Chapter 1
Microbes by Design

True or False Questions

T 1. Bacteria have many variations in their life forms, but there is no hard evidence that one type of bacteria is progressively evolving into another more advanced type.

F 2. Bacteria are all invisible, potentially harmful little creatures.

F 3. *E. coli* devotes 98 percent of its energy to swimming from your bladder toward the kidney.

F 4. The eukaryotic cells of bacteria are generally much smaller and simpler in structure than prokaryotic cells.

T 5. Throughout history, *Escherichia coli* has had beneficial and also detrimental results in society.

F 6. A bacterium is said to be motile when it cannot move.

T 7. Resistance to antimicrobial drugs contributes to the growing number of cases of diseases once thought eradicated.

F 8. It is possible for germs to mutate and evolve into totally new diseases.

T 9. It is possible for some normally harmless bacteria, like *Serratia marcescens*, to change slightly, and in turn cause disease in immune compromised individuals.

F 10. Scientists have correctly applied "survival of the fittest" to make advances in medicine.

Multiple Choice

b 1. What percentage of bacteria is pathogenic?
   a. 2%
   b. 5%
   c. 25%
   d. 75%
   e. 100%

e 2. Name the microbiologist who first described synthesis of the red pigment found in bacteria that often cause bread and communion wafers appear to have blood on it.
   a) Joseph Lister
   b) Robert Koch
   c) Louis Pasteur
   d) John Tyndall
   e) Robert P. Williams

c 3. Give the name of the pigment responsible for the bright red color in the bacteria that appeared as "blood."
   a. tuberculin
   b. chlorophyll
   c. prodigiosin
   d. hemoglobin

e. rhodopsin

b 4. In his book, *Darwin's Black Box*, Dr. Michael Behe describes flagella as _____.
a. being a design paradigm
b. having irreducible complexity
c. having the "most efficient machine in the universe"
d. evidence of evolution
e. necessary for the survival of bacteria

e 5. Some evolutionists believe some bacteria are _____.
a. evolving into more complex and dangerous forms.
b. irreducibly complex.
c. primitive and basic.
d. unnecessary for life on earth.
e. a and c

a 6. Which bacteria produce vitamins for the body?
a. *E. coli*
b. *Chlamydia trachomatis*
c. *Legionella*
d. *Treponema*
e. *Rickettsia*

c 7. Which of the following scientists discredited the theory of spontaneous generation by boiling plant infusions in swan-necked flasks that maintained their sterility for long periods of time?
a) Joseph Lister
b) Robert Koch
c) Louis Pasteur
d) John Tyndall
e) Anna Roby

a 8. The idea that microbes "pop" into existence from substances less complex than a living cell is termed:
a) spontaneous generation
b) sporulation
c) binary fission
d) pleiotrophy
e) etiology

b 9. Microbiology is the study of
a) small amounts of biology. (Yeayyy !)
b) organisms too small to seen with the unaided eye.
c) small unaided eyes.
d) small amounts of organisms.
e) small amounts of un-eyed organisms.

e 10. Name the brightly red pigmented bacteria that once thought to cause the "blood of Christ" to appear on communion wafers.
a. *E. coli*
b. *Chlamydia trachomatis*

c. *Legionella pneumophilia*
d. *Treponema palladium*
e. *Serratia marcescens*

Chapter 2
BACTERIA

True or False Questions

F 1. The only group of bacteria that have flagellum are the spirilla.

T 2. The cell walls of Gram-negative bacteria are more complex chemically than those of Gram-positive organisms.

F 3. Bacteria thrive in cold temperatures which explain why there is more sickness in winter.

T 4. The technique of Gram-staining allows a clearer view of the cell wall.

F 5. When classifying bacteria by shape, it is important to master Latin since all the names come from Latin derivatives.

F 6. The eukaryotic cells of bacteria are generally much smaller and simpler in structure than prokaryotic cells.

F 7. Bacteria that are cultivated for some time in the laboratory have the same capacity to produce disease as those in the environment.

