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

<table>
<thead>
<tr>
<th>Objective lens</th>
<th>Magnification</th>
<th>(Objective x Ocular)</th>
<th>Total Magnification</th>
</tr>
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<tbody>
<tr>
<td>Scan</td>
<td>4x</td>
<td>4 x 10</td>
<td>40</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil</td>
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</tbody>
</table>

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 KMnO₄ (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% dH₂O (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)

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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)
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!

<table>
<thead>
<tr>
<th>Slide #1</th>
<th>Slide #2:</th>
<th>Skin Model</th>
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<tbody>
<tr>
<td>Skin palmer  [Thick skin] Identify: Regions Specific layers Tissue types Sweat glands</td>
<td>Scalp [Thin skin] Identify: Regions Tissue types Hair follicle Hair shaft Sebaceous glands Sweat glands</td>
<td>Identify: All terms listed for slides plus: Arrector pili muscle</td>
</tr>
<tr>
<td>Tissue / Cell type</td>
<td>Region</td>
<td>Specific layers</td>
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