Simply Charlotte Mason Lesson Plans for *Discovering Design with Biology*

These lessons plans will guide you through Discovering Design with Biology *by Dr. Paul Madtes and Dr. Jay Wile with narration prompts and reminders to enter key people and events into your Book of Centuries.*

NOTE ABOUT LABS AND HIGH SCHOOL CREDIT

For this course to qualify for high school credit, some of the labs in *Discovering Design with Biology* are required. Students completing one of the following can earn a science credit:

1. Complete all of the household item labs and the dissection labs.

2. Complete all of the household item labs and the microscope labs.

To qualify as an honors course, the student should complete all of the labs: household item labs, dissection labs, and microscope labs.

The dissection labs and microscope labs require specific lab kits, which are available through Berean Builders.

LESSON 1

Read and narrate these sections in *Discovering Design with Biology*, pages iii-v:
“Introduction,”
“How to Use This Book,”
“Experiments and Activities,”
“Experiment Supplies,”
“Course Website,”
“Question/Answer Service.”

Take a few moments to look over the materials that will be needed for the experiments in chapter 1, “Introduction to Biology,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 1 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-1/.

Note: A list of what materials are needed for the experiments in each chapter can be found in Appendix C on pages 545–551.

LESSON 2

Read and narrate these sections in *Discovering Design with Biology*, chapter 1:
“Introduction,”
the first three characteristics of life in Section 1.1: “The Characteristics of Life.”

LESSON 3

Read and narrate this section in *Discovering Design with Biology,* chapter 1:
the last four characteristics of life in Section 1.1: “The Characteristics of Life.”

Complete Experiment 1.1, “Fruit DNA,” when you come to it in the reading.

Answer Comprehension Check questions 1.1, 1.2, and 1.3 either orally or in writing.

LESSON 4

Read and narrate these sections in *Discovering Design with Biology*, chapter 1:
Section 1.2: “Organization of Life,”
Section 1.3: “Nomenclature.”

Answer Comprehension Check questions 1.4, 1.5, and 1.6 either orally or in writing.

LESSON 5

Read and narrate these sections in *Discovering Design with Biology,* chapter 1:
Section 1.4: “Philosophy of Science,”
Section 1.5: “The Scientific Method.”

Answer Comprehension Check questions 1.7 and 1.8 either orally or in writing.

Enter Roger Bacon, Nicolaus Copernicus, Galileo Galilei, and Louis Pasteur in *My Book of Centuries*. Use the suggestions in the Book of Centuries Entries here or customize your entries.

Book of Centuries Entries

Roger Bacon (c. 1220–1292) emphasizes knowledge should be confirmed with observations.

Nicolaus Copernicus (1473–1543) proposes the earth traveled around the sun based on his observations.

Galileo Galilei (1564–1642) makes observations that support Copernicus’ idea of the earth traveling around the sun.

Louis Pasteur (1822–1895) performs experiments that show that the theory of Spontaneous Generation is incorrect.

LESSON 6

Read and narrate this section in *Discovering Design with Biology*, chapter 1:
Section 1.6: “Energy Flow.”

Complete Experiment 1.2, “Energy in Chemicals,” when you come to it in the reading.

Answer Comprehension Check questions 1.9 and 1.10 either orally or in writing.

LESSON 7

Read and narrate this section in *Discovering Design with Biology*, chapter 1:
Section 1.7: “Natural Selection.”

Answer Comprehension Check question 1.11 either orally or in writing.

Enter Charles Darwin in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Charles Darwin (1809–1882) proposes his idea of evolution through natural selection.

LESSON 8

Review chapter 1, “Introduction to Biology,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: eukaryotic cell, prokaryotic cell, anabolism, catabolism, the 7 characteristics of life, the organization of life from atoms to biosphere, the eight divisions of taxonomy, nomenclature, the scientific method, producers, consumers, decomposers, food chain, primary consumer, secondary consumer, tertiary consumer, food web, natural selection.

LESSON 9

Look over the Chapter Review for chapter 1 in *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 10

Complete the Test for chapter 1 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 2, “The Chemistry of Life” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 2 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-2/.

LESSON 11

Read and narrate these sections in *Discovering Design with Biology*, chapter 2:
“Introduction,”
Section 2.1: “The Building Blocks of Chemistry.”

Answer Comprehension Check questions 2.1 and 2.2 either orally or in writing.

LESSON 12

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
Section 2.2: “Water.”

Complete Experiment 2.1, “Capillary Action,” when you come to it in the reading.

Answer Comprehension Check questions 2.3 and 2.4 either orally or in writing.

LESSON 13

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
Section 2.3: “Carbohydrates.”

Complete Experiment 2.2, “Comparing Starch and Smaller Carbohydrates,” when you come to it in the reading.

Answer Comprehension Check questions 2.5 and 2.6 either orally or in writing.

LESSON 14

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
Section 2.4: “Lipids.”

Answer Comprehension Check questions 2.7 and 2.8 either orally or in writing.

LESSON 15

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
Section 2.5: “Proteins.”

Complete Experiment 2.3, “The Effect of Temperature and pH on Proteins,” when you come to it in the reading.

Answer Comprehension Check questions 2.9. 2.10, and 2.11 either orally or in writing.

LESSON 16

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
the first part of Section 2.6: “Nucleic Acids” from the beginning through the paragraph beginning with, “Just as English uses 26 letters in its alphabet to form thousands of words…”

LESSON 17

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
the second part of Section 2.6: “Nucleic Acids” beginning with, “There are two processes by which the information in DNA is used.” through the end of the section.

Answer Comprehension Check questions 2.12, 2.13, and 2.14 either orally or in writing.

LESSON 18

Read and narrate this section in *Discovering Design with Biology*, chapter 2:
Section 2.7: “Chemical Evolution.”

Enter Alexander Oparin, Stanley Miller, Harold Urey, and James Tour in *My Book of Centuries*. Use the suggestions in the Book of Centuries Entries here or customize your entries.

Book of Centuries Entries

Alexander Oparin (1894–1980) proposes the idea of “primordial soup” that gave rise to organic molecules.

Stanley Miller (1930–2007) and Harold Urey (1893–1981) set up an experiment to simulate earth in its “primitive” state.

James Tour (b. 1959) designs and makes molecules that work like machines.

LESSON 19

Review chapter 2, “The Chemistry of Life,” in *Discovering Design with Biology.*

Narrate either orally or in writing. Try to cover these points: substance, atoms, elements, molecules, compounds, chemical formula, ions, properties of water, the different types of carbohydrates, hydroxyl group, dehydration reaction, hydrolysis reaction, saturated and unsaturated fatty acids, hydrogenation, phospholipids, steroids, wax, amino acids, peptide bonds, the four levels of organization within a protein, pH, the makeup of DNA and RNA, how replication and transcription and translation relate to DNA and RNA, left-handed molecule, right-handed molecule, biomachines.

LESSON 20

Look over the Chapter Review for chapter 2 in *Discovering Design with Biology* and answer any questions listed that weren't included in your narration.

LESSON 21

Complete the Test for chapter 2 of *Discovering Design with Biology* either orally or in writing.

