

Health Sciences 1111
Module 11 Blood and Lymphatics
LAB 11

Watch the video "Our Immune System" and answer the questions on your worksheet.

Open Internet Explorer

- Go to the Health Sciences Website* and click on Lab 11
- Click on the National Cancer Institute: NewMed link
- Read the research report on "Bone Marrow Transplantation and Peripheral Blood Stem Cell Transplantation: Questions and Answers."
- Using your class resources and the webpage text material answer lab questions 1-17 on your worksheet.

Cybered Online.

- Open the Health Sciences Website* and click on the Cyberedonline link
- Username: weberstate
- Password: science
- Click on Biology (grasshopper) icon
- Click on Blood and Immunity DSL+
- Click on Presentation
- Click on Automatic
- View all the Presentations
- Click on Main Menu
- When you are finished viewing the Presentations
 - Click on Interactive Lessons and start at the Beginning
 - Click the Continue button for each lesson
 - Answer all 10 lessons
 - Click Main Menu
- When you are finished with the Interactive Lessons
 - Click on the Post-Test button
 - Answer all the questions
 - Click Quit when you are done.

* <http://www.weber.edu/chpweb>

As you view the film "Our Immune System" answer the following questions.

1. What are the first cells that come to the infection site?
2. How do these cells kill the virus?
3. Where do these cells go from the tissue and which cells recognize their signal?
4. What are the proteins that the B cells produce?
5. What cell can detect a/an cell infected by viruses?
6. T or F: The virus in a vaccine is dead or weakened.
7. What is now used to prevent the immune system from rejecting transplant organs and doesn't paralyze the immune system completely?
8. What year did we start using it?
9. What is currently the survival rate among organ transplant patients?
10. T or F: Some side effects of Cyclosporine are kidney damage and provoking growth of tumors

Web Activity

As you read Read the research report on "Bone Marrow Transplantation and Peripheral Blood Stem Cell Transplantation" answer the following questions

1. Bone marrow transplantation (BMT) and peripheral blood stem cell transplantation (PB SCT) are effective treatments for some kinds of
 - a. infectious diseases
 - b. sexually transmitted diseases
 - c. cancer
 - d. genetic diseases
2. The chief function of bone marrow is to produce

- a. hormones
 - b. blood cells
 - c. blood proteins
 - d. nerve growth factors
3. Stem cells, in the context of our present unit of study, can be defined as
- a. immature cells that give rise to blood cells
 - b. mature cells that fight cancer
 - c. old cells that are undergoing autolysis
 - d. lysed blood cells
4. Most blood cells mature in the bone marrow, but some white blood cells (lymphocytes) mature in the
- a. lungs, heart, lymph nodes
 - b. liver, pancreas, cholecyst
 - c. lymphatic ducts, kidneys, spleen
 - d. thymus, spleen, lymph nodes
5. A patient suffering from leukopenia will be more likely to
- a. hemorrhage
 - b. develop an infection
 - c. become obese
 - d. die from a heart attack
6. Neutrophils guard against bacterial infection thru (among other mechanisms)
- a. phagocytosis
 - b. scoliosis
 - c. pinocytosis
 - d. hemolysis
7. B cells, T cells, and NK cells are

- a. blood cells
 - b. WBCs
 - c. granular WBCs
 - d. lymphocytes
 - e. B and D are correct
8. Granulocytes are also called
- a. RBCs
 - b. lymphocytes
 - c. polymorphonuclear leukocytes (PMNs, polys)
 - d. mononuclear cells
9. Red blood cells are also called
- a. lymphocyte
 - b. erythrocytes
 - c. PMNs
 - d. leukocytes
10. T or F: Platelets cause blood clots to form.
11. The main purpose of bone marrow transplantation (BMT) and peripheral blood stem cell transplantation (PB SCT) in cancer treatment is to allow the patient to
- a. avoid hemorrhage
 - b. receive high doses of chemo and/or radiation therapy
 - c. avoid dehydration
 - d. receive blood transfusions without adverse side effects
12. Chemotherapy and radiation therapy may be effective against cancer because cancer cells
- a. divide faster than most cells
 - b. are larger than most cells
 - c. can withstand hypoxic conditions better than most cells
 - d. have less stringent nutritional requirements than most cells
13. One potentially life-threatening side effect of chemo and/or radiation therapy is
- a. loss of hair
 - b. destruction of bone marrow, especially stem cells

- c. nausea
 - d. malaise
14. BMT and PB SCT allow stem cells that were damaged by chemo and/or radiation therapy to be
- a. filtered out of the blood by the spleen
 - b. filtered out of the blood by the liver
 - c. repaired
 - d. replaced with healthy stem cells
15. Cell surface proteins that allow WBCs to distinguish your body's own cells from foreign cells are named
- a. surface receptor proteins
 - b. BMT proteins
 - c. HLA proteins
 - d. PB SCT proteins
16. Allogenic donors for transplantation procedures may be
- a. an identical twin
 - b. any HLA suitable person other than an identical twin, and other than the patient themselves
 - c. the patient
 - d. all of the above
17. Success of allogenic transplantation depends on a close match between the patient's and donor's
- a. HLA antigens
 - b. lymph type
 - c. blood type
 - d. GVHD type

At this point in the lab, you should have read through the section on autologous transplantation. There are no more lab questions on transplantation, but you might want to skim the remaining material at this website for your own interest.

