The Secret Life of Germs

At the end of the semester you will take a quiz on this book worth up to 50 points of enrichment (depending on other projects for the book). The questions will be based on those below and you will be allowed to use your notes on the quiz. So get as far as you can through the reading during the semester and take good notes. You should plan to read each section, then look for the answers to the questions for that section. If you just try to look for the answers without reading the section, you will not truly learn the material and will likely have wrong or incomplete answers. You will also turn in all of your notes.

Chapter 1: Seeds of Disease, Seeds of Life

1. Our Greatest Fear (pg 3)

Description: This section is an introduction. Most of the intro will be covered in depth in the rest of the book.

Vocabulary: Germs, Infectious Diseases, Public Sanitation, Bacteria, Viruses, Antibiotics, Vaccines, Penicillin, Contagious, Epidemic, Drug Resistance, Globalization, Migration, Nosocomial Infections, Hygiene, Microbiology

1) Infectious diseases are the number one killer world wide and have been for most of human history. What was probably the number one killer before them, when humans were first evolving?
2) What are the top three killers in developed country? Why is there this difference in primary causes of death between developed and undeveloped countries?
3) What contributions did Girolamo Fracastoro make to medical science?
4) What human behaviors prevent populations from being isolated from one another? How do these influence infectious diseases?
5) When should people wash their hands? Why do you think they don't do it?

2. Our Best Hope (pg 6)

Description: This section describes the benefits of germs, their prevalence, and insight into why the author chose to study germs.

Vocabulary: Organic Matter, Evolution, Fossilized, Colonize, Adaptability

1) Why do we need germs? (List all of the ways germs are useful that are described in this section)
2) What is the earliest evidence of life on Earth?
3) What is the difference between the number of human cells that make up our bodies and the number of germs that live in or on our bodies?
4) If aliens came to observe Earth, what reasons might lead them to conclude that germs are the dominant life forms?
5) What are some ways that we might be able to use germs in the future to help humanity?

Chapter 2: How We Make Each Other Sick

3. It Could Happen to You (pg 10)

Description: This section details the importance of hand washing and how germs spread in its absence using an example of Ebola transmission.

Vocabulary: Contaminated, Good Samaritan, Ebola Virus

1) How often do people wash their hands well enough to rid themselves of most germs after they use a public restroom and also avoid reinfecting themselves when they leave?
2) What are the primary infection sites where germ contact can easily lead to contracting a disease?
3) What are the early symptoms of Ebola virus?
4) How does Ebola spread from person to person? How can its transmission from person to person be prevented?
5) What percent of germs are transmitted by touch?
6) What is the difference between direct and indirect touch?
7) Why do germs in hospitals tend to be more dangerous than those in other locations?

4. Germ City (pg 14)

Description: This section describes the germs found on common public surfaces and continues to stress the importance of proper hand washing.

Vocabulary: Samples, Humidity, Microbes, Feces, Fecal, Vaginal, Innocuous, Self-Limiting Infection

1) What environmental conditions are ideal for most germs to survive?
2) Where in the New York experiment was flesh eating bacteria found? Where were fecal bacteria found? Where were vaginal bacteria found?
3) What five factors determine if a person develops an infection from a germ?
4) What members of a population are most vulnerable to infectious germs?
5) How much of the world population lacks access to adequate sanitation and clean water?
6) How many people die each year from diarrhea caused by infectious germs?

5. Cleanliness is Next to Godliness (pg 17)

Description: This section discusses the role of observation over time to slowly develop medical science in primitive peoples and modern society.

Vocabulary: Civilizations, Ancient, Middle Ages, Modern, Pharmaceutical Companies, Primitive, Ecosystem

1) Which time period do we classify as "Ancient"? Which time period do we classify as the "Middle Ages"? Which time period do we classify as "modern"?
2) What is digitalis? When and how was it discovered by modern medicine?
3) What environmental conditions are healthiest?

6. 300 B.C. to A.D. 500 (pg 19)

Description: This section describes the origins of public sanitation and hygiene, and perceptions of disease.