LESSON 22

Use today to catch up on chapter 2 of *Discovering Design with Biology* as needed.

Take a few moments to look over the materials that will be needed for the experiments in chapter 3, "Cells," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 3 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-3/.

LESSON 23

Read and narrate these sections in *Discovering Design with Biology*, chapter 3:
"Introduction,"
Section 3.1: "Cell Theory,"
Section 3.2: "Prokaryotes."

Answer Comprehension Check questions 3.1, 3.2, and 3.3 either orally or in writing.

LESSON 24

Read and narrate this section in *Discovering Design with Biology*, chapter 3:
"Eukaryotes."

If you are doing the microscope labs, complete Experiment 3.1, "Using a Microscope to See Cells," when you come to it in the reading.

LESSON 25

Read and narrate this section in *Discovering Design with Biology*, chapter 3:
Section 3.4: "Organelles."

If you are doing the microscope labs, complete Experiment 3.2, "Seeing Two Organelles," when you come to it in the reading.

Answer Comprehension Check questions 3.4, 3.5, and 3.6 either orally or in writing.

Tip: Narrating in shorter segments will help you remember the material better.

LESSON 26

Read and narrate this section in *Discovering Design with Biology*, chapter 3:
Section 3.5: "Membrane Transport."

Complete Experiment 3.3, "Gummy Bear Osmosis," when you come to it in the reading.

Answer Comprehension Check questions 3.7 and 3.8 either orally or in writing.

LESSON 27

Read and narrate these sections in *Discovering Design with Biology*, chapter 3:
Section 3.6: “ATP,”
“Section 3.7: “Photosynthesis.”

Answer Comprehension Check questions 3.9, 3.10, and 3.11 either orally or in writing.

Finish Experiment 3.3, “Gummy Bear Osmosis.”

Enter Melvin Calvin in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Melvin Calvin (1911–1997) receives 1961 Nobel Prize in Chemistry for his discoveries on photosynthesis.

LESSON 28

Read and narrate these sections in *Discovering Design with Biology*, chapter 3:
the first part of Section 3.8: “Cellular Respiration:”
“Introduction,”
“Glycolysis,”
“Fermentation,”
“Krebs Cycle.”

Enter Hans Adolf Krebs in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Hans Adolf Krebs (1900–1983) receives Nobel Prize for Physiology or Medicine in 1953 for his discoveries on cellular respiration.

LESSON 29

Read and narrate this section in *Discovering Design with Biology*, chapter 3:
the last part of Section 3.8: “Cellular Respiration:”
“Electron Transport Chain.”

Answer Comprehension Check questions 3.12, 3.13, and 3.14 either orally or in writing.

LESSON 30

Read and narrate this section in *Discovering Design with Biology*, chapter 3:
Section 3.9: “Evolution: Endosymbiotic Theory.”

Answer Comprehension Check question 3.15 either orally or in writing.

LESSON 31

Review chapter 3, “Cells,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: the three basic parts of Cell Theory; the structures of prokaryotic cells and their functions: plasma membrane, cytoplasm, ribosome, nucleoid, cell wall, capsule, fimbriae, flagellum; the organelles of eukaryotic cells and their functions: plasma membrane, nucleus, endoplasmic reticulum, Golgi, lysosome, mitochondria, cytoskeleton; diffusion; osmosis; endocytosis and exocytosis; ATP; photosynthesis; glycolysis; fermentation; Krebs cycle; electron transport chain; aerobic respiration; anaerobic respiration.

LESSON 32

Look over the Chapter Review for chapter 3 in *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 33

Complete the Test for chapter 3 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 4, “Cell Division,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 4 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-4/.

LESSON 34

Read and narrate these sections in *Discovering Design with Biology*, chapter 4
“Introduction,”
Section 4.1: “Cell Cycle.”

Answer Comprehension Check questions 4.1 and 4.2 either orally or in writing.

LESSON 35

Read and narrate these sections in *Discovering Design with Biology*, chapter 4:
Section 4.2: “Apoptosis,”
Section 4.3: “Budding,”
Section 4.4: “Binary Fission.”

If you are doing the microscope labs, complete Experiment 4.1, “Budding in Yeast,” when you come to it in the reading.

Answer Comprehension Check questions 4.3 and 4.4 either orally or in writing.

LESSON 36

Read and narrate this section in *Discovering Design with Biology*, chapter 4:
the first part of Section 4.5: “Mitosis:”
- “Introduction,”
- “Interphase,”
- “Prophase,”
- “Metaphase.”

LESSON 37

Read and narrate this section in *Discovering Design with Biology*, chapter 4:
the last part of Section 4.5: “Mitosis:”

“Anaphase,”
“Telophase,”
“Differences Among Organisms.”

If you are doing the microscope labs, complete Experiment 4.2, “Mitosis in Animal and Plant Cells,” when you come to it in the reading.

Answer Comprehension Check questions 4.5, 4.6, and 4.7 either orally or in writing.

LESSON 38

Read and narrate this section in *Discovering Design with Biology*, chapter 4:
Section 4.6: “Meiosis.”

Answer Comprehension Check questions 4.8 and 4.9 either orally or in writing.

LESSON 39

Read and narrate this section in *Discovering Design with Biology*, chapter 4:
Section 4.7: “The Human Life Cycle.”

Answer Comprehension Check questions 4.10 and 4.11 either orally or in writing.

LESSON 40

Read and narrate this section in *Discovering Design with Biology*, chapter 4:
Section 4.8: “Reproduction and Artificial Intelligence.”

Answer Comprehension Check question 4.12 either orally or in writing.

LESSON 41

Review chapter 4, “Cell Division,” in *Discovering Design with Biology.*

Narrate either orally or in writing. Try to cover these points: the four phases of the cell cycle; apoptosis; budding; binary fission; cytokinesis; mitosis and its stages: interphase, prophase, metaphase, anaphase, and telophase; meiosis I; meiosis II; spermatogenesis; oogenesis; fertilization.

LESSON 42

Look over the Chapter Review for chapter 4 in *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 43

Complete the Test for chapter 4 of *Discovering Design with Biology* either orally or in writing.

LESSON 44

Use today to catch up on chapter 4 of *Discovering Design with Biology* as needed.

Take a few moments to look over the materials that will be needed for the experiments in chapter 5, “Genetics,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 5 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-5/.

LESSON 45

Read and narrate these sections in *Discovering Design with Biology*, chapter 5:
"Introduction,"
the first part of Section 5.1: "Gregor Mendel and Simple Inheritance" to the Comprehension Check.

Answer Comprehension Check question 5.1 either orally or in writing.

Enter Gregor Mendel in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Gregor Mendel (1822–1884) studies how traits are passed from one generation to another through his work with pea plants.

LESSON 46

Read and narrate this section in *Discovering Design with Biology*, chapter 5:
the last part of Section 5.1: "Gregor Mendel and Simple Inheritance" beginning with the paragraph after the Comprehension Check at the bottom of page 131.

Complete Experiment 5.1, "Simple Punnett Squares and Their Statistical Nature," when you come to it in the reading.

