

TEACHER GUIDE

9th–12th Grade

Includes Student
Worksheets

Science



Weekly Lesson Schedule



Student Worksheets

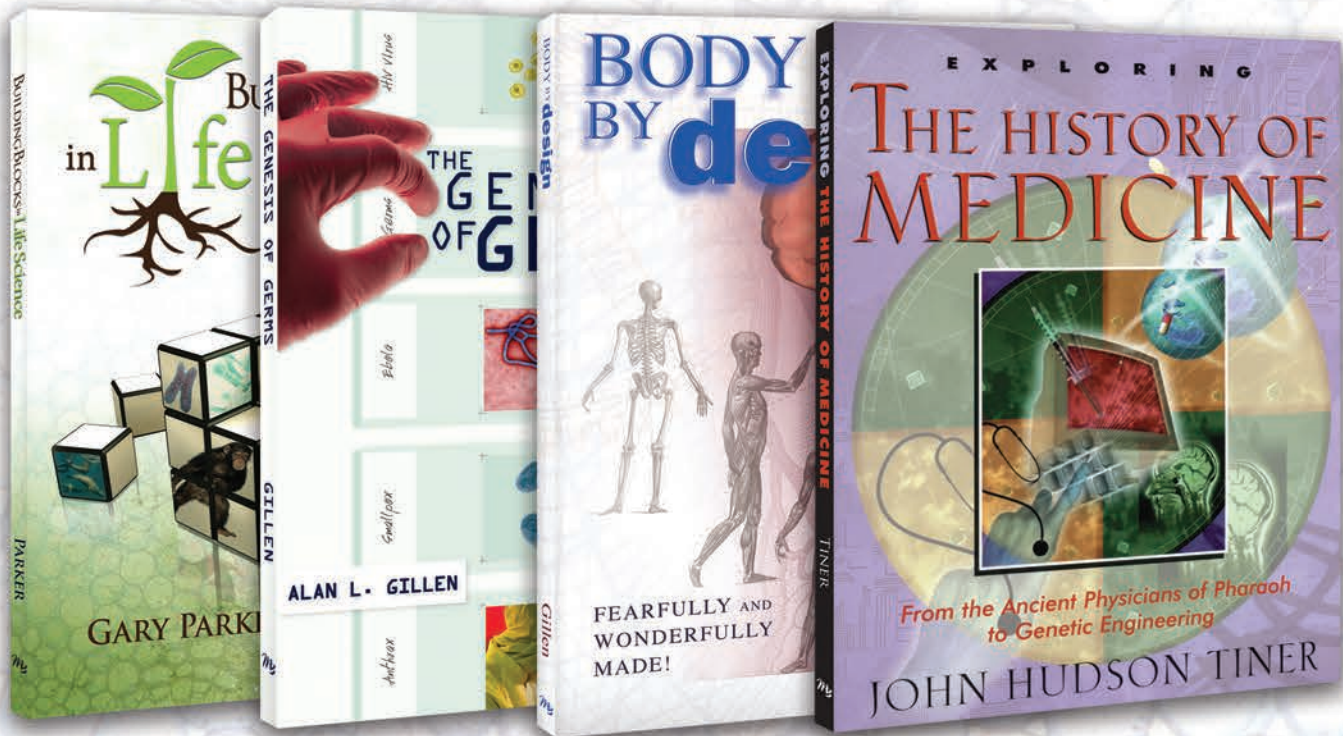


Quizzes & Test



Answer Key

ADVANCED PRE-MED STUDIES



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Includes Student
Worksheets

Science



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Answer Key

Advanced Pre-Med Studies



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Using This Teacher Guide

Features: The suggested weekly schedule enclosed has easy-to-manage lessons that guide the reading, worksheets, and all assessments. The pages of this guide are perforated and three-hole punched so materials are easy to tear out, hand out, grade, and store. Teachers are encouraged to adjust the schedule and materials needed in order to best work within their unique educational program.

Lesson Scheduling: Students are instructed to read the pages in their book and then complete the corresponding section provided by the teacher. Assessments that may include worksheets, activities, quizzes, and tests are given at regular intervals with space to record each grade. Space is provided on the weekly schedule for assignment dates, and flexibility in scheduling is encouraged. Teachers may adapt the scheduled days per each unique student situation. As the student completes each assignment, this can be marked with an “X” in the box.

	Approximately 30 to 45 minutes per lesson, four to five days a week
	Includes answer keys for worksheets, quizzes, and semester exams.
	Worksheets for each chapter
	Quizzes and tests are included to help reinforce learning and provide assessment opportunities; optional semester exams included.
	Designed for grades 9 to 12 in a one-year course to earn 1 science credit

Course Objectives: Students completing this course will

- ✓ Discover the spectacular discoveries that started with men and women who used their abilities to better mankind and give glory to God
- ✓ Learn the fascinating history of medicine comes alive in this book, providing students with a healthy dose of facts, mini-biographies, and vintage illustrations
- ✓ Study where germs came from, and how they fit into a biblical worldview
- ✓ Investigate how germs are symptomatic of the literal Fall and Curse of creation as a result of man's sin and the hope we have in the coming of Jesus Christ
- ✓ Explore the wonder, beauty, and creation of the human body, giving evidence for creation, while exposing faulty evolutionistic reasoning
- ✓ Identify exceptional insights and clarity to patterns of order in living things, including the promise of healing and new birth in Christ.

Course Description

From surgery to vaccines, man has made great strides in the field of medicine. Quality of life has improved dramatically in the last few decades alone, and the future is bright. But students must not forget that God provided humans with minds and resources to bring about these advances. A biblical perspective of healing and the use of medicine provides the best foundation for treating diseases and injury. The evolutionary worldview can be found filtered through every topic at every age level in our society. It has become the overwhelmingly accepted paradigm for the origins of life as taught in all secular institutions. This dynamic course helps young people not only learn science from a biblical perspective, but also helps them know how to defend their faith in the process.

Author Bio:

John Hudson Tiner (*Exploring the History of Medicine*) received five National Science Foundation teaching fellowships during his 12 years as a teacher of mathematics and science that allowed him to study graduate chemistry, astronomy, and mathematics. He also worked as a mathematician and cartographer for the Defense Mapping Agency, Aerospace Center in St. Louis, MO.

Dr. Alan Gillen (*The Genesis of Germs* and *Body by Design*) is a biologist and zoologist with a doctorate in science education. He is an experienced high school and college biology instructor. He is currently a biology professor at Liberty University.

Once a non-Christian evolutionist, **Dr. Gary Parker** (*Building Blocks in Life Science*) became a zealous creationist, eventually serving as professor of biology at the Institute for Creation Research and lecturing worldwide for both ICR and Answers in Genesis.

Suggested Optional Science Labs

There are a variety of companies that offer science labs that complement our courses. These items are only suggestions, not requirements, and they are not included in the daily schedule. We have tried to find materials that are free of evolutionary teaching, but please review any materials you may purchase. The following items are available from www.HomeTrainingTools.com.