Vocabulary: Parasites, Germ Warfare, Sumerian Empire, Mesopotamia, Egyptian Empire, Ayurvedic Medicine, Greek Empire, Roman Empire

1) The earliest evidence of public sanitation and soap is from which ancient empire? In which region of the world was it located? Which ancient civilization was first to practice germ warfare against their enemies? How did they do this?
2) What are humors? How are they believed to cause disease?
3) Why do moldy and fermented substances help infected wounds to heal? When are the earliest records of this form of treatment?
4) Which civilization built the most advanced public sanitation system not surpassed until modern times?

7. A.D. 500 to A.D. 1500 (pg 21)

Description: This section describes some of the germ-related medical advances of this period.

Vocabulary: Demographic, Distillation, Incidence

1) What is another nickname for the period of the Middle Ages? Why is it sometimes referred to by this other name?
2) What epidemic hit Europe in the mid 1300's?
3) What was special about the hospitals in Cairo, Egypt starting in the 13th century? Why is this important?

8. A.D. 1500 to Present (pg 22)

Description: This section describes how microbes were discovered and progressively researched during modern times. It concludes with the Protective Response Strategy on Hand Washing.

Vocabulary: Renaissance, Venereal Disease, Small Pox, Pustules, Inoculate, Inoculation, Spontaneous Generation, Pasteurization, Activism, Urbanization, Industrialization, Cholera, Surfactants, Hydrophilic, Hydrophobic, Surface Tension,

1) What is Syphilis? When did it become prevalent?
2) When did proof of the existence of germs first occur? Who was first to see them? How did he see them? How did he share his discovery with others?
3) What material were pipes made of in the Middle Ages? How did this contribute to disease?
4) How has bathing changed since the middle ages?
5) Although relatively unsafe methods of vaccination were used during ancient times, what was the first safe vaccination developed? Who developed it? What experiment did he do to figure it out? Do you feel this experiment was ethical – explain why or why not?
6) What notable thing did Ignaz Semmelweis notice in the 1840's? What did he do as a result? What effect did his actions have in the short term. What were the unfortunate long term effects of his actions? What does this tell you about how society adapts to changes in ideas and beliefs?
7) What ideas were merged in the paper, "A History of Lactic Acid Fermentation"? Who wrote this paper? When?
8) How did Pasteur disprove Spontaneous Generation?
9) What notable contribution did Joseph Lister make to medicine?
10) What epidemic hit London in 1848 and 1854? How many people were killed in each outbreak? What factors cause these sort of epidemics?
11) How much would it cost to bring life-saving public sanitation to the 40% of people on Earth who lack it? Do you think this is a lot of money? Why or why not? What role do you think the United States should play in implementing adequate sanitation in other parts of the world?
12) When should you wash your hands?
13) Write out step-by-step instructions for properly washing your hands in a public restroom.

Chapter 3: The Germ Domain

9. In the Beginning Was the Germ (pg 30)

Description: This section describes basic biochemistry and the origin of life. It also talks about human impact on the ozone layer.

Vocabulary: Metabolism, Photosynthesis, By-Product, Enzymes, Cells, Cytoplasm, Membrane, Nucleic Acids, Amino Acids, Proteins, Fats, Carbohydrates, Multicellular Organism, Theory, Algae, Ozone Layer, Depletion, Cataracts

