

Unit 4: The Immune System and Blood Stem Cell Lineage Tree

By Alexi Weirich, Laurel Barchas and Maria Mouchess. Reviewed by Candice Tahimic

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Suggested time frame: Five to ten class periods

Course level: Advanced Biology, AP/IB level Biology, biotech classes, college level Biology

Inquiry teaching: Read how to modify the curriculum for inquiry teaching

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- Download Unit 4 Teacher Background Information [pdf]
- Download Unit 4 Teacher Glossary [pdf] (refers to terms in Teacher Background Information document)
- Download Unit 4 Student Glossary [pdf]
- Download Unit 4 Bibliography [pdf]
- Download Unit 4 PowerPoint presentation [ppt]
- Go to Introductory Lesson download page

Brief Outline of Unit 4

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I. INVITATION

A. Human Blood Observation

1. Microscopic or virtual slides and responses

B. Think, Pair, Share - Connection of body responses to illness

C. The hematopoietic stem cell and its descendents: myeloid, erythroid, and lymphoid lineages

1. The Cell is Right activity - students connect cell types to positions in blood lineage tree

D. AP extensions of discussion

1. T-cells, stem cells, progenitor cells, and mature cell types

II. Exploration

A. Lecture - the immune system

1. Lymphocyte development, pathogens, immune activation, and response
2. Innate and acquired immunity
3. PowerPoint and activity- Natural Killer Cells webquest to decide if part of nonspecific or specific immunity

III. Application

A. Case studies of blood disorders

1. Jigsaw reading activity of HIV/AIDS, sickle cell anemia, leukemia, and lymphoma case studies
2. Jigsaw teaching groups report back explanations of cases and record blood disorder summaries on table provided

B. Bone marrow transplant investigation

1. Animations and questions regarding bone marrow transplants
2. Extension of homework activities for topics of bone marrow use and umbilical cord blood
3. Webquest based on topics of blood disorders, biomedical research, and careers

IV. Assessment

1. Student graphic display of understanding blood diseases
2. Students turn in final copy of their Blood Disorder Summary Table
3. Teacher designs questions to test understanding of lecture topics and concepts of disease causes, symptoms, and treatments

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