Answer Comprehension Check question 5.2 either orally or in writing.

LESSON 47

Read and narrate this section in *Discovering Design with Biology*, chapter 5:
Section 5.2: "Patterns of Inheritance."

If you are doing the dissection labs, complete Experiment 5.2, "A Possibly Bitter Pedigree," when you come to it in the reading.

Answer Comprehension Check questions 5.3, 5.4, and 5.5 either orally or in writing.

LESSON 48

Read and narrate this section in *Discovering Design with Biology*, chapter 5:
Section 5.3: "Non-Mendelian Inheritance."

Answer Comprehension Check questions 5.6, 5.7, and 5.8 either orally or in writing.

LESSON 49

Read and narrate these sections in *Discovering Design with Biology*, chapter 5:
Section 5.4: "Environment and Genetics,"
Section 5.5: "Human Genome Project and Linkage."

Answer Comprehension Check questions 5.9 and 5.10 either orally or in writing.

LESSON 50

Read and narrate this section in *Discovering Design with Biology*, chapter 5: the first part of Section 5.6: “Chromosomal and Nucleotide Abnormalities:”

“Introduction,”
“Chromosomal Abnormalities,”
“Nucleotide Abnormalities,”
“Mutations in a Group of Nucleotides.”

Enter Barbara McClintock in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Barbara McClintock (1902–1992) receives Nobel Prize in Physiology or Medicine for her work on translocation of nucleotides from one location on a chromosome to another.

LESSON 51

Read and narrate these sections in *Discovering Design with Biology*, chapter 5: the last part of Section 5.6: “Chromosomal and Nucleotide Abnormalities:”

“Point Mutations,”
“Somatic Cell Mutations versus Germline Mutations,”
Section 5.7: “Evolution: Mutations and Information.”

Answer Comprehension Check questions 5.11, 5.12, 5.13, 5.14, and 5.15 either orally or in writing.

Enter John Sanford in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

John Sanford (b. 1950) rejects evolution after experiments to produce better crops through random mutations fail.

LESSON 52

Review chapter 5, “Genetics,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: dominant allele, recessive allele, genotype, homozygous, heterozygous, phenotype, Law of Segregation, Law of Independent Assortment, pedigree, autosome, sex-linked disorder, incomplete dominance, polygenic inheritance, chemicals and genetics, temperature and genetics, light and genetics, Chromosomal abnormalities, Nucleotide abnormalities, mutations in a group of nucleotides, point mutations.

LESSON 53

Look over the Chapter Review for chapter 5 in *Discovering Design with Biology* and answer any questions listed that weren't included in your narration.

LESSON 54

Complete the Test for chapter 5 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 6, "Biotechnology," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 6 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-6/.

LESSON 55

Read and narrate these sections in *Discovering Design with Biology*, chapter 6:
"Introduction,"
Section 6.1: "Biotechnology,"
Section 6.2: "Restriction Endonucleases."

Answer Comprehension Check question 6.1 either orally or in writing.

LESSON 56

Read and narrate these sections in *Discovering Design with Biology*, chapter 6:
Section 6.3: "Gel Electrophoresis,"
Section 6.4: "Polymerase Chain Reaction (PCR)."

Answer Comprehension Check questions 6.2 and 6.3 either orally or in writing.

Enter Kary Mullis in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Kary Mullis (1944–2019) receives the 1993 Nobel Prize in Chemistry for his development of Polymerase Chain Reaction that enabled replication of small pieces of DNA.

LESSON 57

Read and narrate this section in *Discovering Design with Biology*, chapter 6:
Section 6.5: "DNA Analysis."

Answer Comprehension Check questions 6.4 and 6.5 either orally or in writing.

Enter Frederick Sanger in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

> ***Book of Centuries Entry***
>
> *Frederick Sanger (1918–2013) receives the 1980 Nobel Prize in Chemistry for his development of a process to identify individual nucleotides in DNA.*

LESSON 58

Read and narrate this section in *Discovering Design with Biology*, chapter 6:
the first part of Section 6.6: "Genetic Engineering:"
"Recombinant DNA (rDNA),"
"Reproductive Cloning."

If you are doing the microscope labs, complete Experiment 6.1, "Identical DNA Doesn't Mean Identical Structures," when you come to it in the reading.

LESSON 59

Read and narrate this section in *Discovering Design with Biology*, chapter 6:
the last part of Section 6.6: "Genetic Engineering:"
"Therapeutic Cloning,"
"RNA interference (RNAi)."

Answer Comprehension Check questions 6.6 and 6.7 either orally or in writing.

LESSON 60

Read and narrate this section in *Discovering Design with Biology*, chapter 6:
Section 6.7: "Biotechnology Products."

Answer Comprehension Check question 6.8 either orally or in writing.

LESSON 61

Read and narrate these sections in *Discovering Design with Biology*, chapter 6:
Section 6.8: "Gene Therapy,"
Section 6.9: "Genomics."

LESSON 62

Read and narrate these sections in *Discovering Design with Biology*, chapter 6:
Section 6.10: "CRISPR,"
Section 6.11: "Bioethics."

Answer Comprehension Check questions 6.9 and 6.10 either orally or in writing.

LESSON 63

Review chapter 6, "Biotechnology," in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: bacteriophages, biotechnology, recombinant DNA, genetic engineering, restriction endonucleases, palindrome, gel

electrophoresis, Polymerase Chain Reaction, DNA sequencing, restriction fragment length polymorphism, short tandem repeat profiling, reproductive cloning, therapeutic cloning, RNA interference, products made with biotechnology, gene therapy, genomics, CRISPR.

LESSON 64

Look over the Chapter Review for chapter 6 in *Discovering Design with Biology* and answer any questions listed that weren't included in your narration.

LESSON 65

Complete the Test for chapter 6 of *Discovering Design with Biology* either orally or in writing.

LESSON 66

Use today to catch up on chapter 6 of *Discovering Design in Biology* as needed.

Take a few moments to look over the materials that will be needed for the experiments in chapter 7, "Microbiology — Archaea and Bacteria," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 7 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-7/.

LESSON 67

Read and narrate these sections in *Discovering Design with Biology*, chapter 7:
"Introduction,"
the first part of Section 7.1: "Microbiology:"
"Microscopy."

Answer Comprehension Check question 7.1 either orally or in writing.

Enter Anton van Leeuwenhoek, Ernst Ruska, Max Knoll, Gerd Binnig, Heinrich Rohrer, and Hans Christian Gram in *My Book of Centuries*. Use the suggestions in the Book of Centuries Entries here or customize your entries.

Book of Centuries Entries

Anton van Leeuwenhoek (1632–1723) creates a simple lens to view microscopic organisms.

Ernst Ruska (1906–1988) and Max Knoll (1897–1969) invent the transmission electron microscope.

Gerd Binnig (b. 1947) and Heinrich Rohrer (1933–2013) invent the scanning tunneling microscope.

Hans Christian Gram (1853–1938) develops the Gram stain to distinguish different types of bacteria.

LESSON 68

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
the last part of Section 7.1: Microbiology:"
"Culturing."

Complete Experiment 7.1, "Culturing Bacteria in Broth," when you come to it in the reading.

