**AP BIOLOGY (WHEATLEY)**

**HOMEOSTASIS AND RESPONSE UNIT GUIDE 2015**

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| **MONDAY** | **TUESDAY** | **WEDNESDAY** | **THURSDAY** | **FRIDAY** |
| **11/30**  \*Cell size lab – **DUE 12/1** | **12/1**  \* Microscope lab | **12/2**  \*Microscope lab – **due at**  **the end of the period** | **12/3**  \*Cell organelles activity | **12/4**  \*Cell membrane  structure POGIL – **due**  **12/7** |
| **12/7**  \*Cell membrane function  POGIL – **due 12/8** | **12/8**  \*Transport lab  \*Water potential practice | **12/9**  \*Transport lab  \*Water potential practice | **12/10**  \*Transport lab  \*Water potential practice  – **DUE 12/11** | **12/11**  \*Transport lab mini-  posters – **due at the**  **end of the period**  \*Review for final exam |
| **1/4**  **TEACHER WORKDAY** | **1/5**  \*Homeostasis | **1/6**  \*Feedback loops | **1/7**  **REVIEW FOR HOMEOSTASIS AND RESPONSE TEST** | **1/8**  **HOMEOSTASIS AND RESPONSE TEST** |

Supplemental Resources:

1. Bozeman Science Videos
2. Cellular organelles
3. A tour of the cell
4. The cell membrane
5. Transport across cell membranes
6. Cell compartmentalization
7. Why are cells so small
8. Feedback loops
9. Homeostatic disruptions
10. Homeostasis hugs
11. Crash Course Videos
12. Eukaryotes: the city of animal cells
13. In da club – membranes and transport

Reading: Read Chapters 4, 5, and 20 and answer the prompts below.

A. Introduction to the Cell

4.1 Compare the designs of and images produced by a light microscope, a scanning electron microscope, and a transmission electron microscope. Distinguish between magnification and resolving power.

4.1 Describe the two parts of cell theory.

4.2 Explain why there are upper and lower limits to cell size.

4.2 Describe the hydrophobic and hydrophilic components of a plasma membrane and relate these regions to the functions of the plasma membrane.

4.3 Distinguish between the structures of prokaryotic and eukaryotic cells.

4.4 Explain why compartmentalization is important in eukaryotic cells.

4.4 Compare the structures of plant and animal cells. Note the function of each   
cell part.

4.4 Describe the structures and functions of the four compartments of eukaryotic cells.

**B. The Nucleus and Ribosomes**

4.5 Describe the structure and functions of the nucleus and nucleolus. Explain how DNA is packaged inside of the nucleus.

4.6 Describe the functions of ribosomes. Explain why some ribosomes are free in the fluid of the cytoplasm while others are bound to the endoplasmic reticulum or nuclear envelope.

C. The Endomembrane System

4.7–4.12 Describe the structures and functions of the components of the endomembrane system, including smooth and rough endoplasmic reticulum, Golgi apparatus, lysosomes, vacuoles, and peroxisomes.

D. Energy-Converting Organelles 4.13–4.15

4.13–4.14 Compare the structures and functions of chloroplasts and mitochondria.

4.15 Describe the evidence that suggests that mitochondria and chloroplasts evolved by endosymbiosis.

E. The Cytoskeleton and Cell Surfaces 4.16–4.22

4.20 Compare the structures and functions of tight junctions, anchoring junctions, and gap junctions.

4.21 Relate the structures of plant cell walls and plasmodesmata to their functions.

F. Membrane Structure and Function

5.1 Describe the fluid mosaic structure of cell membranes.

5.1 Describe the diverse functions of membrane proteins.

5.2 Relate the structure of phospholipid molecules to the structure and properties of cell membranes.

5.2 Explain how the properties of phospholipids spontaneously form membranes.

5.3 Define diffusion and describe the process of passive transport.

5.4 Explain how osmosis can be defined as the diffusion of water across a   
membrane.

5.5 Distinguish between hypertonic, hypotonic, and isotonic solutions.

5.5 Explain how animal and plants cells change when placed into hypertonic or   
hypotonic solutions.

5.6 Explain how transport proteins facilitate diffusion.

5.7 Describe the function of aquaporins in cell membranes.

5.8 Compare the processes of facilitated diffusion and active transport.

5.9 Distinguish between exocytosis, endocytosis, phagocytosis, pinocytosis, and   
receptor-mediated endocytosis.

G. External Exchange and Internal Regulation

20.13 Describe the systems that help an animal exchange materials with its environment. Describe examples of adaptations to increase the surface-to-volume ratio.

20.14 Define the concept of homeostasis and illustrate it with examples.

20.15 Explain how negative feedback is used to regulate internal body temperature.