Advanced Pre-Med Studies

The History of Medicine

BE-BACKKIT Bacteria Experiment Kit

CM-HUMXRAY True-to-Life Human X-Rays Set

Recommended Microscope Slides:

MS-SETHPAT Human Pathology Slide Set

Building Block in Life Science

CM-DNAMOD DNA Molecular Model Kit

KT-SWDNA Science Wiz DNA Kit

LM-GROFROG Grow-A-Frog Kit

Recommended Microscope Slides:

MS-SETBIO Biology Slide Set

MS-SETHPAT Human Pathology Slide Set

The Genesis of Germs

Choose from:

KT-BACSOAP Bacteria Hand Washing Experiment Kit

KT-MILIFE Microscopic Life Kit

BE-BACKKIT Bacteria Experiment Kit

Recommended Microscope Slides:

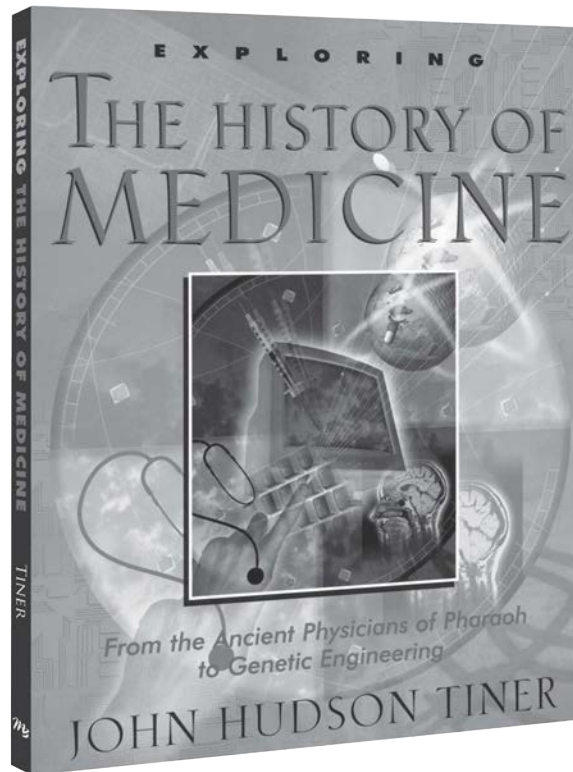
MS-SETWATER Water Life Slide Set

MS-SETHPAT Human Pathology Slide Set (Also used for Life Science)

First Semester Suggested Daily Schedule

Date	Day	Assignment	Due Date	✓	Grade
First Semester-First Quarter — <i>The History of Medicine</i>					
Week 1	Day 1	Read Pages 4-10 • <i>The History of Medicine</i> (HM)			
	Day 2	The First Physicians Ch1: Worksheet 1 • Page 17 • Lesson Plan (LP)			
	Day 3	Read Pages 12-16 • (HM)			
	Day 4	Greek Medicine Goes Wrong Ch2: Worksheet 1 • Page 19 • (LP)			
	Day 5	Read Pages 18-22 • (HM)			
Week 2	Day 6	Fabric of the Body Ch3: Worksheet 1 • Page 21 • (LP)			
	Day 7	Read Pages 24-30 • (HM)			
	Day 8	Father of Modern Surgery Ch4: Worksheet 1 • Page 23 • (LP)			
	Day 9	Read Pages 32-36 • (HM)			
	Day 10	The Living River Ch5: Worksheet 1 • Page 25 • (LP)			
Week 3	Day 11	Chapters 1-5 Quiz 1 • Page 159 • (LP)			
	Day 12	Read Pages 38-42 • (HM)			
	Day 13	The Invisible Kingdom Ch6: Worksheet 1 • Page 27 • (LP)			
	Day 14	Read Pages 44-50 • (HM)			
	Day 15	Triumph over Smallpox Ch7: Worksheet 1 • Page 29 • (LP)			
Week 4	Day 16	Read Pages 52-58			
	Day 17	Davy Deadens Pain Ch8: Worksheet 1 • Page 31 • (LP)			
	Day 18	Read Pages 60-66			
	Day 19	Morton Defeats the Pain of Surgery Ch9: Worksheet 1 • Page 33 • (LP)			
	Day 20	Read Pages 68-74 • (HM)			
Week 5	Day 21	Death House in Vienna Ch10: Worksheet 1 • Page 35 • (LP)			
	Day 22	Chapters 6-10 Quiz 2 • Page 161 • (LP)			
	Day 23	Read Pages 76-84 • (HM)			
	Day 24	The Chemist Who Became a Doctor Ch11: Worksheet 1 • Page 37 • (LP)			
	Day 25	Read Pages 86-90 • (HM)			

Date	Day	Assignment	Due Date	✓	Grade
Week 6	Day 26	Joseph Lister Fights Infection Ch12: Worksheet 1 • Page 39 • (LP)			
	Day 27	Read Pages 92-96 • (HM)			
	Day 28	The Search for Disease Germs Ch13: Worksheet 1 • Page 41 • (LP)			
	Day 29	Read Pages 98-106 • (HM)			
	Day 30	Louis Pasteur Again Ch14: Worksheet 1 • Page 43 • (LP)			
Week 7	Day 31	Pages 108-112 • (HM)			
	Day 32	Dr. Lind's Limes Ch15: Worksheet 1 • Page 45 • (LP)			
	Day 33	Chapters 11-15 Quiz 3 • Page 163 • (LP)			
	Day 34	Read Pages 114-120 • (HM)			
	Day 35	The Hidden Hunger Ch16: Worksheet 1 • Page 47 • (LP)			
Week 8	Day 36	Read Pages 122-128 • (HM)			
	Day 37	Mysterious Rays Ch17: Worksheet 1 • Page 49 • (LP)			
	Day 38	Read Pages 130-134 • (HM)			
	Day 39	Useful Radiation Ch18: Worksheet 1 • Page 51 • (LP)			
	Day 40	Read Pages 136-140 • (HM)			
Week 9	Day 41	Wonder Drugs Ch19: Worksheet 1 • Page 53 • (LP)			
	Day 42	Read Pages 142-153			
	Day 43	Mold Battles Bacteria Ch20: Worksheet 1 • Page 55 • (LP)			
	Day 44	Medicine in Today's World Ch21: Review • Page 56 • (LP)			
	Day 45	Chapters 16-21 Quiz 4 • Page 165 • (LP)			
		Optional Exam • Page 167 • (LP)			
First Semester-Second Quarter — <i>The Genesis of Germs</i>					
Week 1	Day 46	Read Pages 4-9 • <i>The Genesis of Germs</i> • (GG)			
	Day 47	Read Pages 10-15			
	Day 48	Read Pages 16-21			
	Day 49	Microbes by Design Ch1: Worksheet 1 • Page 59 • Lesson Plan • (LP)			
	Day 50	Read Pages 22-25			
Week 2	Day 51	Read Pages 26-30			
	Day 52	Read Pages 31-35			
	Day 53	Beneficial Bacteria Ch2: Worksheet 1 • Page 61 • (LP)			
	Day 54	Read Pages 36-40			
	Day 55	Read Pages 41-45			



Advanced Pre-Med Worksheets
for Use with
Exploring the History of Medicine



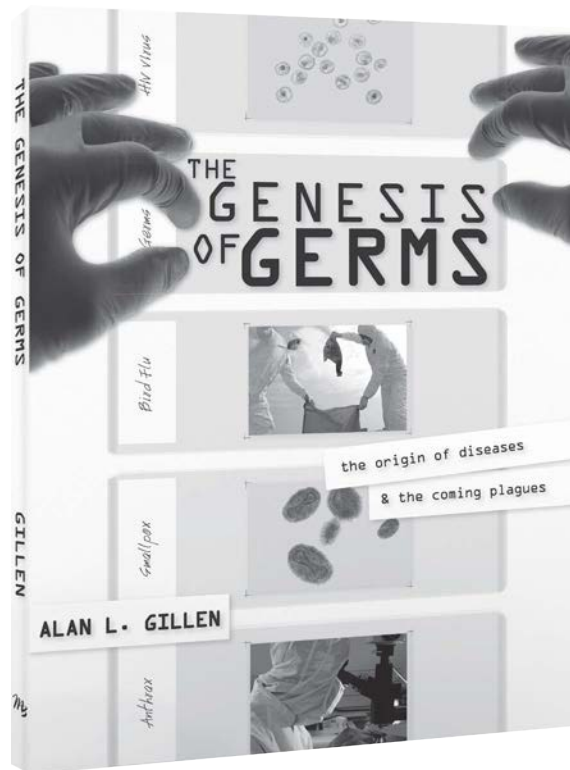
*Answer T or F for true or false, or select the letter
for the phrase that best completes the sentence.*