T 8. Bacterial flagella are unique structures not equivalent to the cilia or flagella of protozoa.

T 9. Bacteria have adapted to more different living conditions than any other group of organisms.

F 10. At the turn of the 20th century, anthrax was the leading cause of death in the USA.

Multiple Choice

c 1. The word, **bacteria**, comes from the Latin word meaning:
   a. berry
   b. corkscrew
   c. staff or rod
   d. ball
   e. stick

c 2. Which group moves by rotation of internal, flagellum-like filaments produces a corkscrew-like movement?
   a. Proteobacteria
   b. Chlamydias
   c. Spirochetes
   d. Gram-Positive Bacteria
   e. Cyanobacteria

c 3. Who was the first known scientist to observe microorganisms, including bacteria?
   a. Louis Pasteur
   b. Joseph Lister
   c. Anton van Leeuwenhoek
   d. Robert Koch
   e. David DeWitt

b 4. What is the purpose of bacterial spores?
   a. They divide and increase in cell numbers, allowing the bacteria to reproduce.
   b. Spore formation permits cells to survive adverse conditions.
   c. Spores are an important food source for fastidious bacteria.
   d. Spores allow bacteria to disperse to new locations.
   e. b and d

e 5. When studying and classifying bacteria, it is important to consider which of the following?
   a. growth characteristics
   b. morphology and metabolic way of life
   c. molecular composition
   d. staining characteristics
   e. all of the above

e 6. Bacteria have thrived due to _____.
   a. varied metabolic abilities
   b. small size
   c. rapid reproductive rate and ability to form resistant spores
   d. producing their own food through spore formation
   e. a, b and c

c 7. In the group of bacteria called spirilla, you would see _____.
   a. Bacteria shaped like a berry.
   b. Bacteria that were rod shaped.
   c. Bacteria having a helical shape like a corkscrew.
   d. Bacteria with smooth sides and no flagella.
   e. Bacteria that form spores.

e 8. Which of the following bacteria would be a member of the bacilli group?
   a. A bacterium shaped as a short and thick cylinder.
   b. A bacterium shaped like a long and slender rod.
   c. A bacterium that is not perfectly round, but are flattened on one side or more or less elongated.
   d. A bacterium that is slightly curved and less rigid with blunt ends.
   e. a, b and d

a 9. The difference between Gram-positive and Gram-negative bacteria was discovered in the _____.
   a. late 1800's with more wide spread use of microscopes and improved staining techniques.
   b. early 1900's as man began to study bacteria in order to develop antibiotics.
   c. mid-1900's as man began to look for biohazards to use in war.
   d. mid-1900's with the invention of the electron microscope.
   e. late 1900's with the mapping of the genome of many bacteria.

b 10. The cell wall of a bacterium is best described as _____.
   a. Fluid, excreting biofilm
   b. rigid with some elasticity
   c. soft and pliable

d. closely connected to its' cytoplasm
e. of little importance to the function of bacteria

c 11. How fast can an *E. coli* bacterium swim?
a. nearly 5 times the length of its body in one hour inside your urinary tract
b. nearly 10 times the length of its body in one minute inside your urinary tract
c. nearly 50 times the length of its body in one second inside your urinary tract
d. nearly 100 times the length of its body in one hour inside your urinary tract
e. *E. coli* bacterium do not swim at all.

b 12. The fastest growth of bacteria happens in which phase?
a. lag phase
b. logarithmic phase
c. stationary phase
d. motile phase
e. death phase

Chapter 3
BACTERIA, Part 2

True or False Questions

F 1. Ulcers are caused by stress and poor diet.

F 2. A person exposed to *Treponema palladium* will develop a sore throat.

T 3. Those plants which have mutualistic bacteria associated with their roots (i.e. legumes) include clover, peas, beans and alfalfa

F 4. Archaea are different from bacteria because their cell membranes have unusual lipid composition.

T 5. The most successful bacteria are the ones that live in harmony with their hosts.

F 6. Infection of bacteria always leads to disease.

T 7. A disease is an infection that impairs the normal state of health.

