

AP Biology Unit 9 – Immune System

Name _____ Block _____ Date _____

Timeline: Feb. 12 – March 7

Textbook readings: Chapters 43 and 19; Sections 39.1 and 39.5

Labs: ELISA, and maybe “Butterfly Salad Bar”

Essential Questions

- What characteristics are common to invertebrate and vertebrate immunity?
- How do the different components of specific immunity (T cells, B cells, antibodies, etc.) assist in humoral and cellular immunity? How do these relate to vaccines?
- How does molecular variation contribute to immune system defense against innumerable pathogens?
- What causes different types of diseases?
- What is the detailed structure of a virus, and how is this structure different from living cells?
- Why are some viruses more deadly than others?
- How do plants defend themselves against diseases?

Unit Outline

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| I. Innate Immunity | c. Autoimmune |
| II. Acquired Immunity | d. Infectious (viral, bacterial, fungal, protist, other) |
| a. Humoral and cellular immunity | e. Focus on HIV |
| b. Memory cells and secondary response | f. Why emergent diseases? |
| III. Immunization | V. Plant defenses (Ch 39) |
| IV. Types of diseases (Ch 19) | a. Signaling in plants |
| a. Genetic | b. Plant defenses |
| b. Cancer | |

The “Big Ideas” of AP Biology: In each unit, consider how these themes relate to what you learn.

1 – The process of Evolution drives the diversity and unity of life

2 – Biological systems utilize free energy and molecular building blocks to grow and to maintain dynamic homeostasis

3 – Living systems store, retrieve, transmit and respond to information essential to life

4 – Biologic systems interact, and these systems and their interactions possess complex properties

Chapter 43 – Immune System

1. Compare and contrast specific (innate) and nonspecific (acquired) defense mechanisms.
2. Describe the inflammatory response.
3. Explain antigen recognition by lymphocytes.
4. Explain the roles of helper T cells, cytotoxic T cells, and B cells for cellular and humoral immunity.
5. Explain how memory cells play a role in a secondary immune response.

Chapter 19 – Viruses

1. Compare and contrast the hosts and structures of Fig. 19.3 viruses with the basic virus structure.
2. What is the basic sequence of a viral life cycle?
3. What are characteristics of and diseases caused by the six classes (Table 19.1) of animal viruses?
4. Compare and contrast the reproductive cycle of an enveloped RNA virus with the reproductive cycle of HIV.

5. (Based on HW and class work) Relate HIV life cycle to the function of the immune system to explain why AIDS is a particularly devastating disease.
5. What is a vaccine?
6. What are factors common to emerging viruses and the types of viruses that can cause epidemics?
7. What is the difference between horizontal and vertical transmission of plant viruses?
8. What are viroids and prions?

Chapter 39.1 and Chapter 39.5 – Plant Signaling and Response to Herbivores and Pathogens

1. Why is etiolation adaptive? Is etiolation only adaptive in tubers? Explain your thinking. (Note: Etiolation is given as an example of cell-signaling in plants. While unrelated to the topics of this unit, it provides a model for other plant responses.)
2. Describe the signaling pathway (reception, transduction, and response) for de-etiolation.
3. How do plants defend against herbivores?
4. How do plants defend against pathogens using the hypersensitive response and systemic acquired resistance?

Monday	Tuesday	Wednesday	Thursday	Friday
<u>Feb 12</u>	<u>Feb 13</u> Finish test, finish writing lab report	<u>Feb 14</u> pGLO/GFP formal lab report due	<u>Feb 15</u> Notes, unit sheet h.w. and study guide chapter 43.1 immune system cartoon Q's and POGIL q's due	<u>Feb 16</u> Notes, unit sheet h.w. and study guide chapter 43
<u>Feb 19</u> Enjoy	<u>Feb 20</u> February	<u>Feb 21</u> Vacation	<u>Feb 22</u> Week!	<u>Feb 23</u> ☺
<u>Feb 27</u> No homework due, welcome back! Review of immune system	<u>Feb 28</u> Notes, unit sheet h.w. and study guide chapter 19	<u>March 1</u> Notes, unit sheet h.w. and study guide chapter 19	<u>March 2</u> QUIZ	<u>March 3</u> notes study guide 39.1 and 39.5
<u>March 6</u> Review	<u>Mar 7</u> Unit 9 Test	<u>Mar 8</u> <i>TBA</i>	<u>Mar 9</u> <i>TBA</i>	<u>Mar 10</u> <i>TBA</i>