1) What are the six characteristics of living organisms?
2) What are the basic building blocks that make up cells?
3) How big are cells?
4) What is the purpose of DNA (genes) in cells?
5) What is the purpose of proteins in cells?
6) How does the DNA in different cells of the same multicellular organism differ?
7) What four elements make up the basic building blocks of living matter?
8) How old is the planet Earth?
9) What is meant by, "We are stardust"?
10) How did the Earth's core, crust, atmosphere, and oceans form?
11) How does the Miller/Urey theory on the origin of life differ from that of the violent crust theory? Which one explains the origins of proteins? Which one explains the origins of DNA? Can they both be correct? How can one or both of these theories be proven?
12) What microbe is credited as being the first cell possessing all of the attributes and capabilities of life?
13) All multicellular organisms rely on oxygen in order to produce energy for their cells. Today oxygen comprises 21% of the Earth's atmosphere. But when life first evolved 3.5 billion years ago, there was no oxygen in the Earth's atmosphere. How did the first living cells get their energy in the absence of oxygen? How did oxygen come to be such a large portion of the atmosphere? About how long ago did oxygen-dependent organisms begin to evolve?
14) How did the ozone layer form? What sorts of things deplete the ozone layer? How has depletion of the ozone layer so far affected human health? What will be the result if the ozone layer is completely destroyed?

10. If There Were No Germs (pg 34)

Description: This section describes the role of microbes as the basis of the food chain, and in producing oxygen, fixing nitrogen, decomposition, energy production, and pollution clean up.

Vocabulary: Food Chain, Nitrogen Fixation, Nutrients, Archaebacteria, Thermodynamics, Decomposition, Methanotrophs

1) How much of the world's oxygen is produced by microscopic algae?
2) What is the relationship between the ozone layer and microscopic algae? What would happen if the ozone layer were destroyed?
3) Plants require nitrogen to grow. About 78% of air is nitrogen, but plants can't use it in this form. How then are plants able to get the nitrogen they need to survive and grow?
4) What are the only organisms on Earth that do not rely on any other organisms for survival?
5) In addition to producing oxygen and sustaining organisms at the bottom of the food chain, microbes play a key role in recycling nutrients. Describe how they recycle nutrients. How does this relate to the second law of thermodynamics? What would happen if microbes did not do this?
6) How can we use microbes to help clean up the planet and prevent further pollution?

11. Animal, Mineral, or Vegetable? (pg 36)

Description: This section gives a very basic description of the variety of microbes, especially bacteria.

Vocabulary: Hyperthermophiles, Aerobes, Anaerobes, Facultative Anaerobes, Flora, Fauna, Microorganism, Protozoa, Fungi, Flagellae

1) What type of environment do microbes require to survive?
2) Microbes include what five types of organisms?
3) Do you think microbes should be classified as plants, as animals, or in their own group distinct from both plants an animals? Why?
4) Where are "Strings of Pearl" bacteria found? What is so special about them?
5) What are the three basic shapes of bacteria? What terms describe each shape?
6) What is unique about flagellate microbes?

12. Coexisting with Germs (pg 38)

Description: This section describes the difference between mutualistic, commensalistic, and parasitic microbes.

Vocabulary: Symbiosis, Mutualism, Commensalism, Parasitism, Toxoplasmosis, Immunosuppressed, Congenital, Staphylococcus, Benign, Pneumonia

1) How are termites and protozoa mutualists?
2) What is the difference between a parasite and a commensalist?
3) Why are pregnant women at greater risk for infection than other members of a population?
4) What is the most common parasite to infect humans world wide? How is it transmitted to people? Why might it be considered a commensalist rather than a parasite? When does it act like a parasite?
5) Why do parasites tend to evolve into less lethal strains over time?
6) When is *Staphylococcus pneumoniae* parasitic? When is *Staphylococcus aureus* parasitic?

Chapter 4: The Germ Factory

13. Intro to Chapter 4 (No Section Title) (pg 42)

Description: This section describes how microbes that are beneficial in one region of the body may be harmful in another, and explains why they may be able to colonize one region of the body and not others (adherence affinity).

Vocabulary: Arid, Ecological, pH, Magnetic Field, Niche, Indigenous, Adherence Affinity, Competitive Advantage, Dynamic Flux, Secretions

1) Make a table that includes the seven species of microbes listed on page 42 and how each benefits humans.
2) List five ecological conditions that vary from location to location, helping to determine which microbes reside there.
3) Why is skin populated with Staphylococcus aureus, Staphylococcus epidermidis, Propionibacterium, and diptheroid bacilli?
4) Why does Staphylococcus pyogenes cause strep throat but not bladder infections?
5) Since E. coli is found in the intestinal part of the digestive system, but not in the mouth or throat, what does this tell you about the cells that line these regions of the body?
6) Why do antibiotics have side effects like stomach upset, diarrhea, and yeast infections?
7) What are the two possible outcomes when normal human flora is transmitted to locations in the body that are not normally exposed to it? Explain why each of these might occur.

