

BIOLOGY 11 – PRE-LAB EXERCISE

5

Name: **Answer Key**

Lab Day & Time:

5

Human Body Tissues

- Refer to **Figure 5.1** in the *Lab Manual* and the accompanying photomicrographs (photos taken with a microscope) of a variety of human tissues. List and describe the four steps needed to process a piece of body tissue to make a prepared slide such as one of these.
 - Fixation:** tissue is immersed in preservative.
 - Embedding:** tissue is immersed in alcohol and then impregnated with wax.
 - Sectioning:** the embedded tissue is sliced into extremely thin slices, and then placed on a slide.
 - Staining:** the tissue section on the slide is immersed in a special dye to stain specific structures.

How is the photomicrograph of the blood cells different from the other pictures in **Figure 5.1**? (Hint: Refer back to **Figure 2.3** in Lab 2.) **Scanning electron micrograph (the others are light photomicrographs)**
[Also, blood does not need to be fixed, embedded, & sectioned.]

- a) Name each of the four major (primary) types of tissues in the human body; b) describe the distinguishing characteristic for each of these four tissue types; c) give an example (subtype) of each of these four tissue types.

a) Tissue Type	b) Distinguishing Characteristic	c) Example
1. epithelial	continuous layer or layers of cells with direct cell–cell connections	squamous, cuboidal, or columnar; simple or stratified
2. connective	cells suspended in extra-cellular matrix	loose, dense, bone, adipose, cartilage, blood
3. muscle	cells specialized for contraction	skeletal, cardiac, smooth
4. nervous	cells specialized to conduct nerve impulses	neurons, neuroglia

- What type and subtype of human tissue are sometimes ciliated? **epithelial: pseudostratified columnar**
 Where are these ciliated tissues found in the human body? **oviducts and respiratory passages**

What is the function of the cilia? **push fluids over the surface of the cells**

e.g., oviduct fluids with egg are swept toward uterus; mucus is swept out of airway

What energy source is used to fuel the “molecular engines” that power the cilia to move? **ATP**

- Distinguish between “tissue” and “organ”.

A tissue is an association of cells of the same type.

Whereas an organ is a structure constructed of multiple tissues.

- Refer to **Figure 5.17** in the *Lab Manual* and the accompanying description of human skin.

The epidermis is mostly composed of which primary tissue type? **epithelial (stratified squamous)**

The dermis is mostly composed of which primary tissue type? **connective**