As you view the film "Our Immune System" answer the following questions.

1. What are the first cells that come to the infection site?

PHAGOCYTES

2. How do these cells kill the virus?

INGESTION

3. Where do these cells go from the tissue and which cells recognize their signal?

LYMPH ORGANS T CELLS

4. What are the proteins that the B cells produce?

ANTIBODIES

5. What cell can detect a/an cell infected by viruses?

T KILLER

6. T or F: The virus in a vaccine is dead or weakened.

TRUE

7. What is now used to prevent the immune system from rejecting transplant organs and doesn't paralyze the immune system completely?

CYCLOSPRINE

8. What year did we start using it?

1978

9. What is currently the survival rate among organ transplant patients?

80%

10. T or F: Some side effects of Cyclosporine are kidney damage and provoking growth of tumors

TRUE

As you read Read the research report on "Bone Marrow Transplantation and Peripheral Blood Stem Cell Transplanatation" answer the following questions

1. Bone marrow transplantation (BMT) and peripheral blood stem cell transplantation (PB SCT) are effective treatments for some kinds of

- a. infectious diseases
- b. sexually transmitted diseases
- c. cancer
- d. genetic diseases

ans: c

2. The chief function of bone marrow is to produce
- hormones
 - blood cells
 - blood proteins
 - nerve growth factors

ans: b

3. Stem cells, in the context of our present unit of study, can be defined as

- immature cells that give rise to blood cells
- mature cells that fight cancer
- old cells that are undergoing autolysis
- lysed blood cells

ans: a

4. Most blood cells mature in the bone marrow, but some white blood cells (lymphocytes) mature in the

- lungs, heart, lymph nodes
- liver, pancreas, cholecyst
- lymphatic ducts, kidneys, spleen
- thymus, spleen, lymph nodes

ans: d

5. A patient suffering from leukopenia will be more likely to

- hemorrhage
- develop an infection
- become obese
- die from a heart attack

ans: b

6. Neutrophils guard against bacterial infection thru (among other mechanisms)

- phagocytosis
- scoliosis
- pinocytosis
- hemolysis

ans: a

7. B cells, T cells, and NK cells are
- a. blood cells
 - b. WBCs
 - c. granular WBCs
 - d. lymphocytes
 - e. b and d are correct

ans: e

8. Granulocytes are also called
- a. RBCs
 - b. lymphocytes
 - c. polymorphonuclear leukocytes (PMNs, polys)
 - d. mononuclear cells

ans: c

9. Red blood cells are also called
- a. lymphocyte
 - b. erythrocytes
 - c. PMNs
 - d. leukocytes

ans: b

10. T or F: Platelets cause blood clots to form.

ans: True

11. The main purpose of bone marrow transplantation (BMT) and peripheral blood stem cell transplantation (PB SCT) in cancer treatment is to allow the patient to

- a. avoid hemorrhage
- b. receive high doses of chemo and/or radiation therapy
- c. avoid dehydration
- d. receive blood transfusions without adverse side effects

ans: a

12. Chemotherapy and radiation therapy may be effective against cancer because cancer cells

- a. divide faster than most cells
- b. are larger than most cells

- c. can withstand hypoxic conditions better than most cells
- d. have less stringent nutritional requirements than most cells

ans: a

13. One potentially life-threatening side effect of chemo and/or radiation therapy is

- a. loss of hair
- b. destruction of bone marrow, especially stem cells
- c. nausea
- d. malaise

ans: b

14. BMT and PB SCT allow stem cells that were damaged by chemo and/or radiation therapy to be

- a. filtered out of the blood by the spleen
- b. filtered out of the blood by the liver
- c. repaired
- d. replaced with healthy stem cells

ans: d

15. Cell surface proteins that allow WBCs to distinguish your body's own cells from foreign cells are named

- a. surface receptor proteins
- b. BMT proteins
- c. HLA proteins
- d. PB SCT proteins

ans: c

16. Allogenic donors for transplantation procedures may be

- a. an identical twin
- b. any HLA suitable person other than an identical twin, and other than the patient themselves
- c. the patient

- d. all of the above
- ans: b

17. Success of allogenic transplantation depends on a close match between the patient's and donor's

- a. HLA antigens
 - b. lymph type
 - c. blood type
 - d. GVHD type
- ans: a

At this point in the lab, you should have read through the section on autologous transplantation. There are no more lab questions on transplantation, but you might want to skim the remaining material at this website for your own interest.

Graphics for Exam 11

19.1 Know the percentages of the components of blood

19.8

19.13

19.14

22.2

22.13