Answer Comprehension Check question 7.2 either orally or in writing.

LESSON 69

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
Section 7.2: “Archaea.”

Answer Comprehension Check questions 7.3 and 7.4 either orally or in writing.

LESSON 70

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
the first part of Section 7.3: “General Characteristics of Eubacteria (bacteria):”
- “Introduction,”
- “Reproduction,”
- “Structure,”
- “Biochemistry.”

LESSON 71

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
the last part of Section 7.3: “General Characteristics of Eubacteria (bacteria):”
- “Immune System.”

Complete Experiment 7.2, “Examining Your Cultures,” when you come to it in the reading. If you are not doing the microscope labs, complete the first two steps of the experiment.

Note: If it has not been three full days since you set out your cultures, wait another day to complete Experiment 7.2, “Examining Your Cultures.”

Answer Comprehension Check questions 7.5 and 7.6 either orally or in writing.

LESSON 72

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
the first part of Section 7.4: “Classification of Bacteria:”
- “Introduction,”
- “Proteobacteria Gram-Negative Bacteria.”

Note: If you have not completed Experiment 7.2, “Examining Your Cultures,” do that today.

LESSON 73

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
the last part of Section 7.4: “Classification of Bacteria:”
- “Nonproteobacteria Gram-Negative Bacteria,”
- “Gram-Positive Bacteria.”

Answer Comprehension Check questions 7.7 and 7.8 either orally or in writing.

LESSON 74

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
Section 7.5: “Viruses, Viroids, and Prions.”

Answer Comprehension Check questions 7.9 and 7.10 either orally or in writing.

LESSON 75

Read and narrate this section in *Discovering Design with Biology*, chapter 7:
Section 7.6: “Evolution Challenges.”

Answer Comprehension Check question 7.11 either orally or in writing.

LESSON 76

Review chapter 7, “Microbiology — Archaea and Bacteria,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: the development of the microscope, the different stains used in microscopy, culturing microbes, extremophiles, the four groups of Archaea and their characteristics, bacteria reproduction, structure of bacteria, shapes of bacteria, photosynthetic bacteria, aerobic bacteria, anaerobic bacteria, facultative anaerobes, bacteria and your immune system, proteobacteria Gram-negative bacteria, nonproteobacteria Gram-negative bacteria, Gram-positive bacteria, characteristics of viruses, lytic cycle, lysogenic cycle.

LESSON 77

Look over the Chapter Review for chapter 7 in *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 78

Complete the Test for chapter 7 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 8, “Microbiology — Protists and Fungi,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 8 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-8/.

LESSON 79

Read and narrate these sections in *Discovering Design with Biology*, chapter 8:
“Introduction,”
Section 8.1: “Introduction to Protists,”
Section 8.2: “Characteristics of Protists.”

Complete Experiment 8.1, “Growing Fungi,” when you come to it in the reading.

Answer Comprehension Check question 8.1 either orally or in writing.

LESSON 80

Read and narrate this section in *Discovering Design with Biology*, chapter 8:
the first part of Section 8.3: “Classification of Protists:”
- “Introduction,”
- “Excavata,”
- “Chromalveolata.”

Answer Comprehension Check questions 8.2, 8.3, and 8.4 either orally or in writing.

Check on Experiment 8.1, “Growing Fungi.”

LESSON 81

Read and narrate this section in Discovering Design with Biology, chapter 8:
the last part of Section 8.3: “Classification of Protists:”

"Rhizaria,"
"Archaeplastids,"
"Amoebozoa,"
"Opisthokonta."

Answer Comprehension Check questions 8.5, 8.6, and 8.7 either orally or in writing.

Check on Experiment 8.1, "Growing Fungi."

LESSON 82

Complete Experiment 8.2, "Examining Some Protists."

Check on Experiment 8.1, "Growing Fungi."

LESSON 83

Read and narrate these sections in *Discovering Design with Biology*, chapter 8:
Section 8.4: "Introduction to the Fungi,"
Section 8.5: "Characteristics of Fungi."

Answer Comprehension Check questions 8.8 and 8.9 either orally or in writing.

Check on Experiment 8.1, "Growing Fungi."

LESSON 84

Read and narrate this section in *Discovering Design with Biology*, chapter 8:
the first part of Section 8.6: "Classification of Fungi:"
"Introduction,"
"Microsporidians,"
"Chytridiomycota (also called chytrid fungi),"
"Zygomycota (also called zygospore fungi)."

Check on Experiment 8.1, "Growing Fungi."

LESSON 85

Read and narrate this section in *Discovering Design with Biology*, chapter 8:
the last part of Section 8.6: "Classification of Fungi:"
"Ascomycota (also called sac fungi),"
"Basidiomycota (also called club fungi),"
"Deuteromycota (also called imperfect fungi)."

Answer Comprehension Check questions 8.10, 8.11, and 8.12 either orally or in writing.

Check on Experiment 8.1, "Growing Fungi."

LESSON 86

Complete Experiment 8.3, "Examining Some Fungi." If you are doing the microscope labs, examine the fungi and note their characteristics. Use a magnifying glass if you have one to get a better look at the fungi.

LESSON 87

Read and narrate these sections in *Discovering Design with Biology*, chapter 8:
Section 8.7: "Symbiosis in Fungi,"

Section 8.8: “Diseases Caused by Fungi,”
Section 8.9: “Evolution — Classification Using Phylogenetics.”

Answer Comprehension Check question 8.13 either orally or in writing.

LESSON 88

Review chapter 8, “Microbiology — Protists and Fungi,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: phytoplankton, zooplankton, supergroup, the characteristics of Euglena, contractile vacuole, characteristics of diatoms, the relationship between protists and diseases such as malaria and African Sleeping Sickness, characteristics of Paramecium, radiolarians, alternation of generations, gametophyte, sporophyte, Amoeba, slime molds, plasmodium, asexual reproduction in fungi, sexual reproduction in fungi, fruiting body, characteristics of fungi, microsporidians, chytrid fungi, zygospore fungi, sac fungi, Penicillium, yeast, pasteurization, club fungi, imperfect fungi, commensalism, parasitism, mutualism, phylogenetic tree.

LESSON 89

Look over the Chapter Review for chapter 8 in *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 90

Complete the Test for chapter 8 of *Discovering Design with Biology* either orally or in writing.

Note: If your student is completing the final exams, have him study for the Semester 1 Final Exam and complete the exam.

LESSON 91

Use today to catch up on chapter 8 of *Discovering Design with Biology* as needed.

Take a few moments to look over the materials that will be needed for the experiments in chapter 9, “Invertebrates,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 9 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-9/.

LESSON 92

Read and narrate these sections in *Discovering Design with Biology*, chapter 9:
“Introduction,”
Section 9.1: “Invertebrate Characteristics,”
Section 9.2: “Phylum Porifera.”

Answer Comprehension Check questions 9.1 and 9.2 either orally or in writing.

LESSON 93

Read and narrate this section in *Discovering Design with Biology*, chapter 9:
Section 9.3: “Phylum Ctenophora and Cnidaria.”