F 8. Only Gram-positive bacteria, like the anthrax bacteria produce toxins.

T 9. *H. pylori* was discovered by Barry Marshall and won the Nobel Prize in Physiology and Medicine in 2005.

T 10. Anthrax is the likely cause for one of the "plagues of Egypt" that is described in the book of Exodus.

Multiple Choice

e 1. To develop his famous postulates, Robert Koch first studied what disease?
   a. tuberculosis
   b. diphtheria
   c. cholera
   d. meningitis
   e. anthrax

d 2. What is the correct order for Koch's postulates?
   1. The pure culture must cause the disease when inoculated into an experimental animal.
   2. The causative microorganism must be re-isolated from the experimental animal and re-identified in pure culture.
   3. The causative microorganism must be isolated and grown in pure culture.
   4. The causative microorganism must be present in every individual with the disease.

   a. 1, 2, 3, 4
   b. 2, 1, 4, 3
   c. 4, 3, 2, 1
   d. 4, 3, 1, 2
   e. 2, 4, 1, 3

Chapter 3
BACTERIA, Part 2

e 3. Koch discovered which species to be susceptible to cholera?
a. guinea pigs
b. mice
c. cattle
d. dogs
e. man

d 4. How long did it take to solve the mystery of Legionnaire's disease?
a. 6 hours
b. 6 days
c. 6 weeks
d. 6 months
e. 6 years

b 5. What is important about the species of bacteria called *Rhizobium leguminosarum*?
a. They are denitrifying bacteria that add in the decomposition of organic matter.
b. They are nitrogen-fixing bacteria that add nourishment through root nodules.
c. They are nitrifying bacteria that release ammonia.
d. They prosper in high heat and give color to the waters of Yellowstone.
e. They are "oil-eating" microbes that clean up oil spills like the *Exxon Valdez.*

d 6. What was one laboratory problem that faced the doctors researching Legionnaire's?
a. Media pressure to solve the mystery.
b. Power failures that interfered with bacterial growth in incubators.
c. Failure of Equipment
d. Determining what the bacteria required as food.
e. Too many mice died in the laboratory.

c 7. What previous experience helped Dr. Fliersman understand *Legionella pneumophila*?
a His father had worked on air conditioning units and he understood bacteria grew in them.
b. He had studied soil around nuclear plants.
c. He had studied thermophilic bacteria and recognized similarities.
d. He had studied diseases that plagued American veterans.
e. a and c

c 9. The Archaean known as *Halobacterium* is characterized by _____.
a. growing rapidly in fresh water ponds
b. it's purple light–sensitive pigment
c. it's red light–sensitive pigment
d. living only in cold climates
e. none of the above

d 10. The microorganisms of the hot springs are:
a. bacteria
b. algae
c. protozoa
d. a and b
e. a, b and c

Chapter 3
BACTERIA, Part 2

d 11. What are microbes that thrive in hot springs called?
a. bacteria
b. heat mosaics
c. thermobacteria
d. thermophiles
e. hyperalgae

c 12. The action of nitrifying bacteria results in _____.
a. destroying plant material
b. stripping the soil of its nutrients
c. enriching the soil
d. more insects attacking crops
e. less water being needed to grow crops

Chapter 4
THE PROTISTA

True or False Questions

T 1. The organelles of protozoa have a “parallel” function to that of organs in complex animals.

T 2. In malaria parasites, the characteristic reproduction method is sporulation.

T 3. Schizogony is reproduction by totally asexual means and produces new cells called merozoites.

F 4. These parasitic forms of protozoans are naturally more common in distribution than the free-living organisms,

F 5. The findings of Leeuwenhoek were readily accepted by British scientists.

F 6. Most protozoa are larger than bacteria.

F 7. All protists are microscopic.

F 8. Leeuwenhoek is known as the “Father of Biology”.

T 9. An amoeba has no visible internal structures except a nucleus.

T 10. Malaria parasites reproduce by both sporulation and schizogony depending on where it is in the life cycle.

T 11. Agar is a complex polysaccharide derived from these red algae.