- T F** 1. The medical discoveries of the Egyptian doctor Imhotep are well-known today.
- A B** 2. The most famous ancient Greek doctor was (A. Plato, B. Hippocrates).
- T F** 3. One of the Greek treatments for disease was to have the sick person dream away the sickness in a pagan temple.
- A B** 4. Older doctors predicted that doctors who followed Hippocrates' teaching would be (A. punished, B. rewarded) by the gods and goddesses.
- A B** 5. The Hippocratic Oath for doctors is (A. a pledge of proper conduct, B. a schedule of prices a doctor should charge).
- A B** 6. The title given to Hippocrates is (A. Father of Greek Philosophy, B. Father of Medicine).
- A B** 7. The most important physician during Roman times was (A. Galen, B. Socrates).
- A B** 8. The city of Alexandria was noted for its huge (A. aqueduct, B. library).
- A B** 9. Galen learned firsthand about the human body from (A. dissecting the bodies of criminals, B. treating injured gladiators).
- T F** 10. When Galen went to Rome, he was put in prison.
- T F** 11. Galen believed that the marvelous complexity of the human body pointed to a Creator.



*Answer T or F for true or false, or select the letter
for the phrase that best completes the sentence.*

- | | |
|------------|--|
| T F | 1. Charlemagne was an important writer during the Dark Ages. |
| A B | 2. Alexandria's great library was (A. preserved in Egypt, B. burned by a mob). |
| T F | 3. The books by Hippocrates and Galen were free of errors. |
| T F | 4. Doctors used bloodletting because they believed it put the body's four humors in balance. |
| T F | 5. The treatment George Washington received was based on the four-humors theory of disease. |
| A B | 6. Anatomy is the study of (A. the human body, B. stars and planets). |
| T F | 7. Medical schools used Galen's books as the final word in medicine. |
| T F | 8. Jacobus Sylvius taught medical students by reading from a book while an assistant carried out a dissection. |



Advanced Pre-Med Worksheets
for Use with
The Genesis of Germs



True or False Questions

- T F 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.
- T F 2. Bacteria are all invisible, potentially harmful little creatures.
- T F 3. *E. coli* devotes 98 percent of its energy to swimming from your bladder toward the kidney.
- T F 4. The eukaryotic cells of bacteria are generally much smaller and simpler in structure than prokaryotic cells.
- T F 5. Throughout history, *Escherichia coli* has had beneficial and also detrimental results in society.
- T F 6. A bacterium is said to be motile when it cannot move.
- T F 7. Resistance to antimicrobial drugs contributes to the growing number of cases of diseases once thought eradicated.
- T F 8. It is possible for germs to mutate and evolve into totally new diseases.
- T F 9. It is possible for some normally harmless bacteria, like *Serratia marcescens*, to change slightly, and in turn cause disease in immune-compromised individuals.
- T F 10. Scientists have correctly applied “survival of the fittest” to make advances in medicine.

Multiple Choice

1. What percentage of bacteria is pathogenic?
- 2%
 - 5%
 - 25%
 - 75%
 - 100%
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.
- Joseph Lister
 - Robert Koch
 - Louis Pasteur
 - John Tyndall
 - Robert P. Williams
3. Give the name of the pigment responsible for the bright red color in the bacteria that appeared as “blood.”
- tuberculin
 - chlorophyll
 - prodigiosin
 - hemoglobin
 - rhodopsin
4. In his book, *Darwin's Black Box*, Dr. Michael Behe describes flagella as _____.
- being a design paradigm
 - having irreducible complexity
 - having the “most efficient machine in the universe”
 - evidence of evolution
 - necessary for the survival of bacteria

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
6. Which bacteria produce vitamins for the body?
 - a. *E. coli*
 - b. *Chlamydia trachomatis*
 - c. *Legionella*
 - d. *Treponema*
 - e. *Rickettsia*
7. Which of the following scientists devised 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
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
9. Microbiology is the study of:
 - a. small amounts of biology (Yayy!)
 - 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
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*



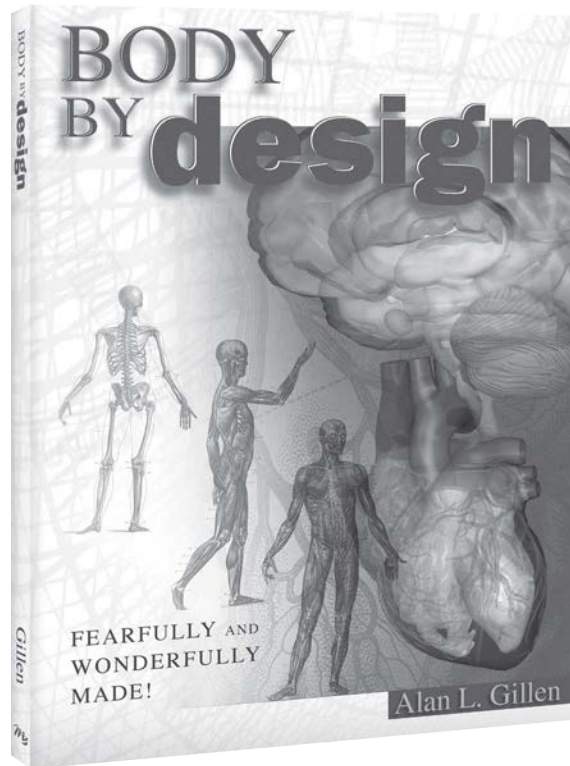
True or False Questions

- T F 1. The only group of bacteria that have flagellum are the spirilla.
- T F 2. The cell walls of Gram-negative bacteria are more complex chemically than those of Gram-positive organisms.
- T F 3. Bacteria thrive in cold temperatures, which explains why there is more sickness in winter.
- T F 4. The technique of Gram-staining allows a clearer view of the cell wall.
- T F 5. When classifying bacteria by shape, it is important to master Latin since all the names come from Latin derivatives.
- T F 6. The eukaryotic cells of bacteria are generally much smaller and simpler in structure than prokaryotic cells.
- T 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 F 8. Bacterial flagella are unique structures not equivalent to the cilia or flagella of protozoa.
- T F 9. Bacteria have adapted to more different living conditions than any other group of organisms.
- T F 10. At the turn of the 20th century, anthrax was the leading cause of death in the USA.