Answer Comprehension Check questions 9.3 and 9.4 either orally or in writing.

LESSON 94

Read and narrate this section in *Discovering Design with Biology*, chapter 9:
Section 9.4: “Phylum Platyhelminthes.”

If you are doing the microscope labs, complete Experiment 9.1, “Examining a Hydra and a Planarian,” when you come to it in the reading.

Answer Comprehension Check questions 9.5 and 9.6 either orally or in writing.

LESSON 95

Read and narrate these sections in *Discovering Design with Biology*, chapter 9:
Section 9.5: “Phylum Echinodermata,”
Section 9.6: “Phylum Mollusca.”

Answer Comprehension Check questions 9.7 and 9.8 either orally or in writing.

LESSON 96

Read and narrate these sections in *Discovering Design with Biology*, chapter 9:
Section 9.7: “Phylum Nematoda,”
Section 9.8: “Phylum Annelida.”

LESSON 97

If you are doing the dissection labs, complete Experiment 9.2, “Earthworm Dissection.”

Answer Comprehension Check questions 9.9 and 9.10 either orally or in writing.

LESSON 98

Read and narrate this section in *Discovering Design with Biology*, chapter 9:
the first part of Section 9.9: “Phylum Arthropoda:”
“Introduction,”
“Arachnids.”

LESSON 99

Read and narrate this section in *Discovering Design with Biology*, chapter 9:
the next part of Section 9.9: Phylum “Arthropoda:”
“Crustaceans.”

If you are doing the dissection labs, complete Experiment 9.3, “Crayfish Dissection,” when you come to it in the reading.

Answer Comprehension Check question 9.11 either orally or in writing.

LESSON 100

Read and narrate this section in *Discovering Design with Biology*, chapter 9:
the last part of Section 9.9: “Phylum Arthropoda:”
“Insects,”
“Millipedes and centipedes.”

LESSON 101

Read and narrate these sections in *Discovering Design with Biology*, chapter 9:
Section 9.10: “Invertebrates in Phylum Chordata,”
Section 9.11: “Challenges for Evolution.”

Answer Comprehension Check question 9.12 either orally or in writing.

LESSON 102

Review chapter 9, “Invertebrates,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: exoskeleton, hermaphroditic, characteristics of sponges, characteristics of jellyfish, reproduction in jellyfish, characteristics of sea anemones, characteristics of coral, characteristics of Planarian, life cycle of a liver fluke, characteristics of a tapeworm, characteristics of a sea star, life cycle of echinoderms, anatomy and characteristics of a snail, characteristics of cephalopods, characteristics of bivalves, characteristics of roundworms, anatomy of an earthworm, characteristics of arachnids, characteristics of crustaceans, characteristics of insects, characteristics of millipedes and centipedes, characteristics of invertebrates in phylum Chordata.

LESSON 103

Look over the Chapter Review for chapter 9 of *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 104

Complete the Test for chapter 9 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 10, “Vertebrates: Fish and Amphibians,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 10 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-10/.

LESSON 105

Read and narrate these sections in *Discovering Design with Biology*, chapter 10:
“Introduction,”
Section 10.1: “Characteristics of Vertebrates,”
Section 10.2: “Characteristics of Fish,”
Section 10.3: “Agnatha (the Jawless Fish).”

Answer Comprehension Check questions 10.1 and 10.2 either orally or in writing.

LESSON 106

Read and narrate this section in *Discovering Design with Biology*, chapter 10:
Section 10.4: “Chondrichthyes (the Cartilaginous Fish).”

Answer Comprehension Check questions 10.3 and 10.4 either orally or in writing.

LESSON 107

Read and narrate this section in *Discovering Design with Biology*, chapter 10:
the first part of Section 10.5: “Osteichthyes (the Bony Fish):”
“Introduction.”

If you are doing the dissection labs, complete Experiment 10.1, “Perch Dissection,” when you come to it in the reading.

Answer Comprehension Check questions 10.5 and 10.6 either orally or in writing.

LESSON 108

Read and narrate this section in *Discovering Design with Biology*, chapter 10:
the last part of Section 10.5: “Osteichthyes (the Bony Fish):”
“Ray-finned Fish,”
“Lobe-finned Fish.”

Answer Comprehension Check questions 10.7 and 10.8 either orally or in writing.

LESSON 109

Read and narrate these sections in *Discovering Design with Biology*, chapter 10:
Section 10.6: “Characteristics of Amphibians,”
Section 10.7: “Order Caudata.”

Answer Comprehension Check questions 10.9 and 10.10 either orally or in writing.

LESSON 110

Read and narrate this section in *Discovering Design with Biology*, chapter 10:
the first part of Section 10.8: “Order Anura — Frogs and Toads:”
“Introduction.”

If you are doing the dissection labs, complete Experiment 10.2, “Frog Dissection,” when you come to it in the reading.

Answer Comprehension Check question 10.11 either orally or in writing.

LESSON 111

Read and narrate this section in *Discovering Design with Biology*, chapter 10:
the last part of Section 10.8: “Order Anura — Frogs and Toads”
“Diversity Among Frogs,”
“Diversity Among Toads.”

LESSON 112

Read and narrate these sections in *Discovering Design with Biology*, chapter 10:
Section 10.9: “Order Apoda — Caecilians,”
Section 10.10: “Evolution of Fish to Amphibians.”

Answer Comprehension Check questions 10.13, 10.14, and 10.15 either orally or in writing.

LESSON 113

Review chapter 10, “Vertebrates: Fish and Amphibians,” in *Discovering Design with Biology.*

Narrate either orally or in writing. Try to cover these points: general characteristics of vertebrates, common characteristics of fish, spawning, characteristics of jawless fish, characteristics of cartilaginous fish, ovoviviparous, oviparous, viviparous, common characteristics of bony fish, anatomy of bony fish, characteristics of ray-finned fish, characteristics of lobe-finned fish, anadromous, living fossil, general characteristics of amphibians, life cycle of amphibians, characteristics of salamanders, spermatophore, characteristics of frogs, aposematic coloration, anatomy of a frog, characteristics of toads, characteristics of caecilians.

LESSON 114

Look over the Chapter Review for chapter 10 in *Discovering Design with Biology* and answer any questions listed that weren't included in your narration.

LESSON 115

Complete the Test for chapter 10 of *Discovering Design with Biology* either orally or in writing.

LESSON 116

Use today to catch up on chapter 10 of *Discovering Design with Biology* as needed.

Take a few moments to look over the materials that will be needed for the experiments in chapter 11, "Reptiles, Birds, and Mammals," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 11 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-11/.

LESSON 117

Read and narrate these sections in *Discovering Design with Biology*, chapter 11:
"Introduction,"
the first part of Section 11.1: "Reptiles:"
"Introduction" (stop at the Comprehension Check questions).

Complete Experiment 11.1, "Egg Dissection," when you come to it in the reading. If you do not have the dissection kit, use any metal household item that ends in a sharp point for the experiment.

Answer Comprehension Check questions 11.1 and 11.2 either orally or in writing.