14. Location, Location, Location (pg 45)

Description: This section describes the concentration of germs at different regions of the body: skin, respiratory and digestive tract, and internal organs

Vocabulary: invagination, mucous membrane, sterile, colon, feces, tartar

1) Which part of the body is normally sterile (germ free)?
2) Draw the circle within a circle model and label which part represents the surface of the skin and its invaginations, the respiratory and digestive tracts, and the internal organs. In parenthesis next to each label, indicate if that part harbors microbes or is sterile.
3) What happens to the germs you inhale? (That is, how does your body protect you from them?)
4) Put the following in order according to how many microbes they harbor (from smallest to largest): Nose, saliva, teeth, gums (gingival crevice), stomach, small intestine, large intestine (colon), skin, vagina
5) Why do the crevice of the gums contain a higher concentration of anaerobes than the saliva?
6) How many different varieties of microbes are there in feces? In the mouth? In the vagina?
7) In addition to bacteria, what other types of microbes populate the body?

15. How Germs Spread (pg 47)

Description: This section describes how the body is initially colonized by bacteria in infancy and introduces us to the four routes of transmission

Vocabulary: Ecological Succession, epidemiology, reservoir, virulence

1) What type of germs populate a baby's body when its in the womb, before birth?
2) What is generally the first microbe to colonize a baby's mouth?
3) When do S. mutans and S. sanguis colonize a baby's mouth?
4) How did the word "epidemiology" come into being?
5) What is the relationship between a microbe, a reservoir, and a host?
6) What are the four possible routes of transmission of pathogens?

16. Contact Spread (pg 48)

Description: This section describes the three types of contact spread and discusses how to properly wipe your anus

Vocabulary: Inanimate, defecate (defecation, defecating), stool

1) What are the three types of contact spread and what is the difference between them? Give at least two examples of each.
2) Which type of contact spread takes place when a sexually transmitted diseases is passed from one person to another?
3) What are the symptoms of Norwalk virus and how is it passed from person to person?
4) How did the Norwalk virus spread to the Duke football players? How did the Norwalk virus spread to the Florida State football players
5) Which type of transmission is responsible for most cases of food poisoning?
6) What additional steps does the book propose people should take when wiping their anus after defecating? Do you think most people will really do this?
7) Why do rabbits eat their own feces?

17. Common-vehicle Spread (pg 51)

Description: This section describes common-vehicle spread

Vocabulary: vector

1) What are the vectors for transmission in the two examples given in this section?

18. Airborne Spread (pg 52)

Description: This section discusses airborne spread

Vocabulary: bacillus

1) What is the difference between airborne spread and droplet spread?
2) How do airplanes promote this type of spread? Which flights are most dangerous?

19. Vector-borne Spread (pg 53)

Description: This section discusses vector-born spread and goes on to talk about all of the different factors that come in to play to determine where and how an infection can get started in your body

Vocabulary: appendage, desiccation, mucous membrane, viability, spore

1) What is the difference between contact spread, common-vehicle spread, airborne spread, and vector-borne spread? (see previous sections to answer this question)
2) What are the two types of vector-borne spread?
3) How do humidity and desiccation each affect (help and hinder) pathogens and their hosts?
4) What strategy does Streptococcus pneumoniae use to out-compete Staphylococcus aureus on and in your body? What result might this have on your health?
5) Why are colds and other ailments more frequent during the winter?
6) What is the difference between a flagellum, cilia, and pseudopodia? (What do they have in common? How do they differ in structure and function?)
7) What is a polymicrobial infection? How is it different from "normal" infections?
8) What is labrynthitis and how can it be contracted (that is, how does the microbe get into this part of the body)?