Multiple Choice

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

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
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.
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
9. The difference between Gram-positive and Gram-negative bacteria was discovered in the _____.
a. late 1800s with more widespread use of microscopes and improved staining techniques.
b. early 1900s as man began to study bacteria to develop antibiotics.
c. mid-1900s as man began to look for biohazards to use in war.
d. mid-1900s with the invention of the electron microscope.
e. late 1900s with the mapping of the genome of many bacteria.
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
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.
12. The fastest growth of bacteria happens in which phase?
a. lag phase d. motile phase
b. logarithmic phase e. death phase
c. stationary phase



Advanced Pre-Med Worksheets
for Use with
Body by Design



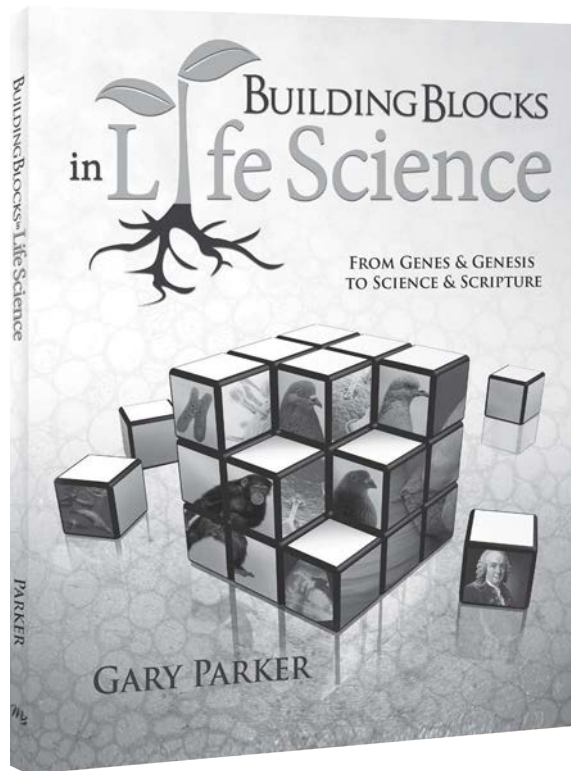
1. How can you recognize design in the human body?
2. List the 11 systems in the human body. Which of these systems is easiest to recognize? Hardest to recognize?
3. Name six physiological themes that are consistent with the concept of intelligent design. Which of these themes could be applied to all body systems?
4. How does the body reveal wisdom in the inward parts (Job 38:36)?

5. The anatomical masterpiece *De Humani Corporis Fabrica* was the work of Vesalius. Explain why he may have been a creationist in thinking. Also, discuss the impact of Vesalius on the advancement of anatomy and medicine when he based his human anatomy upon cadaver dissection rather than animal dissection.
6. Why must scientists be critical thinkers and sometimes oppose the popular thinking of the day? How does this apply to evolutionary dogma of this day?



1. How has evolution (molecules-to-man) affected thinking in the 20th century? How do you think it will affect people in the new millennium?
2. Compare and contrast the definition of evolution by creationists and evolution.
3. Explain the difference between micro- and macroevolution.
4. How is variation in humans (and other creatures) a lot like the concept of microevolution?
5. Explain two views on the presence of tonsils and wisdom teeth in your body.

7. How does one's world view of man's origin affect one's living?



Advanced Pre-Med Worksheets
for Use with
Building Blocks in Life Science



1. Complete the paragraph with these key words:

DNA dominant hybrid alleles gene recessive blending

Sections of a _____ molecule that affect particular traits are called _____. Genes in adults usually come in pairs called _____, like T and t for “tasters” and “non-tasters” of PTC. A “mixed pair,” Tt, is called _____ (or heterozygous). If Tt is a taster, then T is a _____ gene, and only tt could express the _____ trait. If T and t represent tall and short and Tt were medium, the inheritance pattern would be called _____.

2. If both parents were hybrid tasters (Tt), what is the likelihood they could have a non-tasting child? (**0-none, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1-all**) _____. If Tt represented parents of medium height, what fraction of their off spring would be taller than parents? (**0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1**) _____. Shorter? _____. Medium like their parents? _____.
3. Darwin’s followers once taught that there were different “races” of human beings with different skin colors that were in different stages of evolution. But science and Scripture agree: all people belong to only (how many?) _____ races(s), and human skin color depends primarily on only (how many?) _____ molecule(s), a protein called _____.
4. If two pairs of genes controlled the amount of melanin skin color and Adam and Eve were AaBb, they would be (**very dark, dark, medium, light, very light**) _____. How many of these five shades of melanin skin color would be found among their children? (**1, 2, 3, 4, 5**) _____. So, how many generations would it take to go from two people with one skin color to people with all the various amounts of melanin color we see today? (**one, one thousand, one million**) _____. Evolutionists believe it takes lots of time to produce little variation; science and Scripture (see the chart on p. 9) show that it takes (**lots, little**) _____ time to produce _____ of variation.
5. God delights in diversity! The number of combinations among genes created in Adam and Eve is far (**greater/less**) _____ than the number of atoms in the cosmos – meaning YOU are SPECIAL, with a UNIQUE place no one else can take in the whole (**country, planet, universe**) _____.
6. Why is it important for Christians to relate God’s world and God’s Word – science and Scripture?

7. Use the following words and phrases to fill blanks in the paragraph below:

plan, purpose, and special creation God better life (wins)
time, chance, struggle, and death Darwin worse death (wins)

According to the biblical worldview that gave birth to science in the 1600s and 1700s, the first of each created kind of life resulted from _____. But the Bible also records that man's disregard for God (sin) brought the processes of _____ into God's world, making things _____. In the 1800s, _____ argued that the processes of _____ (which he called the "war of nature") would make living things slowly _____, even though finally _____ wins. Those believing the Word of _____ rather than the words of Darwin have hope in Christ that _____ wins.

8. Relate each statement about God's world below to one of "4Cs" in God's Word:

Creation Corruption Catastrophe Christ

- _____ a. Flood conditions are ideal for forming fossils.
- _____ b. Many defects and diseases result from chance changes in heredity called mutations.
- _____ c. Adaptations are design features that suit each organism for its special role in the web of life.
- _____ d. Land animals saved on the Ark and the immune system healing deadly infections both illustrate God's deliverance from death and disaster.



1. The “gene pool” is all the genes (and their allelic variations) that can be passed from one generation to the next. The number of alleles in one individual is usually (**less than/more than/the same as**) _____ in the total population, somewhat like the cards in a deck include (**greater/lesser/the same**) _____ variation than the cards dealt to one person. When they are shuffled and dealt again, the cards individuals get are (**constantly changing/always the same**) _____, but the deck is (**constantly changing/always the same**) _____. Similarly, gene shuffling from one generation to the next (recombination) keeps the gene pool of each kind (**always constant/ever changing**) _____ while individuals in each new generation continually express (**the same old/ever new and unique**) _____ trait combinations, unfolding the creativity and diversity built in ahead of time by (**God/evolution**) _____.
2. The Punnett square on p. 9 shows a dramatic change from one skin color in Adam and Eve to every melanin color from very dark to very light in their children — but what change occurred in the gene pool? _____ Given the very first generation had genes AaBb, the fraction of A in their melanin color pool was (**0-none, 1/4, 1/2, 3/4, 1-all**) _____. Among the 16 boxes with 4 genes each (64 total) in the second generation, counting shows (how many?) _____ are A — and 16/64 reduces to (**1/8, 1/4, 1/2**) _____, which is (**dramatically different from/exactly the same as**) _____ the fraction of A in first generation. Group constancy plus individual variation — that’s (**variation within/change between**) _____ kinds and illustrates (**creation/evolution**) _____. Creationists might call this Conservation of Genetic Variability genetic (**equilibrium/inertia**) _____, a positive term, while evolutionists see it as _____, or resistance to genetic change.
3. Below are non-evolutionary factors that can disrupt the gene pool constancy normally maintained by recombination and the Hardy-Weinberg Law. Match names and descriptions.

genetic drift specialization reproductive isolation
genetic bottleneck founder effect mutations

- _____ a. Only a few members of a species with a large gene pool survive a major disaster (e.g., animals aboard the Ark).
- _____ b. Several small groups separate from a large population, each with percentages of alleles different from those in the original gene pool (e.g., language groups moving away from the Tower of Babel).
- _____ c. Members of a kind separating into distinctive subtypes as they “multiply and fill” earth’s environmental diversity (e.g., generalized bears leaving the Ark becoming black, brown, grizzly, and polar bears).
- _____ d. Barriers or preferences in the choice of a mate separate some parts of a gene pool from others (e.g., culture and language separate humans; size and temperament separate dogs).
- _____ e. Random changes in genes that often change normal genes into alleles producing defects or disease (e.g., sickle cell hemoglobin).