LESSON 118

Read and narrate this section in *Discovering Design with Biology*, chapter 11:
the next part of Section 11.1: "Reptiles:"
"Order Crocodilia: Crocodiles, Alligators, Caimans, and Gharials;"
"Order Sphenodontia: tuataras;"
the "Lizards" section of "Order Squamata: lizards, snakes."

LESSON 119

Read and narrate this section in *Discovering Design with Biology*, chapter 11:
the last part of Section 11.1: "Reptiles:"
the "Snakes" section of "Order Squamata: lizards, snakes"
"Order Testudines: turtles, tortoises, terrapins."

Answer Comprehension Check questions 11.3, 11.4, and 11.5 either orally or in writing.

Enter Mary Schweitzer in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

> ***Book of Centuries Entry***
>
> *Mary Schweitzer (?) discovers soft tissue in a dinosaur fossil.*

LESSON 120

Read and narrate this section in *Discovering Design with Biology*, chapter 11:
the first part of Section 11.2: "Birds:"
"Introduction" (stop at the Comprehension Check questions).

Complete Experiment 11.2, "Analyzing a Feather," when you come to it in the reading. If you do not have the dissection kit, use household tools to open up the shaft of the feather. A magnifying glass can be used to observe the feather if you do not have a microscope.

Answer Comprehension Check questions 11.6 and 11.7 either orally or in writing.

LESSON 121

Read and narrate this section in *Discovering Design with Biology*, chapter 11:
the last part of Section 11.2: "Birds:"
"Flightless Birds,"
"Flying Birds."

Answer Comprehension Check question 11.8 either orally or in writing.

LESSON 122

Read and narrate this section in *Discovering Design with Biology*, chapter 11:
the first part of Section 11.3: "Mammals:"
"Introduction,"
"Monotremes,"
"Marsupials."

LESSON 123

Read and narrate these sections in *Discovering Design with Biology*, chapter 11:
the last part of Section 11.3: "Mammals:"
"Placental Mammals,"
Section 11.4: "Challenges for Evolution."

Answer Comprehension Check questions 11.9, 11.10, and 11.11 either orally or in writing.

LESSON 124

Review chapter 11, "Reptiles, Birds, and Mammals," in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: general characteristics of reptiles; parts of an amniotic egg; characteristics of crocodilians; characteristics of tuataras; characteristics of lizards; characteristics of snakes; the different types of snake venom; Jacobson's organ; characteristics of turtles, tortoises, and terrapins; dinosaurs; general

characteristics of birds; the different type of feathers; characteristics of flightless birds; characteristics of flying birds; general characteristics of mammals; characteristics of the duck-billed platypus and echidna; characteristics of marsupials; characteristics of placental mammals.

LESSON 125

Look over the Chapter Review for chapter 11 in *Discovering Design with* Biology and answer any questions listed that weren't included in your narration.

LESSON 126

Complete the Test for chapter 11 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 12, "Primates and Humans," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 12 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-12/.

LESSON 127

Read and narrate these sections in *Discovering Design with Biology*, chapter 12:
"Introduction,"
Section 12.1: "Primates,"
Section 12.2: "Humans."

Answer Comprehension Check questions 12.1 and 12.2 either orally or in writing.

LESSON 128

Read and narrate this section in *Discovering Design with Biology*, chapter 12:
Section 12.3: "The Nervous System."

Complete Experiment 12.1, "Reaction Versus Reflex," when you come to it in the reading.

Answer Comprehension Check question 12.3 either orally or in writing.

LESSON 129

Read and narrate this section in *Discovering Design with Biology*, chapter 12:
Section 12.4: "The Cardiovascular System."

If you are doing the microscope labs, complete Experiment 12.2, "Examining Your Own Blood," when you come to it in the reading.

Answer Comprehension Check questions 12.4 and 12.5 either orally or in writing.

LESSON 130

Read and narrate this section in *Discovering Design with Biology*, chapter 12:
Section 12.5: "The Immune System."

Answer Comprehension Check question 12.6 either orally or in writing.

LESSON 131

Read and narrate this section in *Discovering Design with Biology*, chapter 12:
Section 12.6: "The Digestive System."

Answer Comprehension Check question 12.7 either orally or in writing.

LESSON 132

Read and narrate this section in *Discovering Design with Biology*, chapter 12:
Section 12.7: “The Respiratory System.”

Complete Experiment 12.3, “Diffusion Through Plastic,” when you come to it in the reading. If you do not have the microscope kit, you can purchase iodine from a drug store.

Answer Comprehension Check question 12.8 either orally or in writing.

LESSON 133

Read and narrate these sections in *Discovering Design with Biology*, chapter 12:
Section 12.8: “The Renal System,”
Section 12.9: “The Reproductive Systems,”
Section 12.10: “*Imago Dei*.”

Answer Comprehension Check question 12.9 either orally or in writing.

Enter Willem Kolff in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Willem Kolff (1911–2009) invents a kidney dialysis machine, creates many artificial organs, and receives the Nobel Prize in Physiology or Medicine in 2003.

LESSON 134

Read and narrate this section in *Discovering Design with Biology*, chapter 12:
Section 12.11: “Human Evolution.”

Answer Comprehension Check question 12.10 either orally or in writing.

Enter Thomas Nagel in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Thomas Nagel (b. 1937), atheist philosopher who wrote the book Mind and Cosmos: Why the Materialist Neo-Darwinian Conception of Nature Is Almost Certainly False *in which he explains that the evolutionary view is certainly false because there is no evolutionary explanation for the characteristics that separate humans from animals.*

LESSON 135

Review chapter 12, “Primates and Humans,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: characteristics of primates, structural differences between humans and primates, central nervous system, peripheral nervous system, parts of a neuron, autonomic nervous system, somatic nervous system, the makeup of blood, the parts of the heart, how the heart circulates blood, veins and arteries, immune system, lymphocytes, thymus, spleen, appendix, innate immunity, adaptive immunity, parts of the digestive system and their role in digestion, mechanical digestion, chemical digestion, parts of the respiratory system and their role in breathing, kidneys, reproductive system, how humans are uniquely different from animals.

LESSON 136

Look over the Chapter Review for chapter 12 in *Discovering Design with* Biology and answer any questions listed that weren’t included in your narration.

LESSON 137

Complete the Test for chapter 12 of *Discovering Design with Biology* either orally or in writing.

LESSON 138

Use today to catch on chapter 12 of *Discovering Design in Biology* as needed.

Take a few moments to look over the materials that will be needed for the experiments in chapter 13, “Plants — Anatomy and Classification,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 13 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-13/.

LESSON 139

Read and narrate these sections in *Discovering Design with Biology*, chapter 13:
“Introduction,”
the first part of Section 13.1: “Overview:”
“Cells.”

Answer Comprehension Check questions 13.1 and 13.2 either orally or in writing.

LESSON 140

Read and narrate this section in *Discovering Design with Biology*, chapter 13:
the last part of Section 13.1 “Overview:”
“Tissues,”
“Organs.”

Complete Experiment 13.1, “A Flower Dissection,” when you come to it in the reading. If you don’t have the dissection kit, use household items to take apart the flower. If you don’t have a microscope, observe as much as you are able with a magnifying glass.