20. The (Not So) Sweet Smell of Human Flora (pg 56)

Description: This section explains why we have bad breath and foul smelling feces

Vocabulary: stagnant

1) What causes your breath and feces to smell badly?

21. Bad Breath: Its Causes and Cures (pg 56)

Description: This section describes the three microbial sources of bad breath, the difference between morning breath and chronic bad breath, and how digestive problems and tonsiliths contribute to bad breath

Vocabulary: periodontitis, chronic, putrefaction, fissure

1) What causes temporary bad breath? When is it most severe?
2) Describe each remedy for each of the three causes of chronic bad breath
3) What is a food lithe? Where are they found?

22. Foot Odor (pg 58)

Description: This section explains what causes your feet to smell badly, including the role of sweat

Vocabulary: dermatophytes, desquamation, prodigiously

1) Why should you always wear some sort of footwear when walking and showering in a public place?
2) What is the relationship between sweat and foot odor?
3) What type of socks reduce foot odor? What should you be sure to do before you put on your socks?

23. Why Some Babies Smell Different than Others (pg 59)

Description: This section describes the difference in gut biology between breast-fed babies and formula-fed babies

Vocabulary:

1) Which smells worse: feces from babies that are breast fed or feces from babies that are formula fed? Why?

24. Cyclical Smells (pg 59)

Description: This section

Vocabulary: menses, pathogenic, urethra

1) What type of bacteria normally colonize the vagina? How does this change during menses? Why?
2) Based on its name, what organs do you think are infected during a urinary tract infection?
3) What is a uropathogen?
4) Why should women avoid douching?
5) Why do you think this chapter was called “The Germ Factory”?

Chapter 5: The Enemy Within

25. Barbarians at the Gate (pg 62)

1) What two ways can a mutualistic germ that normally resides on or in the human body be transformed into a parasitic pathogen?
2) Why are humans an attractive host for germs? (name three specific reasons)
3) What are some ways germs directly benefit us? What are some ways they indirectly benefit us?
4) Why must a woman usually be exposed to gonococci more than once before she develops gonorrhea?

26. Self vs. Nonself (pg 67)

1) How does the body recognize pathogens and foreign tissues, like those that would be part of a transplanted organ?
2) What type of lymphocyte produces antibodies?
3) How do antibodies, helper T cells, cytotoxic T cells, and natural killer cells help the immune system deal with pathogens?
4) What are phagocytes and what is phagocytosis?
5) How does immunity develop to protect the body against a second exposure to a pathogen?
6) What is hypersensitivity and what symptoms does it cause?
7) How does the body recognize when gonococcus bacterium have attached to its cells, and how does the gonococcus bacterium escape the body’s immune system?
8) How do encapsulated pathogens escape the immune system?
9) How does salmonella use the body’s immune system to help itself spread throughout the body?
10) What is hyaluronidase, who produces it, and how does it help pathogens invade body tissues?
11) How did E.coli, a usually benign bacteria, become a deadly pathogen?
12) Why do pathogens evolve to become less harmful over time?

27. We Have Met the Enemy and He is Us (pg 71)

1) What is toxic shock syndrome? What causes it? How does it affect the body?
2) Why are most toxic shock victims young people?

28. The Tampon Connection (pg 76)

1) How does the number of menses in women today differ from preindustrial times? Why?
2) Why is S.aureus more dangerous when it grows in substances like potatoes salad?
3) In what two ways did Dr. Tierno share his results with the public, the government, and the scientific community?
4) Why doesn’t resistance develop in people who suffer from toxic shock syndrome, meaning they aren’t immune to future S.aureus infections?

29. Good Manufacturing Policy (pg 85)

1) How do baking soda, hydrogen peroxide, and tryclosan promote a healthy mouth and teeth?

Chapter 6: Person to Person

30. Intro (No Section Title) (pg 89)

1) What is a fomite?
2) How often, on average, do we touch our nose, mouth and eyes?