4. Breakup of the human gene pool at the Tower of Babel produced some groups with only AABB melanin control genes. Since they could only pass on A and B genes, their children were always (**very dark, dark, medium, light, very light**) _____. Children whose founders carried only aabb genes were always _____. Groups with AAbb founders always passed on A and b genes, so their children (like some Orientals, Polynesians, and Native Americans) are always _____. People migrating to India apparently took A, a, B, and b, so their children can be (**only medium/any shade of**) _____ melanin skin color.
5. “Hybrid vigor” means hybrids (e.g., Rr) are often hardiest. What fraction of offspring from a hybrid cross will also be hybrid? _____. If hybrids are “superior,” can superior parents have only superior children? _____. Did Hitler know this? _____.

Quizzes and Tests
for Use with
Advanced Pre-Med Studies



Matching: (3 Points Each)

A. Andreas Vesalius
D. Nicolas Copernicus

B. Jan Stephen van Calcar
E. Sylvius

C. Leonardo da Vinci
F. Vesalius' father

1. _____ was a young artist who made illustrations for Vesalius' book.
2. _____ was an artist who studied the human body so he could paint it accurately.
3. _____ was a Polish astronomer who described the sun and not the earth as the center of the planetary system.
4. _____ was a successful apothecary (druggist).
5. _____ taught in Paris from old books.
6. _____ wrote *On the Fabric of the Human Body*.

A. David Fabricius
C. Marcello Malpighi

B. Galileo
D. William Harvey

7. _____ taught the experimental method at Padua.
8. _____ lectured on surgery and anatomy, pointed out valves in the veins.
9. _____ wrote *On the Motion of the Blood*.
10. _____ discovered capillaries.

Fill-in-the-Blank Questions: (4 Points Each Answer)

11. Paré said, "The foundation of medicine must be _____."
12. Ambroise Paré said, "I treated him, _____ healed him."
13. William Harvey stated that the heart was a _____.

Multiple Choice Questions: (4 Points Each)

14. In Europe of the 1500s, minor operations and first aid were given by
A. barbers B. dentists
C. doctors D. janitors
15. Paré's improved treatment for gunshot wounds was to
A. pour in boiling oil B. use soothing ointment
C. sear the wound with a hot iron D. use thread to tie the veins and arteries closed
16. Paré's improved treatment to stop the bleeding after an amputation was to
A. pour in boiling oil B. use soothing ointment
C. sear the wound with a hot iron D. use thread to tie the veins and arteries closed

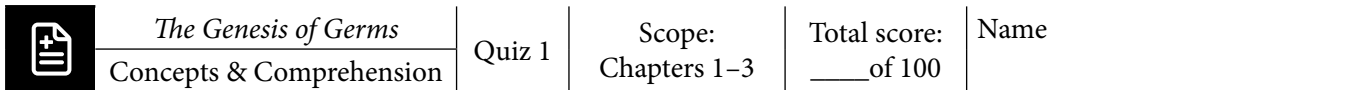
Underline the Correct Answer: (2 Points Each Answer)

17. The most famous ancient Greek doctor was (A. Plato, B. Hippocrates).
18. The Hippocratic Oath for doctors is (A. a pledge of proper conduct, B. a schedule of prices a doctor should charge).

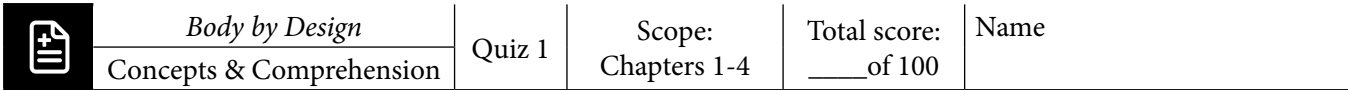
19. The most important physician during Roman times was (A. Galen, B. Socrates).
20. Galen learned firsthand about the human body from (A. dissecting the bodies of criminals, B. treating injured gladiators).
21. Alexandria's great library was (A. preserved in Egypt, B. burned by a mob).
22. Andreas Vesalius came from a long line of (A. doctors, B. lawyers).
23. Paré became France's most skilled surgeon and earned the title (A. Master Barber, B. First Surgeon of the King).
24. When William Harvey attended Padua in Italy, its most famous teacher was (A. Isaac Newton, B. Galileo).
25. Blood is carried to the heart by (A. arteries, B. veins).

True/False: (2 Points Each)

26. T F The medical discoveries of the Egyptian doctor Imhotep are well-known today.
27. T F When Galen went to Rome he was put in prison.
28. T F Galen believed that the marvelous complexity of the human body pointed to a Creator.
29. T F Charlemagne was an important writer during the Dark Ages.
30. T F The books by Hippocrates and Galen were free of errors.
31. T F Doctors used bloodletting because they believed it put the body's four humors in balance.
32. T F The treatment George Washington received was based on the four-humors theory of disease.
33. T F Medical schools used Galen's books as the final word in medicine.
34. T F Publication of *On the Fabric of the Human Body* is considered one of the ten most important events in medical science.
35. T F As a child Paré learned to read and write both Latin and Greek.
36. T F Paré was reluctant to share his discoveries with others.
37. T F William Harvey believed that experiments could be used to study medicine.
38. T F Before he died, William Harvey's idea that blood circulates was accepted as the true picture.
39. T F Harvey's discovery of the circulation of blood is one of the ten most important events in medical history.



20. The idea that microbes “pop” into existence from substances less complex than a living cell is termed:
- spontaneous generation
 - sporulation
 - binary fission
 - pleiotrophy
 - etiology
21. The word bacteria comes from the Latin word meaning:
- berry
 - corkscrew
 - staff or rod
 - ball
 - stick
22. Which group moves by rotation of internal, flagellum-like filaments produces a corkscrew-like movement?
- Proteobacteria
 - Chlamydias
 - Spirochetes
 - Gram-positive bacteria
 - Cyanobacteria
23. Who was the first known scientist to observe microorganisms, including bacteria?
- Louis Pasteur
 - Joseph Lister
 - Anton van Leeuwenhoek
 - Robert Koch
 - David DeWitt
24. When studying and classifying bacteria, it is important to consider which of the following?
- growth characteristics
 - morphology and metabolic way of life
 - molecular composition
 - staining characteristics
 - all of the above
25. The cell wall of a bacterium is best described as _____.
- fluid, excreting biofilm
 - rigid with some elasticity
 - soft and pliable
 - closely connected to its cytoplasm
 - of little importance to the function of bacteria
26. The fastest growth of bacteria happens in which phase?
- lag phase
 - logarithmic phase
 - stationary phase
 - motile phase
 - death phase
27. To develop his famous postulates, Robert Koch first studied what disease?
- tuberculosis
 - diphtheria
 - cholera
 - meningitis
 - anthrax
28. Koch discovered which species to be susceptible to cholera?
- guinea pigs
 - mice
 - cattle
 - dogs
 - man
29. How long did it take to solve the mystery of Legionnaires’ disease?
- 6 hours
 - 6 days
 - 6 weeks
 - 6 months
 - 6 years
30. The Archaean known as Halobacterium is characterized by _____.
- growing rapidly in fresh water ponds
 - its purple light-sensitive pigment
 - its red light-sensitive pigment
 - living only in cold climates
 - none of the above
31. The microorganisms of the hot springs are:
- bacteria
 - algae
 - protozoa
 - a and b
 - a, b, and c
32. What are microbes that thrive in hot springs called?
- bacteria
 - heat mosaics
 - thermobacteria
 - thermophiles



Multiple Answer Questions: (2 Points Each Answer)

1. List the 11 systems in the human body.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
 - g.
 - h.
 - i.
 - j.
 - k.
2. Name six physiological themes that are consistent with the concept of intelligent design.
 - a.
 - b.
 - c.
 - d.
 - e.
 - f.
3. What are the four types of tissues found in the body? Describe how structure is related to the function for each tissue type.
 - a.
 - b.
 - c.
 - d.
4. List three organs of the reproductive system.
 - a.
 - b.
 - c.
5. a. Describe how the layers around the growing fetus develop and function to protect the growing embryo.
 - b. How is this evidence for an intelligent designer?