F 12. Surgeon-Major Ronald Ross found organisms similar to the malaria parasite in horses.

Multiple Choice

e 1. Free-living protozoa are found:
- a. in fresh water
- b. in salt water
- c. in the soil
- d. in decaying organic matter everywhere
- e. all of the above

b 2. “Amoeba” is derived from a Greek word meaning _____.
- a. “false feet”
- b. “move”
- c. “simple”
- d. “change”
- e. “life-like”

c 3. An almost universal characteristic of protozoans is:
- a. have low energy
- b. to be parasitic
- c. locomotion
- d. a and b
- e. a and c

b 4. The protozoan *Euglena* ingest food through its:
   a. mouth
   b. gullet
   c. gill slits
   d. eyespot
   e. paramylon

c 5. The cause of African trypanosomiasis is:
   a. the tsetse fly
   b. *Euglena*
   c. *Trypanosoma brucei*
   d. *Trypanosoma lamblia*
   e. *Paramecium caudatum*

e 6. The protozoan *Giardia* has been known to:
   a. infect man
   b. infect wildlife
   c. possibly have infected Leeuwenhoek
   d. exist in clear, running springs
   e. none of the above

e 7. The disease giardiasis can be avoided by:
   a. not drinking from streams
   b. using iodine tablets when camping
   c. city planners insuring the water supply is safe
   d. changing baby diapers
   e. a, b and c

c 8. These organisms are characterized by hundreds of short, hair-like processes on their body.
   a. Flagellates
   b. Amoebae
   c. Ciliates
   d. Sporozoa
   e. none of the above

e 9. Malaria means:
   a. *"Plasmodium Anopheles"*
   b. "yellow fever"
   c. "bad mosquito"
   d. "swamp fever"
   e. "bad air"

c 10. What needs to be present for a definitive diagnosis of malaria to be made?
   a. Fever of 104 degrees or greater
   b. Sudden onset of chills and shaking
   c. Presence of an "O" ring in red blood cells
   d. A high population of *Anopheles* mosquitoes
   e. A dead *Anopheles* mosquito with malaria parasites in its saliva

Chapter 4
THE PROTISTA

Chapter 5
TRUE FUNGI

True or False Questions

F 1. Fungi are not considered plants because they contain chlorophyll

T 2. Scientist have many more species of fungi to discover.

F 3. Yeasts and molds are considered distinctly separate fungal groups.

T 4. Ascus means "tiny" spore-containing sac.

T 5. *Aspergillus* can be used to make vinegar and also as an agent of bioterrorism.

F 6. True yeast has many cells.

T 7. Bacteria multiply faster than yeasts.

T 8. The Creator created bacteria and fungi to live in harmony.

F 9. Alexander Fleming had no idea that penicillin was important when it was discovered

F 10. Antibiotic resistance has only occurred recently as patients insisted on antibiotics for non-bacterial infections.

F 11. Fungi produce 90% of the antibiotics used by man.

F 12. Fungi cells are smaller than bacteria cells.

Multiple Choice

e 1. Which of the following is not a purpose of Fungi:
   a. to help in decomposition of organic matter
   b. to help prevent wheat rusts in crops
   c. to help in the fermentation process
   d. to help with photosynthesis
   e. b and d only

b 2. Which of the following is not caused by a fungus?
   a. Mycosis
   b. Tuberculosis
   c. Pneumocystic pneumonia
   d. fungous disease
   e. all of the above

a 3. Historically, fungi were first considered to be:
   a. plants
   b. microbes
   c. bacteria
   d. blastospores
   e. parasites

b 4. The scientist who first described fungi was:

a. Louis Pasteur
b. Robert Hooke
c. John Ray
d. Carolus Linnaeus
e. Joseph Lister

b 5. The long, slender filaments of a fungi body is known as
a. spores
b. hyphae
c. buds
d. spores
e. chitin

d 6. The part of the mycelium that gives molds their characteristic fuzz is the:
a. vegetative mycelium.
b. sporophore.
c. columella.
d. aerial mycelium.
e. spore

c 7. Which statement is not true regarding the genus *Rhizopus*:
a. Bread mold belongs to the division of *Rhizopus*.
b. Mold in this division also attaches fruits.
c. *Rhizopus* s molds only reproduce asexually.
d. These molds use stolons in their reproduction.
e. *Rhizopus* form a septum during reproduction.

