LAB 1: TERMINOLOGY & MICROSCOPY

Ex. 1, 2, 3 (p. 31-34)

Exercise 1: Body Organization and Terminology

Levels of Organization:

Cells → Tissues → Organs → Organ systems → Organism

Ex. _____ → _____ → _____ → _____ → _____

Anatomical terms (based on **anatomical position**):

Directional and Anatomical Terms:

- Superior – Inferior
- Anterior - Posterior
- Medial – Lateral
- Proximal – Distal
- Superficial – Deep
- Parietal - Visceral

Sectional Anatomy:

- Sagittal
  - Mid-sagittal
  - Parasagittal
- Coronal (frontal)
- Transverse
- Oblique

Organ Systems:

- Integumentary
- Skeletal
- Muscular
- Nervous
- Endocrine
- Cardiovascular
- Lymphatic
- Respiratory

Digestive

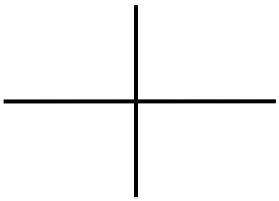
Urinary

Reproductive

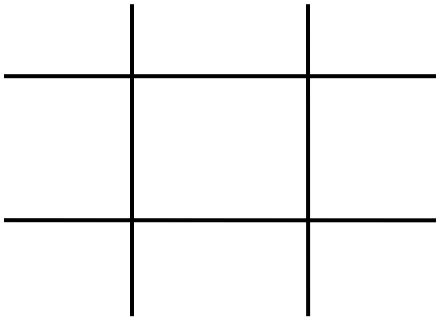
Regional Anatomy:

Cranial, axillary, abdominal, gluteal, calcaneal, etc….

4 quadrants:



9 abdominopelvic regions:



Body Cavities:

- Dorsal Cavity
  - Cranial cavity
  - Vertebral (spinal) cavity
- Ventral Cavity
  - Thoracic cavity
    - Pleural cavity
    - Pericardial cavity
    - Mediastinum
  - Abdominopelvic cavity
    - Abdominal cavity
    - Pelvic cavity

Serous Membranes:

- Pleural: Visceral & Parietal
- Pericardial: Visceral & Parietal
- Peritoneal: Visceral & Parietal

Exercise 2: Care and Use of the Compound Light Microscope

Parts:

- Arm
- Base
- Light source
- Condenser
- Stage
- Ocular lens
- Objective lenses
- Iris diaphragm
- Mechanical stage
- Nosepiece
- Coarse adjustment knob
- Fine adjustment knob

Terms:

- Resolution
- Working distance
- Field of view
- Parfocal
- Depth of Field

Magnification vs. Total Magnification

Objective lens	Magnification	(Objective x Ocular) =	Total Magnification
Scan	4x	4 x 10	40
Low			
High			
Oil			

Slides:

- "e"
- crossed threads
- wet mount of hair
- wet mount of cheek cells [**Exercise 3, p.31-33]**
- live specimen (Paramecium/ Euglena)

LAB 2: MOLECULAR MOVEMENT

Exercise 4: Membrane Transport

Passive processes:

Diffusion

Def.:

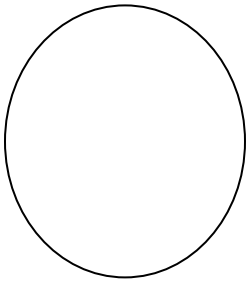
Experiment 1: Diffusion in liquid (Groups of 4)

Observation of MeBlue in water:

Experiment 2: Diffusion in a semi solid medium (Groups of 4)

- petri dish with agar
- remove two small plugs of agar with a straw
- place $KMnO_4$ (MW 158g) and MeBlue (MW 320g) within each well

Observation of the diffusion rate vs. particle weight:



Experiment 3: Diffusion and Membrane Permeability (Groups of 4)

Color of solution in beaker:

Color of solution in dialysis bag:

IKI (iodine) → test for _____

positive test = _____

Osmosis

Def.:

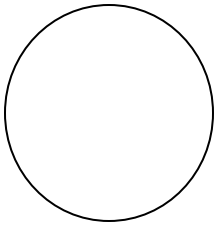
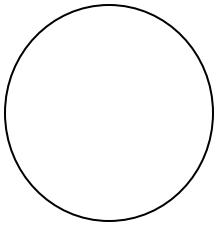
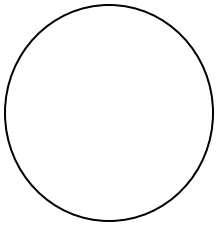
Experiment 4: Thistle tube osmometers (DEMO)

100% molasses

Experiment 5: Osmosis and living cells - red blood cells (Groups of 4)

Observe (under the microscope) RBCs in each of the following solutions:

0.9% NaCl (isotonic) 100% dH_2O (hypotonic) 10% NaCl (hypertonic)

Did you observe hemolysis or crenation? Where?

Filtration (Groups of 4)

Def.:

Experiment 6:

Pour solution of copper sulfate, charcoal, and starch through filter paper in a funnel over an empty beaker.

Which passes through the filter paper into the beaker?
Explain why or why not.
Copper sulfate:
Charcoal:
Starch:

Active Processes:
(know definitions and examples of each)

Active transport

Endocytosis
Phagocytosis

Pinocytosis

Exocytosis

LAB 3: CELL DIVISION AND EPITHELIAL & CONNECTIVE TISSUE

Ex 3, 30, 31 and 5

Ex. 3: Cell Structure and Cell Division (p. 35 – 37)
Ex. 30: Male Reproductive System (p. 550-553)
Ex. 31: Female Reproductive System (p. 563-564)

Cell Cycle = Interphase + Mitosis

Interphase:

$G_{0:}$

$G_{1:}$

S:

$G_{2:}$

Mitosis:

Prophase:

Metaphase:

Anaphase:

Telophase:

Slide: Whitefish blastula

Meiosis:

Spermatogenesis

Oogenesis:

Slides:

Testis

Sperm

Ovary

Exercise 5: Epithelial and Connective Tissues

Four main tissue types: _____ _____

_____ _____

Epithelial tissue:

Know characteristics, functions, and locations for each tissue type. Make a sketch of each cell type as you go through each of the slides.

Simple squamous:

Slide: Lung

Mesothelium

Simple cuboidal:

Slide: Kidney (tubules)

Simple columnar:

Slide: Villi of small intestines

Goblet cells

Stratified Squamous:

Slide: Esophagus

Skin – Palmer (epidermis)

Pseudostratified ciliated columnar: PSCCE

Slide: Monkey trachea

Transitional:

Slide: Transitional (urinary bladder)

Connective Tissues:

Adipose (Fat):

Slide: Adipose

Dense irregular CT:

Slide: Skin (dermis)

LAB 4: INTEGUMENTARY SYSTEM

Ex. 6: The Integumentary System

Regions of Cutaneous Membrane: Functions:

Epidermis

Dermis

Epidermis

Tissue type:

5 specific (cell) layers: Stratum corneum
Stratum lucidum {thick skin only}
Stratum granulosum
Stratum spinosum
Stratum germinativum (basale)

Dermis

Tissue type:

2 specific layers: Papillary layer
Reticular layer

Hypodermis

Tissue type:

No specific layers.

Not considered a region of the integument!

Slide #1

Skin palmer [Thick skin]
Identify: Regions
Specific layers
Tissue types
Sweat glands

Slide #2:

Scalp [Thin skin]
Identify: Regions
Tissue types
Hair follicle
Hair shaft
Sebaceous glands
Sweat glands

Skin Model

Identify: All terms listed for slides plus:
Arrector pili muscle

Tissue / Cell type	Region	Specific layers
	Epidermis	1. 2. 3. 4. 5.
	Dermis	1. 2.
	Hypodermis	