Short Answer: (4 Points)

6. How can you recognize design in the human body?
7. How does the body reveal wisdom in the inward parts (Job 38:36)?
8. Explain the difference between micro- and macroevolution.
9. Explain two views on the presence of tonsils and wisdom teeth in your body.
10. How does one's world view of man's origin affect his/her living?
11. How is the concept of a mosaic an evidence for intelligent design?
12. Describe the fluid mosaic membrane of the cell.
13. Explain the principle of uniform experience and how it relates to the intelligent design inference.
14. Illustrate how you might recognize design in DNA in living systems.
15. What is the overall function of the reproductive system?
16. Describe an interwoven part of the reproductive system.
17. What is the term for infectious diseases that are transmitted through intimate contact of the reproductive organs?



Matching (3 Points Each Answer)

1. **Creation** **Corruption** **Catastrophe** **Christ**
- _____ a. Flood conditions are ideal for forming fossils.
- _____ b. Many defects and diseases result from chance changes in heredity called mutations.
- _____ c. Adaptations are design features that suit each organism for its special role in the web of life.
- _____ d. Land animals saved on the Ark and the immune system healing deadly infections both illustrate God's deliverance from death and disaster.
2. **genetic drift** **specialization** **reproductive isolation**
 genetic bottleneck **founder effect** **mutations**
- _____ a. Only a few members of a species with a large gene pool survive a major disaster (e.g., animals aboard the Ark)
- _____ b. Several small groups separate from a large population, each with percentages of alleles different from those in the original gene pool (e.g., language groups moving away from the Tower of Babel).
- _____ c. Members of a kind separating into distinctive subtypes as they "multiply and fill" earth's environmental diversity (e.g., generalized bears leaving the Ark becoming black, brown, grizzly, and polar bears).
- _____ d. Barriers or preferences in the choice of a mate separate some parts of a gene pool from others (e.g., culture and language separate humans; size and temperament separate dogs).
- _____ e. Random changes in genes that often change normal genes into alleles producing defects or disease (e.g., sickle cell hemoglobin).
3. **fertilotype** **morphotype** **ecotype**
- _____ a. Varieties that consistently look different but still interbreed
- _____ b. Differences in mating ritual or chromosomal rearrangements of the same genes (genons) prevent interbreeding
- _____ c. Can change appearance when moved to different environments
- _____ d. Look-alike species of fruit flies with different chromosome numbers
- _____ e. Effects on gene regulators make willow trees dwarfs in the Arctic
- _____ f. Black, brown, grizzly, polar, and panda bears

Fill-in-the-Blank Questions: (3 Points Each Blank)

4. Created kinds may be called _____, a combination of the Hebrew words bara for _____ and min for _____.
5. The "late, great" evolutionist S. J. Gould called imperfections in living things evidence of _____; creationists call them evidence of _____.
6. Evolutionists use mutations to explain (in Darwin's words) "the origin of _____"; creationists use mutations to explain the origin of _____.

Multiple Choice Questions: (3 Points)

7. All of these are caused by mutations except:
- a. sickle-cell hemoglobin
 - b. endangered reproduction in the Florida panther
 - c. hemophilia that spread through European royalty
 - d. possibly the decline in human life span following the Flood
 - e. an increase in the quantity and quality of genetic information in the human genome.

Short Answer: (4 Points)

8. Why is it important for Christians to relate God's world and God's Word – science and Scripture?
9. Explain why no Christian familiar with the 4 Cs of biblical history would ever have accepted "fixity of species."
10. What does "molecules to man" evolution need that neither microevolution nor natural selection provide?
11. Use lions chasing zebras to explain the difference between natural selection and ecological competition.
12. Use mosses, ferns, and shrubs to explain the differences between real simple-to-complex change, ecological succession, and imaginary evolutionary change by natural selection.
13. Explain why creationists think that "natural selection" works best as "unsurvival of the unfittest."
14. Compare creationist and evolutionist explanations for variation in beaks among Galapagos ("Darwin's") finches.

Applied Learning Activities: (3 Points)

15. Suppose someone challenges you this way: "You've got to believe in evolution. Evolution is just 'change through time.' You believe in change, don't you?" Respond by "giving a reason for the hope that is in you" (1 Peter 3:15), using evidence and logic.