31. Home Truths (pg 90)

1) What is a reconditioned mattress? What sorts of body fluids and germs did the author find when he tested some reconditioned mattresses?
2) Why should you close the lid of a toilet before flushing it?
3) What was Mary Mallon’s nickname and what is she famous for?

32. Is it Safe to Go to Work? (pg 97)

1) How are offices becoming more like schools? How does this contribute to spreading germs?
2) Cold and flu viral infections make up what percent of illnesses?
3) On average, how many times per year will a person suffer from a cold or flu virus?
4) When was the Spanish flu pandemic? What specifically caused it? How many people died?
5) How many American deaths does the flu cause each year? What percent of these are the result of pneumonia in people over age 65?
6) Describe four factors that may contribute to the increased incidence of flu during winter months.
7) Copy the protective response strategy for what to do when you are sick (the first gray box, not the second one)

33. Dirty Money (pg 104)

1) In businesses that sell food, why should cashiers be restricted from handling and serving food?

34. The Common Pool (pg 105)

1) What are common ways germs can be spread at a beauty salon? How can you protect yourself from these germs? (By the way, similar problems have been found in tattoo parlors where deadly hepatitis C has been spread from customer to customer in the past)

35. Children and Germs (pg 106)

1) What is the primary way rotavirus is spread? What deadly symptom does it cause? How many children die from it each year?
2) Which five items commonly touched by children and tested by the author contained the most germs?
3) What six basic principles of hygiene should be taught to young children?
4) What percent of new STD cases per year occur in teenagers?

36. Intimate Contact (pg 111)

1) Which two sexually transmitted diseases (STD's) have been linked to development of cervical cancer?
2) When was AIDS first identified? How many deaths has it caused? What are the two primary means of transmission today?
3) About how many people per day become newly infected with HIV worldwide? What geographic region suffers most from HIV?
4) How did cultural practices in Uganda contribute to the spread of Ebola during the 2000 outbreak?

37. Pet to Person (pg 115)

1) What are zoonotic diseases?
2) Why should pregnant women never clean a cat's litter box or other pet waste?

Chapter 7: Common Ground

38. The Killing Fields (pg 118)

1) How did disease affect the death toll during the civil war? (be specific)
2) Who chiefly led the effort to clean up soldiers' camps, prisons, and hospitals?

39. Fast Food, Fast Germs (pg 121)

1) How does E.coli, which is normally present in the intestines of approximately 50% of cows, get into the meat portion that is sold?
2) What are two ways that fruits and vegetables can become contaminated with E.coli?

40. Germs on Tap (pg 122)

1) What was contaminated with Cryptosporidium in Milwaukee that made more than half of the population sick in 1993?

41. The Case of the Guatemalan Raspberries (pg 124)

1) How did Cryptosporidium get on the Guatemalan Raspberries that caused an outbreak of illness in the U.S. in 1996?

42. The Coldest Cut of All (pg 125)

1) Soft cheeses and lunch meats should be eaten within 10 days because they may be infected with Listeria monocytogenes. In which three ways is this germ more hardy than most other germs?

43. No Free Lunch (pg 126)

1) How do the digestive systems of carnivorous predators and scavengers that eat uncooked and even spoiled meat differ from other animals in order to protect them from the high germ content on their food?
2) How do the digestive systems of omnivores like chimpanzees and humans make them more susceptible to the germs in food?

44. From Cooking to Pasteurizing to Genetic Engineering (pg 132)

1) What is pasteurization?

45. Mad Cows and Englishmen (pg 136)

1) Prion diseases like Mad Cow disease affect which body system?
2) Mad Cow disease, Scrapie, Creutzfeldt-Jakob disease, and bovine spongiform encephalopathy are all caused by which type of pathogen?
3) What caused Kuru in New Guineans prior to the 1980's?

46. Protecting Our Food and Water (pg 142)

1) Which meats can be safely eaten medium rare (pink on the inside)?
2) How should you clean raw fruits and vegetables?
3) How long can food safely sit out in a warm environment?