b 8. Sir Alexander Fleming could not purify or produce large amounts of:
a. *P. Chrysogenum*
b. *P. Notatum*
c. *Tolyposporium niveum*
d. *Aspergillus flavus*
e. *Acremonium*

a 9. This strain was subjected to x-rays in order to produce more antibiotic.
a. *P. chrysogenum*
b. *P. notatum*
c. *Tolyposporium niveum*
d. *Aspergillus flavus*
e. *Acremonium*

c 10. Penicillin was first widely used in:
a. 1928
b. World War I
c. World War II
d. 1941
e. 1950

Chapter 6
VIRUSES

True or False Questions

F 1. DNA viruses mutate faster than RNA viruses.

F 2. The term *capsid*, from the Latin word *capsa*, meaning "hat."

F 3. Dental carries is the most common viral infection in humans.

F 4. Photomicrographs of the virions of tobacco mosaic virus and an animal virus show that the architecture of virions is vastly different between the two.

T 5. Viruses with the icosahedral shape have 20 equilateral triangular faces that provide a stable protein structure consistent with long-term survival.

T 6. Once the HIV virus infects CD4+ T-cells (often called T-4 lymphocytes) in large numbers, it leads to a destruction of the immune system.

F 7. Viruses are adequately described as "poisonous fluids."

T 8. Viruses change quickly because of their RNA genome instead of DNA genome.

F 9. A virus can be classified as either prokaryotes or eukaryotes.

T 10. The virion always contains at minimum both a nucleic acid and a protein.

F 11. In 1995, African hospitals first dealt with a new disease caused by the Ebola virus.

F 12. Modern science has discovered the vector for Ebola.

Multiple Choice

b 1. Which features do viruses have in common with living cells?
   a. the ability to crystallized
   b. the ability to adapt and change
   c. the ability to reproduce by themselves
   d. the ability to metabolize
   e. none of the above

d 2. Since viruses are non-living until they enter a host, they are considered to be _____.
   a. virions
   b. renegade cell parts
   c. opportunistic
   d. parasitic
   e. c and d

e 3. Which of the following is **not** a characteristic of a virus?
   a. relies on a host-cell metabolism
   b. has a nucleic acid core surrounded by protein
   c. contains only one or a few enzymes
   d. relies on the hosts' reproductive capabilities to spread
   e. contains both DNA and RNA

Chapter 6
VIRUSES

d 4. The size of the smallest viruses can be said to be _____.
   a. approximately the size of small bacteria
   b. larger than 300 nm in diameter
   c. highly visible with a light microscope
   d. not much larger than the diameter of a double-stranded DNA helix
   e. none of the above

b 5. What is the best example of microevolution that we have?
   a. potato spindle tuber viroid
   b. colds and flu
   c. bacteria
   d. Epstein-Barr virus
   e. HIV causing cancer

d 6. How would you **best** describe the shape of a helical virus?
   a. It is a regular polyhedron with 20 triangular faces and 12 corners
   b. The capsomeres of each face form an equilateral triangle.
   c. It is spherical in shape.
   d. It resembles long rods that may be rigid or flexible.
   e. The virus is enclosed by an envelop.

e 7. The word *virus* comes from the Latin meaning word meaning _____?
   a. “invisible”
   b. “tiny”
   c. “microscopic”
   d. “disease”
   e. “poison”

c 8. A structural property of HIV is _____.
   a. it displays helical symmetry
   b. the genome is DNA
   c. it contains two molecules of reverse transcriptase
   a. it lacks a lipid – containing envelope
   b. it’s diameter is around 50 nm

e 9. How would you **best** describe the shape of an icosahedral virus**?**
   a. It is a regular polyhedron with 20 triangular faces and 12 corners
   b. The capsomeres of each face form an equilateral triangle.
   c. It is spherical in shape.
   d. It resembles long rods that may be rigid or flexible.
   e. a and b

a 10. Bacterial viruses were first named _____by_____.
   a. bacteriophages, D’Herelle
   b. bacteriophages, Beijerinck
   c. microbes, D’Herelle
   d. microbes, Beijerinck

Chapter 7
Body Defenses

True or False Questions

T 1. The immune system was designed to interact with microbes.

