Bio& 241: Unit 1 Lab 2

Microscope, Cells, and Epithelial Tissues

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Microscope

Be able to identify the following microscope parts and know their function:

Coarse adjustment knob	Fine adjustment knob	Mechanical stage
Oculars	Condenser	Iris diaphragm
Scanning objective	Low power objective	High power Objective
Rotating nosepiece		

Review how to determine the magnification (M) of the oculars lens and each objective lens. Also review how to calculate total magnification (TM).

(TM = M of Ocular X M of Objective)

Review how to calculate the size of the microscope field of view (FV). Low power diameter of the field of view is about 2mm

(FV of higher power objective = FV of lower power objective X M of lower power objective// M higher power objective)

Cell Anatomy and Division

Using the charts and models available, make sure you can identify the following cellular organelles. Also review the functions of each organelle.

Plasma membrane	Nucleolus	Nucleus	Nuclear membrane
Centriole	Lysosomes	Golgi apparatus	Ribosomes
Mitochondrion	Rough ER	Smooth ER	

Cell Shape and Size:

Slide 1: Mesothelium {surface view of simple squamous cells}
Slide 19: Smooth muscle cells
Slide 46: Human Red Blood Cells
Slide 96: Human Sperm cells

The purpose of this exercise is to get you to start thinking about the relationship between cell shape and cell function. As you view these cells, keep the following questions in mind:

How do the four cell types differ in size and shape?
What is the specific function for each of these cells?
How might cell size and shape help these cells perform their functions?

Cell Division/Mitosis:

Slide 88: Mitosis

As you view this slide, make sure you can identify the stages of mitosis and the following structures: (chromosomes, chromatids, centromere, mitotic spindle, centrioles)

Classification of Tissues Epithelial tissue:

Use your Atlas and textbooks to help you identify the following types of Epithelial tissues on the following slides. Also work on learning their location and function

Simple Squamous:

Slide 1: Mesothelium	Surface view of simple squamous cells demonstrating the large surface area.
Slide 80 or 81: Kidney	Side view found lining blood vessels and lining large round structures called a Renal Corpuscle, see figure 26.6, page 922 of the lecture text for an example. This view demonstrates the thin nature of the cells in cross-section.
Slide 67: Lung	Another example of a side view, see figure 23.11, page 788 of the lecture text for an example
Slide 40: Artery/vein	Another example of a side view lining the artery and vein to the inside.

Stratified Squamous:

Nonkeratinized Stratified Squamous: (note that cells have nuclei thoughout this tissue)

Slide 2:	Look at one of the edges or surfaces of the block of tissue. You will be observing a side view of the cells.
Slide 97: Vagina	Look for the edge that would have lined the vaginal surface.
Slide 57 Esophagus	Look for the surface that would have lined the lumen

Keratinized Stratified Squamous: (Noted that cells are dead at the surface, they appear without nuclei and are transparent)

Slide 13: Scalp or hairy skin	Look for outer surface edge
Slide 14: Non hairy skin	Look for outer surface edge for this skin from the palmar surface of the hand

Simple Cuboidal:

Slide 80/81: Kidney	Look for simple cuboidal tissue lining of renal tubules associated with the Renal Corpuscle you view earlier
Slide 73: Thyroid	Look for simple cuboidal tissue lining the large round structures called Follicles.

Simple Columnar: Lines the surface of the lumen of the digestive system

Slide 59: Stomach
Slide 60: Duodenum
Slide 61: Ileum
Slide 62: Colon
Slide 64: Small Intestine

Pseudostratified Columnar Epithelium:

Slide 68: Trachea Look at surface lining of the lumen

Slide 66: Bronchi Look at surface lining of the lumen

Transitional:

Slide 82: Bladder Look at surface lining of the lumen