and external surfaces, openings, passageways
**Classification**:

a. # of layers- one layer = "simple"; multiple layers = "stratified"
b. shape of cells: squamous (flat – cells much wider than they are tall), cuboidal (cube shaped – cells approx. the same height as width), and columnar (column shaped – cells taller than they are wide).

**Primary Tissue Type: Connective**

**Characteristics**: composed of specialized cells embedded within a non-living matrix. Matrix is a combination of ground substance and protein fibers. Ground substance is a mixture of interstitial fluid, cell adhesion proteins, and proteoglycans. Protein fibers include collagen, elastin, and reticulin.
**Function**: structural framework, protection, support, energy storage, immunity
**Classification**: based on cell types present, composition of ground substance, and types of protein fibers present

**Primary: Muscle**
Characteristics: Relatively long, slender cells containing contractile protein actin and myosin. Muscle is both excitable and contractile.

Function: Movement of both skeletal elements and of material within hollow organs.
Classification: Three types.
Specific: A. Skeletal Muscle - long, multinucleate cells w/ obvious striations found in all skeletal muscles to provide voluntary movement. Nuclei are flattened against the edge of the cell.
Specific: B. Smooth Muscle - spindle shaped w/ single, central nucleus. Found in walls of all body organs, blood vessels, etc, and function to propel substances along internal passageways; involuntary.
Specific: C. Cardiac Muscle - Appears striated. However, cells are branched and uninucleate. Found only in the heart. Contains intercalated disc (cell junctions between cells).

**Primary: Nervous**
Characteristics: Composed of two broad categories of cells; neurons and glia (neuroglia). Neurons are the functional cells of the nervous system. Excitable. Glia are the supporting cells of the nervous system, with a variety of functions.
Function: Provides integration and communication between body systems on a relatively fast, short time scale.
Location: Found in the brain, spinal cord, and some collections of cell bodies (ganglia) in the periphery.
Specific: A. Nervous - Ox Spinal Cord, motor nerve. Note the large triangular neuronal cell bodies with many protections. Most of the material visible consists of these entangled projections. Smaller purple stained dots are the nuclei of glial cells.

## PURPOSE:
In this lab, you will be asked to identify some of the different tissue types of the body using a microscope. You will be asked to demonstrate locations and functions of the different types.

## MATERIALS:

You will also need to print off a copy of this lab directions and worksheet to complete while you are working on the lab.

- A copy of the lab report for each member of your group
- A writing utensil
- Microscope
- Preserved slides of tissues: histology slide set

## PREPARATION:

- Read your lab in its entirety before coming to class.
- Clear your workstation of all unnecessary materials. Book bags and or purses should be hung on hooks or places at the front of class. Make sure all other unnecessary materials (coats, drink containers, unused textbooks, etc.) are all stored and placed in a safe area out of the way.
- Obtain all materials listed above.
- Familiarize yourself with your lab materials.
- Follow the directions of the packet and as presented by your instructor.
- Be aware of the instructions for documenting your lab work. You will be performing the lab in a group but will each be responsible for recording your own data and creating your own lab report.

## ACTIVITY:

- Read through each question on the observation report and fill in the appropriate answers. Make sure you answer each question completely for full credit. You may use any of the provided resources (EDAPT, lecture materials, etc.) to accurately answer the following questions.