F 2. The immune system cannot sense anything in the environment; this is the job of the eyes, ears, nose, and throat.

T 3. An example of a positive interaction between the immune system and microbes is *E. coli* in the intestines that provide nutrients and vitamins for the human body.

F 4. T cells are responsible for directly manufacturing antibodies.

F 5. T cell receptors are identical to antibodies.

F 6. The immune response is directed against all the body cells.

F 7. All bacteria have dangerous antigens (germ molecules) on their surface.

F 8. Antibody molecules are not flexible; they are very rigid in structure.

T 9. IgA is the most abundant immunoglobulin found in the fluids of the body.

T 10. Gene rearrangement is responsible for the variation of a theme in the antibody response and the generation of the various antibody types.

F 11. IgG are the antibodies to first arrive during an infection.

T 12. IgM are the largest antibodies.

Multiple Choice

A 1. The study of host defenses and how they can be mobilized and directed specifically against an invading pathogen is termed:
   a. immunology.
   b. genetics.
   c. endocrinology.
   d. pathology.
   e. physiology.

A 2. An excessive, inappropriate, or dysfunctional immune response to germs may be the result of
   a. stress.
   b. allergies.
   c. autoimmune diseases.
   d. immunosuppressive diseases.
   e. being young.

Chapter 7
Body Defenses

E 3. The human immunodeficiency virus (HIV) that causes the disease known as AIDS selectively infects _____ cells.
a. CD 8 (suppressor T)
b. B cells
c. plasma
d. helper D
e. CD 4 (cytotoxic T)

B 4. The lymphatic system with its branching reticular fibers in the spleen, lymph nodes, and lymph capillaries best illustrates which Intelligent Design principle:
a. correlation of structure and function
b. interwoven complexity
c. homeostasis
d. order and organization
e. maintenance of boundaries

E 5. The body defense systems with their **umbrella or bubble-like protection** is best illustrated in the life of:
a. Louis Pasteur
b. Joseph Lister
c. Alexander Fleming
d. Dr. Gillen
e. David Vetter

D. 6. The immune system with regards to its ability to adjust to new circumstances and where it learns and responds to highly specific pathogens best illustrate which Intelligent Design principle:
a. correlation of structure and function
b. interwoven complexity
c. homeostasis
d. adaptation
e. maintenance of boundaries

C 7. One of the earliest researchers to explore the use of chemicals from tears to kill microbial pathogens was:
a. Koch.
b. Hooke.
c. Fleming.
d. Ehrlich.

E 8. Phagocytes are important to the body because they:
a. patrol the bloodstream and tissues engulfing foreign cells
b. occupy "fixed sites" within some tissues engulfing foreign cells
c. kill bacteria infected human cells
d. a and b
e. a, b, and c

Chapter 7
Body Defenses

A 9. In the organization of your defense system, phagocytic cells are best thought of as:
a. a first line of defense
b. a second line of defense
c. a third line of defense
d. a site of bacterial growth
e. a source of antibodies for recognition purposes

E 10. The structure within phagocytic cells that first meets up with and ultimately results in the digestion of bacterial cells is the:
a. nucleus
b. mitochondrion
c. residual body
d. cell wall
e. lysosome

EMERGING DISEASES
Chapter 8

True or False Questions

F 1. The diseases we face today are exactly the same strains that have always existed.

T 2. Weather can sometimes play a part in the emergence of a new disease.

T 3. AIDS came to public awareness through an outbreak of *Pneumocystis* pneumonia.