Worksheet, Quiz, and Test Answers
for Use with
Advanced Pre-Med Studies

Exploring the History of Medicine —● Worksheet Answer Keys

Chapter 1 Worksheet 1

1. F, 2. B, 3. T, 4. A, 5. A, 6. B,
7. A, 8. B, 9. B, 10. F, 11. T

Chapter 2 Worksheet 1

1. F, 2. B, 3. F, 4. T, 5. T, 6. A, 7. T, 8. T

Chapter 3 Worksheet 1

1. A, 2. F, 3. B, 4. T, 5. F, 6. T, 7. A,
8. T, 9. F, 10. F, 11. T, 12. B, 13. C, 14. D,
15. F, 16. E, 17. A

Chapter 4 Worksheet 1

1. A, 2. F, 3. C, 4. B, 5. Love, 6. D,
7. God, 8. F, 9. B

Chapter 5 Worksheet 1

1. B, 2. T, 3. B, 4. A, 5. pump, 6. T,
7. F, 8. T, 9. B, 10. A, 11. D, 12. C

Chapter 6 Worksheet 1

1. C, 2. T, 3. A, 4. F, 5. B, 6. A, 7. B,
8. A, 9. C, 10. E, 11. F, 12. D

Chapter 7 Worksheet 1

1. F, 2. F, 3. B, 4. T, 5. B, 6. F, 7. T,
8. F, 9. D, 10. F, 11. B, 12. E, 13. C,
14. G, 15. A

Chapter 8 Worksheet 1

1. T, 2. F, 3. B, 4. C, 5. F, 6. B, 7. F, 8. F,
9. B, 10. B, 11. T

Chapter 9 Worksheet 1

1. T, 2. D, 3. A, 4. B, 5. F, 6. C, 7. C,
8. C, 9. B, 10. A, 11. T, 12. B, 13. A,
14. D, 15. C

Chapter 10 Worksheet 1

1. B, 2. B, 3. B, 4. B, 5. T, 6. F, 7. T,
8. A, 9. B, 10. T

Chapter 11 Worksheet 1

1. B, 2. F, 3. B, 4. F, 5. C, 6. T, 7. B,
8. B, 9. B, 10. T, 11. A

Chapter 12 Worksheet 1

1. T, 2. T, 3. C, 4. B, 5. T, 6. B, 7. B,
8. F, 9. T, 10. D

Chapter 13 Worksheet 1

1. C, 2. C, 3. D, 4. F, 5. F, 6. B, 7. T,
8. A, 9. A, 10. T

Chapter 14 Worksheet 1

1. T, 2. F, 3. T, 4. A, 5. B, 6. T, 7. B,
8. F, 9. T, 10. F, 11. F, 12. T, 13. F, 14. T

Chapter 15 Worksheet 1

1. B, 2. T, 3. B, 4. F, 5. T, 6. T, 7. F,
8. E, 9. C, 10. B, 11. A, 12. D, 13. F

Chapter 16 Worksheet 1

1. A, 2. F, 3. B, 4. F, 5. F, 6. A, 7. F,
8. F, 9. C, 10. T

Chapter 17 Worksheet 1

1. T, 2. F, 3. B, 4. F, 5. B, 6. A, 7. D,
8. A, 9. T, 10. D, 11. F, 12. T, 13. B,
14. D, 15. A, 16. C

Chapter 18 Worksheet 1

1. B, 2. F, 3. B, 4. B, 5. B, 6. D, 7. T,
8. B, 9. B, 10. F, 11. F

Chapter 19 Worksheet 1

1. T, 2. B, 3. F, 4. B, 5. T, 6. F, 7. A,
8. F, 9. C, 10. D, 11. B, 12. A, 13. E

Chapter 20 Worksheet 1

1. B, 2. B, 3. T, 4. F, 5. F, 6. A, 7. T,
8. F, 9. T, 10. T, 11. T, 12. F, 13. F

The Genesis of Germs — Worksheet Answer Keys

Chapter 1 Worksheet 1

1. T
2. F
3. F
4. F
5. T
6. F
7. T
8. F
9. T
10. F

Multiple Choice

1. b. 5%
2. e. Robert P. Williams
3. c. prodigiosin
4. b. having irreducible complexity
5. e. a and c
6. a. *E. coli*
7. c. Louis Pasteur
8. a. spontaneous generation
9. b. organisms too small to seen with the unaided eye.
10. e. *Serratia marcescens*

Chapter 2 Worksheet 1

1. F
2. T
3. F
4. T
5. F
6. F
7. F
8. T
9. T
10. F

Multiple Choice

1. c. staff or rod
2. c. Spirochetes
3. c. Anton van Leeuwenhoek
4. b. Spore formation permits cells to survive adverse conditions.
5. e. all of the above
6. e. a, b, and c
7. c. Bacteria having a helical shape like a corkscrew.
8. e. a, b, and d

9. a. late 1800's with more wide spread use of microscopes and improved staining techniques.
10. b. rigid with some elasticity
11. c. nearly 50 times the length of its body in one second inside your urinary tract
12. b. logarithmic phase

Chapter 3 Worksheet 1

1. F
2. F
3. T
4. F
5. T
6. F
7. T
8. F
9. T
10. T

Multiple Choice

1. e. anthrax
2. d. 4, 3, 1, 2
3. e. man
4. d. 6 months
5. b. They are nitrogen-fixing bacteria that add nourishment through root nodules.
6. d. Determining what the bacteria required as food.
7. c. He had studied thermophilic bacteria and recognized similarities.
8. c. its red light-sensitive pigment
9. d. a and b
10. d. thermophiles

Chapter 4 Worksheet 1

1. T
2. T
3. T
4. F
5. F
6. F
7. F
8. F
9. T
10. T
11. T
12. F

Body by Design — Worksheet Answer Keys

Chapter 1, Worksheet 1

- Design can be recognized in several ways. First, design is evidenced by a structure's perfect suitability for certain tasks. Second, design is revealed in the balanced interplay of several different systems or structures to reach a common goal.
- The 11 body systems are as follows:
 - Integumentary system: protects the body from the external environment, and helps maintain homeostasis.
 - Muscular system: provides movement through contraction or relaxation.
 - Skeletal system: provides support for the body and protection for vital organs.
 - Circulatory system: carries nutrients and oxygen to the cells of the body and removes waste.
 - Respiratory system: provides oxygen to and removes carbon dioxide from the body.
 - Lymphatic and immune system: protects the body from pathogens. The lymphatic system also returns interstitial fluid to the blood.
 - Digestive system: works to break down food into components that can be absorbed by the bloodstream.
 - Excretory system: filters and removes nitrogenous waste from the body.
 - Endocrine system: secretes hormones that regulate and influence different body functions.
 - Nervous system: coordinates the body's internal functions and its response to external stimuli.
 - Reproductive system: provides for the continuation of human race.

The skeletal system is the most widely recognized system of the body. Both the endocrine and the immune systems are less easily recognized.
- As seen in the text:
 - The relationship of structure to function.
 - Homeostasis
 - Interdependence among body parts.
 - Short-term physiological adaptation.
 - Maintenance of boundaries.
 - Order, organization, and integration.

All of these apply for all body systems.
- As the systems work together to form a whole, it uncovers a wise plan. Every part is perfectly designed for its role and place. The systems do not interfere with each other, but perfectly complement each other. Through its interwoven, interdependent design, the body reveals divine wisdom in its inward parts.
- Vesalius was probably a creationist as revealed by his strong belief in God and in his carefully recorded

discoveries of the exquisite design in the human body. Vesalius's bold challenge to the accepted view of his day encouraged later scientists to think critically and to use more scientific methods of study. By using a human cadaver, he proved that there are many differences between humans and animals and one cannot be used to authoritatively describe the other. Thus, he based human anatomy on a far more accurate foundation.

- Science must be based on facts and careful observations. Thus, like Vesalius, scientists today must be willing to scrutinize all the evidence to discover the truth whether it conflicts with the popular view or not. Nowhere should scientists be more careful in this than in a quick acceptance of the evolutionary theory. Here, they should seek to know both sides, and then, laying aside philosophy, compare the two views with scientific fact.

Chapter 2, Worksheet 1

- The theory of evolution has had a profound influence on the 20th century. For instance, the Holocaust was openly and firmly based on the Darwinian concepts of superior races and the survival of the fittest. Today, evolutionary thinking is the basis for the growing acceptance of abortion and euthanasia. Unfortunately, the belief of evolution has often caused scientists to abandon the scientific method for the sake of evolutionary "proofs." Unless honesty and truth regain their rightful place in science, such frauds and genocides will probably increase in the 21st century.
- Evolutionists and creationists both agree that changes do occur. However, creationists point out that such changes are limited, cause the loss of information, and cannot change one organism into a different organism. Yet, evolutionists argue that such changes could, over eons of time, result in massive and radical changes.
- Small variations or loss of information in a closed gene pool constitute microevolution. Microevolution never increases information, but either loses it or presents it in a different combination. In contrast, macroevolution represents huge changes that require vast new information. Macroevolution is the concept that over time, one life form can change into another very different life form.
- Humans exhibit many variations in such things as height, skin, and eye and hair color. Yet these differences are very small, and humans remain irrevocably human. This is similar to the concept of microevolution — small changes within a kind.
- In the evolutionary view, man is the product of random, chance processes. Thus, the body should be full of junk relics from earlier stages of evolution. They term such alleged relics "vestigial." Tonsils and

wisdom teeth are two examples of such supposed vestigial parts. In contrast, the creation view holds that there is a purposeful design for everything, though it may not be understood yet. This view has proven true with both tonsils and wisdom teeth. Tonsils are important to the immune system, and wisdom teeth are fully functional molars.

6. Though Darwin was very familiar with William Paley's book *Natural Theology*, he rejected it because he rejected God. His writings on evolution were his attempt to rationalize that rejection.
7. One's world view on origins will profoundly influence one's values, lifestyle, and actions. If one accepts the evolutionary view that no power higher than chance has brought about life, then man is accountable to no one. In a world ruled by chance, there is no need or place for absolutes such as right and wrong. On the other hand, if one believes in an omniscient, omnipresent, omnipotent Creator, then one realizes that one is accountable to that Creator and must obey His laws.