Answer Comprehension Check questions 13.3 and 13.4 either orally or in writing.

Enter Robert Hooke in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Robert Hooke (1635–1703) discovers cells in cork.

LESSON 141

Read and narrate this section in *Discovering Design with Biology*, chapter 13:
Section 13.2: “Root System.”

Answer Comprehension Check questions 13.5 and 13.6 either orally or in writing.

LESSON 142

Read and narrate this section in *Discovering Design with Biology*, chapter 13:
Section 13.3: “Stem (or Shoot) System.”

If you are doing the microscope labs, complete Experiment 13.2, “Stems and Roots,” when you come to it in the reading.

Answer Comprehension Check questions 13.7 and 13.8 either orally or in writing.

LESSON 143

Read and narrate this section in *Discovering Design with Biology*, chapter 13:
Section 13.4: “Leaf System.”

If you are doing the microscope labs, complete Experiment 13.3, “The Microscopic Structure of a Leaf,” when you come to it in the reading.

Answer Comprehension Check questions 13.9 and 13.10 either orally or in writing.

LESSON 144

Read and narrate these sections in *Discovering Design with Biology*, chapter 13:
Section 13.5: “Flowers, Fruits, and Seeds,”
the first part of Section 13.6: ‘Classification:”
“Introduction,”
“Non-vascular Plants.”

Answer Comprehension Check question 13.11 either orally or in writing.

LESSON 145

Read and narrate these sections in *Discovering Design with Biology*, chapter 13:
the last part of Section 13.6: “Classification:”
“Seedless Vascular Plants,”
“Seed-Making Plants,”
Section 13.7: “Angiosperm Explosion.”

Answer Comprehension Check questions 13.12 and 13.13 either orally or in writing.

LESSON 146

Review chapter 13, “Plants — Anatomy and Classification,” of *Discovering Design with* Biology.

Narrate either orally or in writing. Try to cover these points: plant cell organelles, turgor pressure, chloroplasts, chromoplasts, the seven types of plant cells, meristematic tissue, ground tissue, vascular tissue, parts of a leaf, parts of a flower, taproot system, fibrous root system, structure of a root, adventitious roots, food-storage roots, structure of a stem, structure of a woody plant stem, growth rings, stolon, rhizome, tuber, bulb, corm, types of leaves, arrangement of leaves on a stem, microscopic structure of a leaf, types of specialized leaves, parts of a seed, how seeds are dispersed, fruit, three categories for fruit, non-vascular plants, seedless vascular plants, seed-making plants, cotyledon, deciduous.

LESSON 147

Look over the Chapter Review for chapter 13 of *Discovering Design with Biology* and answer any questions listed that weren't included in your narration.

LESSON 148

Complete the Test for chapter 13 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 14, "Plants — Physiology," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 14 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-14/.

LESSON 149

Read and narrate these sections in *Discovering Design with Biology*, chapter 14:
"Introduction,"
Section 14.1: "Photosynthesis."

Complete steps 1 through 6 of Experiment 14.1, "Germination and Growth of a Bean Plant," when you come to it in the reading.

LESSON 150

Read and narrate this section in *Discovering Design with Biology*, chapter 14:
Section 14.2: "Vascular System Movement."

Complete Experiment 14.2, "Water Transport in Plants," when you come to it in the reading.

Answer Comprehension Check questions 14.1, 14.2, and 14.3 either orally or in writing.

Check on Experiment 14.1, "Germination and Growth of a Bean Plant."

LESSON 151

Read and narrate these sections in *Discovering Design with Biology*, chapter 14:
Section 14.3: "Nitrogen Fixation,"
Section 14.4: "Reproduction,"
Section 14.5: "Growth."

Answer Comprehension Check questions 14.4 and 14.5 either orally or in writing.

Check on Experiment 14.1, "Germination and Growth of a Bean Plant."

LESSON 152

Read and narrate this section in *Discovering Design with Biology*, chapter 14:
Section 14.6: “Photoperiodism.”

Answer Comprehension Check questions 14.6, 14.7, and 14.8 either orally or in writing.

Check on Experiment 14.1, “Germination and Growth of a Bean Plant.” If you have at least one seed that you can see roots and what appear to be leaves, then complete steps 7–12 of Experiment 14.1, “Germination and Growth of a Bean Plant.”

Enter Frits Went in *My Book of Centuries*. Use the suggestion in the Book of Centuries Entry here or customize your entry.

Book of Centuries Entry

Frits Went (1903–1990) experiments with agar in shoot growth on plants.

LESSON 153

Read and narrate this section in *Discovering Design with Biology*, chapter 14:
Section 14.7: “Plant Hormones.”

Answer Comprehension Check question 14.9 either orally or in writing.

Check on Experiment 14.1, “Germination and Growth of a Bean Plant.” If you have not completed steps 7–12 yet and if you have at least one seed that you can see roots and what appear to be leaves, then complete steps 7–12 of Experiment 14.1, “Germination and Growth of a Bean Plant.”

LESSON 154

Read and narrate these sections in *Discovering Design with Biology*, chapter 14:
Section 14.8: “Tropism,”
Section 14.9: “Plants and Personhood.”

Answer Comprehension Check question 14.10 either orally or in writing.

Check on Experiment 14.1, “Germination and Growth of a Bean Plant.” If you have not completed steps 7–15 yet and if you have at least one seed that you can see roots and what appear to be leaves, then complete steps 7–15 of Experiment 14.1, “Germination and Growth of a Bean Plant. If you have completed steps 7–15 and your bean plant is a few inches above the top of the cup, then complete steps 16–18 of Experiment 14.1, “Germination and Growth of a Bean Plant.”

LESSON 155

Review chapter 14, “Plants — Physiology,” *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: the process of photosynthesis, xylem, cohesion-tension transport, phloem, pressure-flow, nitrogen fixation, vegetative reproduction, sexual reproduction and pollination, germination, photoperiodism, circadian rhythms, long-day plants, short-day plants, day-neutral plants, thermoperiodism, annual

plants, perennial plants, biennial plants, abscission, dormancy, quiescence, senescence, plant hormones and their functions, phototropism, gravitropism, thigmotropism.

Check on Experiment 14.1, "Germination and Growth of a Bean Plant." If you have completed steps 7–15 and your bean plant is a few inches above the top of the cup, then complete steps 16–18 of Experiment 14.1, "Germination and Growth of a Bean Plant." If you have completed steps 16–18 and your bean plant is noticeably tilting in one direction, then complete step 19.

LESSON 156

Look over the Chapter Review for chapter 14 of *Discovering Design with Biology* and answer any questions listed that weren't included in your narration.

Check on Experiment 14.1, "Germination and Growth of a Bean Plant." If you have completed steps 7–15 and your bean plant is a few inches above the top of the cup, then complete steps 16–18 of Experiment 14.1, "Germination and Growth of a Bean Plant." If you have completed steps 16–18 and your bean plant is noticeably tilting in one direction, then complete steps 19 and 20.

LESSON 157

Complete the Test for chapter 14 of *Discovering Design with Biology* either orally or in writing.