F 4. All people who test positive for HIV have symptoms of AIDS.

F 5. The presence of *E. coli 0157:H7* in the human intestine is a normal occurrence.

F 6. The reason for the increase of flesh-eating bacteria has been established.

F 7. It is possible for common cold viruses to mutate into more deadly viruses, like Ebola.

F 8. Comparisons of Hantavirus genes suggest that this new virus.

F 9. In wealthy developed countries with sophisticated health-care systems, infectious diseases are no longer a serious threat.

T 10. *Cryptosporidium* is responsible for up to 30 percent of diarrheal illness in developing countries.

T 11. Changes that make our lives more comfortable can also expose us to new diseases.

F 12. *V. cholerae 0139* is the same strain of cholera that plagued early pioneers in America.

Multiple Choice

b 1. Medical principles of washing of hands, quarantines and facemasks were first recorded in:
   a. Darwin's "Origin of Man"
   b. the Bible
   c. the writings of Hippocrates
   d. Eastern mysticism
   e. New Age philosophy

e 2. Many people were proclaiming victory over germs however, new ones emerge due to:
   a. large urban areas
   b. germs evolving into new diseases
   c. jet planes
   d. blood banks were opening broad new avenues for infection
   e. all but b

d 3. A 1993 outbreak of cryptosporidiosis in Milwaukee was caused by:
   a. contaminated raspberries
   b. unsanitary conditions in a nursery school
   c. contaminated lettuce
   d. contaminated drinking water

EMERGING DISEASES
Chapter 8

d 4. The increasing incidence of new plagues indicates that infectious diseases are not only not disappearing, but also seem to be _____.
   a. strengthening by attacking people with compromised immune systems
   b. increasing
   c. mutating into anti-biotic resistant varieties
   d. re-emerging and increasing
   e. a and c

e 5. Some of the factors contributing to the emergence of Ebola are
   a. minor changes in existing organisms
   b. the spread of known diseases to new geographic regions or populations
   c. increased human exposure to new and unusual infectious agents
   d. a and b
   e. all of the above

e 6. Lyme disease got its' name from:
   a. it is transmitted by a green tick
   b. the doctor who discovered the cause
   c. the convention where the first outbreak occurred
   d. a bacteria called *Borrelia lymus*
   e. the town where the first outbreak occurred

c 7. What did the people with Lyme disease have in common?
   a. they all attended the same convention
   b. they all lived in the city
   c. they were all pet owners
   d. they all had *Pneumocystis* pneumonia
   e. they all developed chronic diarrhea

a 8. Which of the following is <u>not</u> correct regarding AIDS.
   a. The immune system to be overactive due to the presence of HIV.
   b. AIDS is transmitted through transfer of body fluids.
   c. Once AIDS develops, it is always deadly.
   d. Over 47 million people world-wide have HIV.
   e. All choices are correct.

c 9. *E. coli 0157:H7* was first discovered in _____.
   a. 1976
   b. 1981
   c. 1982
   d. 1993
   e. 1995

c 10. When investigating the cause of a new disease, researchers should consider _____.
   a. weather
   b. disruption of natural environment
   c. development of drug-resistant varieties of disease
   d. infectious agents change abruptly and gain the ability to infect new hosts
   e. germs arriving due to international travel of people and animals

Chapter 9
The Origin of Infectious Diseases

True or False Questions

T 1. Antimicrobial resistance can be due to spontaneous mutation or gene acquisition.

T 2. *M. leprae* probably represents a decayed bacterium from faster growing *Mycobacterium* species.

F 3. The microorganisms found on healthy skin make it vulnerable to pathogens.

T 4. One structural example of devolution in the human body is teeth and their susceptibility to dental caries.

T 5. The number one hospital acquired infection is MRSA.

F 6. It has already been proved that H5N1 can be transmitted from person to person easily.

T 7. Typhoid Mary presents an example of how God may have intended our human body to interact with potentially dangerous bacteria.

F 8. Influenza A virus is as virulent in birds as it is in humans.