Chapter 3, Worksheet 1

1. A mosaic has thousands of tiny parts that form an intricate, rich pattern. These little pieces are meaningless on their own, yet in the hands of a master craftsman; they can become a complex, beautiful design. Mosaics require careful, thorough planning. When cells are compared to mosaics, this comparison makes a strong argument for intelligent design of the cell.
2. The main covering of the cell is two layers of lipids with embedded proteins. These proteins, however, are not stationary and can move in the lipid bilayer, forming complicated and functional mosaics. Hence the term, "fluid mosaic membrane."
3. No one thinks that a car came into existence by random chance. One realizes from uniform experience that cars require a designer who has planned carefully in advance, and builders who put that plan into action. If we saw a specialized machine fulfilling its task, we would conclude (even though we had never seen it before) that there was intelligent design behind its construction. The human body is far more specialized and intricate than any machine. Thus, we conclude that the human body is the product of intelligent design.
4. Design is seen in DNA in its tight intertwining double helix, its careful base pairing, its stored information, and its outstanding "proofreading" system.
5. Pseudo-stratified columnar epithelium, simple cuboidal epithelium, simple squamous epithelium, and simple columnar epithelium. Pseudostratified columnar epithelium has many cilia that enable it to move foreign particles out of the respiratory tract. Simple cuboidal epithelium, with its square shape, is important in secretion. Simple squamous epithelium's

flattened shape promotes rapid diffusion in such places as the lungs. Simple columnar epithelium's volume and shape make it very absorptive.

6. Let us begin with DNA in a multinucleate muscle cell or fiber. This is the molecular level. This DNA is contained in a nucleus of the muscle fiber. The rest of the muscle fiber consists of thousands of myofibrils. This is the cellular level. Each muscle fiber is bound to other muscle fibers to form a muscle bundle. This muscle bundle is then connected by fascia to other muscle bundles to form a complete muscle — for instance the triceps brachii. This muscle, in turn, is part of something much larger: the entire muscular system.

Chapter 4, Worksheet 1

1. Male: Testes, penis, accessory reproductive glands. Female: Ovaries, uterine tubes, uterus, vagina.
2. The overall function of the reproductive system is to ensure the continuation and survival of the human race.
3. The uterine blood supply is a beautifully interwoven component of the reproductive system. The branching vessels of the uterine arteries run over both the uterine tube and ovary before they join together, or anastomose, at the upper portion of the uterus. Its weaving pathway supplies the uterus with plenty of oxygen-rich blood. The complex intertwining of the seminiferous tubules also supply a good example of an interwoven portion of the reproductive system.
4. The growing fetus is surrounded by an amniotic sac derived from ectoderm and mesoderm. This amniotic sac is filled with amniotic fluid that cushions and protects the fetus. The amniotic fluid ensures that a constant pressure and temperature is maintained about the fetus. Surrounding the amniotic sac is the chorion. Because of this protective sac, the fetus is able to develop freely without constriction. The amniotic sac and chorion are a superb protection for the fetus and are strong evidence for intelligent design.
5. Sexually transmitted diseases, STDs
6. Recapitulation theory, that human development is a "replay" of macroevolution, was first proposed by Ernst Haeckel. This theory claims that as the fetus develops it reveals different stages of evolution. This faulty theory is based on the vague resemblance of certain fetal structures to animal parts, and Haeckel's fraudulent embryological drawings. It has no basis in fact, and is an example of very poor science. Its modern-day proponent is Dr. Ken Miller.

Chapter 5, Worksheet 1

1. This question is best seen in the light of components. The bones of the skeletal system are composed of several types of unique cells. These cells, osteoblasts, osteocytes, and osteoclasts, work together to form

Building Blocks in Life Science — Worksheet Answer Keys

Chapter 1 Worksheet 1

1. DNA, genes, alleles, hybrid, dominant, recessive, blending
2. $\frac{1}{4}$, $\frac{1}{4}$, $\frac{1}{4}$, $\frac{1}{2}$ (as p. 7, using Tt in place of Rr or Pr)
3. one, one, melanin
4. medium, 5, one, little, lots
5. greater, universe
6. Sample answer (SA): Being able to relate God's world and God's Word is important in two ways: (a) it builds faith and trust in Scripture (the Bible), and (2) it helps believers use the wonders of science to introduce others to the wonders of new life in Christ revealed in God's Word.
7. plan, purpose, and special creation; time, chance, struggle and death; worse, Darwin, time, chance, struggle and death; better, death (wins), God, life (wins)
8. Catastrophe, Corruption, Creation, Christ (see pp. 3–5)

Chapter 2, Worksheet 1

1. less than, greater, constantly changing, always the same, always constant, ever new and unique, God
2. none, $\frac{1}{4}$, 16, $\frac{1}{4}$, exactly the same as, variation within, creation, equilibrium, inertia
3. a-genetic bottleneck, b-genetic drift or founder effect, c-specialization, d-reproductive isolation, e-mutations
4. very dark, very light, medium, any shade of
5. (only) $\frac{1}{2}$, no, no!

Chapter 3, Worksheet 1

1. “multiply after kind”
2. genons, alleles, e, f
3. baramins; create(d); kind
4. morphotype, fertilotype, ecotype, fertilotype, ecotype, morphotype
5. (Carolus) Linnaeus or (Karl) von Linne; genus, species, genus, genus, genus, both (genus and species), genera, (still) species, Homo sapiens
6. unique, non-unique, unique, non-unique, unique, non-unique, unique, combination
7. creation, creation, creation

Chapter 4, Worksheet 1

1. Answers can vary. Some points that can be included are: scriptural authority (biblical account of creation and the Flood), death and suffering not fitting the “good” creation as referenced in the Bible; Christ's return to save mankind from sin which began in the

garden following Creation, scientific evidences that point to a young earth rather than an old one, etc.

2. Answer can vary. Macroevolution — adding genes that never existed before; microevolution — shuffling existing genes and their alleles into various combinations. So-called microevolution actually involves no processes or results different from those already described by creationists for producing *variation within the created kinds*.
3. Answers can vary. The Bible refers to “kinds” in both the Creation and Flood accounts in Genesis. This does not mean “species” — it simply means kinds — which can show a lot of variety and diversity built into each one. For example, the cat kind can encompass everything from a house cat to a cheetah to an African lion. This view takes into account the major changes that occurred when mankind corrupted God's creation; e.g., plants producing thorns, and animal predators beginning to kill and eat other animals. Fixity of species would not allow for the re-population of the earth by animals following the Great Flood — meaning that every animal that every lived in every kind would have had to be represented on the ark, which was not feasible or necessary.
4. SA: The Bible teaches that God is the author of variety and that man's sin brought struggle and death into the world, and creation scientists rightly use those concepts to explain how and where varieties survive as they multiply and fill a fallen world. Darwin's followers, however, want to change a given kind of life into others — but they can explain neither where new kinds of variety (genons) come from nor why struggle and death make things better instead of worse, so their “survival of the fittest” becomes a silly circular argument, the “survival of the survivors.” The famous peppered moth, for example, is recognized in several color forms dark to light as far back as records go (so not even one new trait “evolved”), and many moths moved to locations matching their color (habitat choice, or multiplying and filling) rather than waiting to be eaten (Darwinian struggle and death), and the light moths moved back into the original area after man cleaned up pollution.
5. SA: “Molecules to man” evolution absolutely requires a HUGE INCREASE IN BOTH THE QUANTITY and QUALITY OF GENETIC INFORMATION, and neither mutations nor Darwinian “selection” can provide either, since they only change or select existing varieties (pointing back to prior acts of creation).