Check on Experiment 14.1, "Germination and Growth of a Bean Plant." If you have completed steps 16–18 and your bean plant is noticeably tilting in one direction, then complete steps 19 and 20. If you have observed the bean plant tilt in two different directions, complete step 21.

LESSON 158

Use today to catch up on chapter 14 of *Discovering Design with Biology* as needed.

Check on Experiment 14.1, "Germination and Growth of a Bean Plant." If you have completed steps 16–18 and your bean plant is noticeably tilting in one direction, then complete steps 19 and 20. If you have observed the bean plant tilt in two different directions, complete step 21. Otherwise, continue observing your bean plant daily. When you have observed it tilting in two different directions, complete step 21.

Take a few moments to look over the materials that will be needed for the experiments in chapter 15, "Environmental Science," and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 15 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-15/.

LESSON 159

Read and narrate these sections in *Discovering Design with Biology*, chapter 15:
"Introduction,"
Section 15.1: "Energy Flow."

LESSON 160

Read and narrate this section in *Discovering Design with Biology*, chapter 15:
Section 15.2: "Global Biogeochemical Cycle."

Complete Experiment 15.1, "Cloud Formation," when you come to it in the reading.

Answer Comprehension Check questions 15.1, 15.2, 15.3, and 15.4 either orally or in writing.

LESSON 161

Read and narrate these sections in *Discovering Design with Biology*, chapter 15:
Section 15.3: “Climate,”
Section 15.4: “Soil.”

Answer Comprehension Check questions 15.5 and 15.6 either orally or in writing.

LESSON 162

Read and narrate these sections in *Discovering Design with Biology*, chapter 15:
Section 15.5: “Conservation Biology,”
Section 15.6: “Biodiversity.”

Answer Comprehension Check question 15.7 either orally or in writing.

LESSON 163

Read and narrate this section in *Discovering Design with Biology*, chapter 15:
the first part of Section 15.7: “Drivers of Change” from the beginning to Comprehension Check question 15.8.

Complete Experiment 15.2, “Air Pollution,” when you come to it in the reading. If you do not have the microscope kit, put the petroleum jelly on glasses, use clear plastic wrap for step 2, and put the outside glass on the ground for step 7. You will not need the tape used in step 7. Use a magnifying glass to observe the samples.

Answer Comprehension Check question 15.8 either orally or in writing.

LESSON 164

Read and narrate this section in *Discovering Design with Biology*, chapter 15:
the last part of Section 15.7: “Drivers of Change” from the paragraph after Comprehension Check question 15.8 through the end of the section.

Answer Comprehension Check question 15.9 either orally or in writing.

Complete Experiment 15.2, “Air Pollution.”

LESSON 165

Read and narrate this section in *Discovering Design with Biology*, chapter 15:
Section 15.8: “Sustainability.”

LESSON 166

Read and narrate this section in *Discovering Design with Biology*, chapter 15:
Section 15.9: “Climate Change.”

Complete Experiment 15.3, “Carbon Dioxide Is a Greenhouse Gas,” when you come to it in the reading.

LESSON 167

Review chapter 15, “Environmental Science,” in *Discovering Design with Biology*.

Narrate either orally or in writing. Try to cover these points: ecological pyramid; the hydrologic cycle; the carbon cycle; the nitrogen cycle; the phosphorus cycle; climate; the three basic groups of soil: sand, silt, clay; aggregates; conservation biology; biodiversity conservation; natural resources; drivers of change: exploitation; drivers of change: pollution; drivers of change: habitat loss; drivers of change: extinction; drivers of change: introduction of invasive species; sustainability; renewable resources; climate change.

LESSON 168

Look over the Chapter Review for chapter 15 in *Discovering Design with Biology* and answer any questions listed that weren’t included in your narration.

LESSON 169

Complete the Test for chapter 15 of *Discovering Design with Biology* either orally or in writing.

Take a few moments to look over the materials that will be needed for the experiments in chapter 16, “Ecosystems,” and gather them.

Make note of what experiment samples, videos, and articles are available for chapter 16 at https://bereanbuilders.com/ecomm/online-content/discovering-design-with-biology/ddb-chapter-16/.

Look over Experiment 16.1, “Terrestrial and Aquatic Ecosystems,” on page 502 and plan a time to visit a nearby body of water.

LESSON 170

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
“Introduction,”
the first part of Section 16.1: “Interactions in Populations and Communities” from the beginning to Comprehension Check questions 16.1 and 16.2.

Answer Comprehension Check questions 16.1 and 16.2, either orally or in writing.

LESSON 171

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
the last part of Section 16.1: “Interactions in Populations and Communities” starting at “Population Growth,”
Section 16.2: “Ecosystems and the Biosphere.”

Answer Comprehension Check question 16.3 either orally or in writing.

LESSON 172

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
Section 16.3: “Rainforests,”
Section 16.4: “Deserts.”

Answer Comprehension Check question 16.4 either orally or in writing.

LESSON 173

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
Section 16.5: “Temperate Forests,”
Section 16.6: “Grasslands.”

Answer Comprehension Check questions 16.5, 16.6, and 16.7 either orally or in writing.

LESSON 174

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
Section 16.7: “Scrublands,”
Section 16.8: “Coniferous Forests.”

Answer Comprehension Check question 16.8 either orally or in writing.

LESSON 175

Read and narrate this section in *Discovering Design with Biology*, chapter 16:
Section 16.9: “Tundra.”

Complete Experiment 16.1, “Terrestrial and Aquatic Ecosystems,” when you come to it in the reading.

Answer Comprehension Check question 16.9 either orally or in writing.

LESSON 176

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
Section 16.10: “Freshwater Ecosystems,”
Section 16.11: “Estuary Ecosystems,”
Section 16.12: “The Ocean Ecosystem.”

Answer Comprehension Check questions 16.10 and 16.11 either orally or in writing.

Check Experiment 16.1, “Terrestrial and Aquatic Ecosystems.”

LESSON 177

Read and narrate these sections in *Discovering Design with Biology*, chapter 16:
Section 16.13: “Fine-Tuning in Ecosystems,”
“Some Final Thoughts.”

Complete Experiment 16.2, “A Small Aquatic Ecosystem,” when you come to it in the reading. If you do not have the microscope kit, observe as much as you can with a magnifying glass.

LESSON 178

Review chapter 16, “Ecosystems,” in *Discovering Design with Biology.*

Narrate either orally or in writing. Try to cover these points: individual, population, community, give definitions and examples of independence, cooperation, and competition, three categories of symbiosis with examples, predation, two patterns of population growth, two types of ecological succession, habitat, biome, ecosystem, biosphere, rainforests, deserts, temperate forests, grasslands, scrublands, coniferous forests, tundra, freshwater ecosystems, estuary ecosystems, ocean ecosystem.

LESSON 179

Look over the Chapter Review for chapter 16 in *Discovering Design with Biology* and answer any questions that weren't included in the narration.

LESSON 180

Complete the Test for chapter 16 of *Discovering Design with Biology* either orally or in writing.

Note: If your student is completing the final exams, have him study for the Semester 2 Final Exam and complete it.