

CORNELL NOTES

Directions: You must create a minimum of 5 questions in this column per page (average). Use these to study your notes and prepare for tests and quizzes. Notes will be stamped after each assigned sections (if completed) and turned in to your teacher at the end of the Unit for scoring.

UNIT 6: PHYSIOLOGY

Chapter 31: Immune System and Disease

I. Pathogens and Human Illness (31.1)

A. **Germ theory** states that microscopic particles cause certain diseases

1. Disease can be infectious or noninfectious

a. **Infectious disease**- can be passed from person to person and are caused by _____

b. **Noninfectious disease**- sick person _____ pass the disease (infect) a healthy person (e.g. heart disease, cancer)

2. **Germ theory**- Louis Pasteur helped make connection between microorganisms and _____

a. _____ - disease causing agents

b. Two other scientists helped to complete acceptance of Pasteur's germ theory

1). **Joseph Lister**- used weak _____ to clean operating tools and reduced death of patients

2). **Robert** _____ - experimented and concluded that certain conditions must be met to say that a certain pathogen causes a disease (Koch's postulates)

B. There are five different types of _____

1. **Bacteria**- single _____ organisms.

a. Cause disease by releasing _____ that are toxic to host or destroy healthy body cells

b. _____ is example

2. _____ - disease causing strands of DNA or RNA surrounded by _____ coat.

a. Viruses are very _____

b. Viruses enter and take over a healthy cell and produce _____ viruses

c. Cause illnesses such as **flus**, **colds**, and _____

3. _____ - multicellular or single-celled organisms.

a. Cause disease by piercing healthy cells and taking the cell's _____

b. Usually occur in _____ environments

c. _____ is example

4. **Protozoa**- single celled organisms that prey on other _____

a. Need healthy cells to complete _____-cycle

b. _____ is blood disease caused by protozoan

C. Pathogens can enter the _____ in different ways

1. **Direct contact**- require infected person or animal to physically _____ a healthy person

2. **Indirect contact**- pathogens can survive on nonliving surfaces or in the air (_____)

3. _____ - anything that carries a pathogen and transmits it into healthy cells

a. _____ - transmit bacteria, viruses, and protozoa

b. _____ - rabies, hanta virus

4. _____ - can carry bacteria (food poisoning), parasitic worms, Mad Cow disease

II. Immune System (31.2)

A. Many body _____ protect you from pathogens

1. **immune system**- body system that fights off _____ and _____

2. **First line of defense** is your _____

a. **Physical** _____ against pathogens

b. Also secretes _____ and _____ that makes skin hypertonic and _____

3. Eyes, nose, ears, mouth, and excretory organs

a. Are _____ to environment and need extra protection

1). **Mucous membranes** use hair-like _____ to trap pathogens

2). Stomach _____ and digestive _____

4. If pathogens enter body you immune system then relies on _____ system to send chemical signals to coordinate an attack

B. **Cells** and **proteins** fight the body's infections

1. _____ **blood cells** find and kill pathogens that have gotten past body's external barriers (6 kinds of WBC)

a. _____ - a cell that destroys pathogens by **surrounding** and **engulfing** them

b. _____ (T-cells and B-cells)- white blood cells that initiate the specific immune response

2. **Proteins**- Immune system uses three types of proteins to fight off _____ pathogens

a. _____ **proteins**- made by white blood cells and weaken pathogen's cell

b. _____ - proteins made by B-cells and destroy pathogens

c. **Interferons**- proteins produced by body cells that are infected by viruses that stimulate uninfected body cells to produce _____ that will prevent viral infection

C. Immunity prevents a person from getting sick from a pathogen

1. _____ - means that you will not get sick when that pathogen invades your body

2. _____ **immunity**- occurs without the body's undergoing an immune response. Can be transferred between generations

3. _____ **immunity**- in response to a specific pathogen that has infected or is infecting your body

a. Keeps you from becoming sick by particular pathogen more than _____

b. Destroys “ _____ ” invaders

III. Immune Response (31.3)

A. Many body systems work to produce _____
responses

1. **Nonspecific defense**- happen in the _____ to every pathogen

2. **Inflammation**- characterized by _____, redness, pain, itching, and increased _____ at affected site

a. Occurs when _____ enters the body or when tissues become damaged

b. **Fluids** and _____ **blood cells** move to site of infection

3. _____ - Develops when chemicals released cause hypothalamus to increase body's temperature

a. Prevents **viruses** from _____

b. Low fevers speed up pathogen _____ and high fevers can stop normal _____ function and cause seizure, brain damage, and even death

B. Cells of the immune system produce **specific responses**

1. Specific immune defenses lead to _____ immunity

2. Body must be able to tell difference between _____ cells and _____ cells

a. _____ - protein markers on surfaces of cells and viruses that help immune system identify a foreign cell or virus

b. **Immune response** is _____ when immune system detects a pathogen (2 types of immune response)

1). _____ **-mediated immunity-** when lymphocytes (not antibodies) themselves defend the body.

a). Important with _____ pathogen

b. _____ **cells** attack **antigen bearing cells** directly (causes pathogen to rupture and die)

2). _____ **Immunity-** also called _____-mediated immunity

a). Is provided by antibodies present in the body's "humors" or _____.

b. causes **lymphocytes** (_____ **cells**) to produce antibodies-(protein that helps to destroy pathogens)

c. **Antibodies** attach to _____ on pathogen surface. Can clump pathogens together in large mass (i.e. viruses)

d. This attracts _____ which _____ and destroy whole mass

C. The immune system rejects foreign tissues

1. Your body must constantly decide whether your cells are your own or _____

2. **Tissue** _____ - occurs when recipient's immune system makes antibodies against the protein markers on donors tissue

IV. Immunity and Technology (31.4)

A. Many methods are used to control pathogens

1. _____ - chemicals such as soap, vinegar, and rubbing alcohol that kill pathogens

2. _____ - target **bacteria** or fungi and keep them from growing or reproducing.

a. Target _____ bacteria

b. Can develop antibiotic _____ when bacteria _____

B. Vaccines artificially produce **acquired immunity**

1. _____ - substance that contains antigen of a pathogen

2. Causes immune system to produce _____ **cells**

3. You can make **antibodies** right away if _____

V. Overreactions of the Immune system (31.5)

A. _____ occur when the immune system responds to harmless antigens

1. _____ - over-sensitivity to normally harmless antigen

2. _____ - antigens that cause an allergic reaction

a. When **allergen** enters body cells release _____ (chemical that causes

b. Causes nonspecific responses such as _____)

B. In _____ **diseases**, white blood cells attack the body's healthy cells

1. Your _____ system cannot tell difference between body's healthy and unhealthy cells

2. Includes Type 1 Diabetes, Rheumatoid arthritis, Multiple sclerosis

VI. Diseases that weaken the Immune system (31.6)

A. _____ is characterized by abnormal **white blood cells**

1. Cancer of the _____ **marrow**

2. **White blood cells** do not do not _____ properly

B. _____ targets the immune system

1. **HIV**- _____

2. **Retrovirus** (contains _____) that attacks and weakens the immune system

3. Leads to “_____” infections

4. HIV is transmitted by exchange of _____ or other **body** _____

5. HIV reproduces in _____-**cells** (cells that trigger immune responses)

6. **HIV** leads to _____ (Acquired Immune Deficiency Syndrome)