T 9. In Hansen's Disease, the largest number of deformities develops from loss of pain sensation due to extensive nerve damage.

F 10. The information about horizontal gene transfer was the foundation of the microorganisms evolving into more complex forms.

F 11. Pathogens do not develop resistance against antibiotics through natural selection.

T 12. The current potential pandemic influenza strains, recently isolated from domestic fowl are H5N1, H7N7, and H9N2.

Multiple Choice

B 1. The 1918 flu epidemic is most likely due to:
a. antigenic drift of virus
b. total re-arrangement of chromosomal segments in the influenza virus
c. evolution of a cold virus into a flu virus
d. change in global climate
e. antigenic variation of rhinovirus.

C 2. Bird flu is caused by what strain?
a. Avian Virus #101
b. H1N2
c. H5N1
d. Duck Virus #202
e. Spanish Flu Virus

A, D 3. The biblical principles (or verses) that might explain the origin of bird flu come from which verses? ***(Choose Two)***
a. Lev. 19: 19
b. Gen. 3:18
c. Rev. 21:3

d. Deut. 22:9
e. John 3:16

D 4. What are pathogenicity islands?
a. special nucleotides that code genes
b. strands of RNA that cause virulent characteristics
c. a short piece of naked RNA, only 300 to 400 nucleotides long, with no protein coat
d. discrete segments of DNA that encode virulence traits
e. a latent source of HIV DNA

B 5. What causes the virulence of influenza to change?
a. infection of different kinds of vectors such as birds or swine
b. mutations and the reassortment of foreign RNA into the genetic material of the virus
c. antibiotic resistance
d. infection of immunodeficient individuals causes the virus to get stronger
e. the lack of research for anti-viral drugs

D 6. The origin of infectious disease can be explained by:
a. Man's defenses
b. The microbe
c. Mobile genes
d. All of the above

E 7. The source of variation among microorganisms that were once identical is
a. antibiotic resistance.
b. virulence factors.
c. genomic decay.
d. mutation.
e. all of the above

D 8. *Mycobacterium leprae* has a generation time of
a. 20 minutes.
b. 1 hour.
c. 6 hours.
d. 12 days.

D 9. The plague bacillus is known as
a. *Plasmodium vivax*.
b. *Pneumocystis carinii*.
c. *Streptococcus pyogenes*.
d. *Yersinia pestis*.

B. 10. The bacterium that appears to have picked up a pathogenicity island and causes a common food-borne illness is:
a. *Yersinia pestis*
b. *E. coli* O157H7
c. *E. coli* K 12
d. *Mycobacterium leprae*
e. a, b and d

Chapter 10
Plagues and Pestilence of the Future

True or False Questions

F 1. The third horse described in Revelation 6:7-8 is said to be "pale". This refers to the paleness of a sick person or the pale yellow-green of a dying plant.

T 2. During WWII, Japan used biological warfare on China.

T 3. As few as ten bubonic plague cells can cause death.

F 4. *Jehovah Rapha* means the Great Physician who cleanses.

T 5. While the Egyptians were experiencing plagues, the Israelites were protected because they obeyed the heath principles in Levitical law.

Multiple Choice

B 1. The diseases that have most recently invoked fear have been:
a. Ebola
b. SARS and Bird-flu
c. Flesh-eating *Streptococcus*
d. All of the above

B 2. A plague in scripture denotes:
a. Pestilence alone
b. Pestilence and other calamities in nature
c. Famine
d. War

D 3. The fourth horseman of the apocalypse represents:
a. war
b. famine
c. religious deception
d. pestilence and disease

D 4. The fifth horseman is:
a. war/famine
b. religious deception
c. pestilence and disease
d. Jesus Christ

A 5. What fraction of the Earth's population will see incredible devastation when the fourth horseman completes his ride?
a. ¼
b. ½
c. 1/8
d. ¾

Chapter 10
Plagues and Pestilence of the Future

C 6. Livor mortis is when:

a. The skin shows signs of blood build up
b. Part of the physical death process
c. Skin color progressively changes from green to blue to purple then finally black
d. All of the above