Chapter 8: In Thin Air

47. The New Assassins (pg 149)

1) List two places in your home that might harbor Legionella bacteria?
2) How is hantavirus normally transmitted to humans?
3) How should you clean up rodent droppings and carcasses?

48. A Killer Returns (pg 155)

1) What are the symptoms of tuberculosis and how is it transmitted from person to person?
2) Which two pathogens are the leading causes of death worldwide?
3) Describe the treatment for tuberculosis.

49. Toxic Atmospheres (pg 162)

1) What type of pathogen caused the outbreak of infant deaths associated with bleeding noses (from hemorrhaging lungs) in Celeland, Ohia between 1993 and 1998?

50. Too Clean for Our Own Good (pg 165)

1) What are dust mites, where do they live, and what two common ailments do they trigger?

Chapter 9: On the Wing and On Eight Little Legs

51. The Canary in the Mine (pg 170)

1) In 1999 several people in the New York area contracted a mysterious disease that caused encephalitis (fluid pressure on the brain) along with fever, headache, muscle ache and other general flu-like symptoms. Several people died. At first they were diagnosed with St. Louis encephalitis virus (SLE) until the CDC figured out they actually which closely related disease?

52. West Nile on the Hudson (pg 172)

1) Why is a germ more dangerous to organisms in a new environment than to those in its native environment?

53. Five Mosquitoes Cross the Sea (pg 175)

1) Based on a genetic comparison of different strains of WNV, which country do researchers believe the strain that spread to the Unites States came from?
2) How did the insecticides sprayed in the New York area to kill mosquitoes affect the sea life in nearby ocean waters? Why?

54. Of Mosquitoes and Men (pg 180)

1) Why do West Africans tend to be more resistant to malaria than other populations?
2) What are the differences between malaria and yellow fever in terms of their symptoms and how they are transmitted from host to host?

55. Global Warming (pg 187)

1) What three groups of greenhouse gasses are mostly responsible for global warming?
2) How will global warming affect the incidence of disease on earth? Why?

56. On Eight Little Legs (pg 190)

1) Why is Lyme disease so difficult to diagnose?
2) Describe three things you can do to protect yourself from tick-born diseases. (see pg 194)

Chapter 10: Not the Usual Suspects

57. Man on a Mission (pg 201)

1) Why did Dr. Barry Marshall drink Helicobacter pylori? What did he find out?

58. Hidden Plagues (pg 206)

1) Aside from the primary infection caused by most germs, name three other types of medical conditions they may contribute to?

59. You Are What You Eat (pg 212)

1) What is Crohn's disease and how may a defect in the Nod 2 gene cause it?

60. Molecular Mimicry (pg 218)

1) Coxsackie virus attacks the central nervous system and causes muscle atrophy. What other disease do researchers think it might cause and why/how?

61. Bacterial Invaders in Our Cells (pg 219)

1) What did the Human Genome Project reveal about the genetic similarity between humans and other organisms?

Chapter 11: The Germ Revolt

62. Intro (No Section Title) (pg 222)

No Questions

63. Wonder Drugs and Super Bugs (pg 223)

1) Alexander Fleming discovered that a substance he isolated from mold could kill staphylococcus bacteria. Other researchers went on to discover it could kill all kinds of different bacteria, but they couldn't grow bacteria to a large enough amount in a short enough time to isolate enough of the substance to be of any real medical use. What substance was this that they had discovered and how did they finally figure out to produce enough of it to develop it into a medicine?

64. Survival of the Fittest Germ (pg 225)

1) Describe the five ways in which antibiotics can attack or inhibit the growth of germs.
2) What are three ways germs avoid the effects of antibiotics?
3) What are three ways germs pass resistance to one another?
4) Describe the two ways in which antibiotic action on bystander germs enhances the spread of resistance genes.
5) In what five ways can people help reduce antibiotic resistance (hint: look at the protective response strategies)?

65. The Germicide Controversy (pg 232)

1) What is the difference between a germicide and an antibiotic?