

STUDY GUIDE TIPS: ** ONLY the first THREE pages of this packet are required for the test.

- **READ THE LESSONS.** Your homework in each unit is always to schedule your time each night so that over the 2 or 3 weeks of a unit you will read all lessons covered on the quiz or test. If you WAIT until the night or two before an assessment, you will be LATE.
- **OUTLINE LESSONS IF NEEDED:** Optional - many students find it very helpful both for understanding and remembering concepts.
- **VOCAB:** Be sure you know the definitions of the vocab for Lessons 1, 2, and 3 and can match them. The key to remembering the core concept about each one is to reduce the definition to the smallest number of words that still communicate its meaning.
- **PARTS IN PROCESSES FOR A PURPOSE: (Forms that Function for a Final Goal)**
Understand and be able to explain and apply HOW the biological structures in the lessons work together to make life possible.

CHAPTER 1: LIFE STRUCTURE (FORM) AND FUNCTION

LESSON 1 – Characteristics of Life

BASIC SCIENCE TERMS AND CONCEPTS FROM THE TEXTBOOK with a few Mr. G comments about biblical truths. See the appendix for more.

Cell - smallest unit of life (*Extra: remember Mr. G's phrase "the smallest thing you can call alive is a cell." So, a nucleus is not alive. Also, there is no such thing as a "simple-cell" (See Harvard's animation of inside a cell - <http://www.xvivo.net/animation/the-inner-life-of-the-cell/>)*)

Multicellular - made of two or more cells (*Extra: your cells are connected using tiny micro-bio staple-like structures*)

Organism - thing that has all the characteristics of life. (*"Creature" is a synonym that reminds us of their CREATOR!*)

Unicellular - made of one cell (*Extra: bacteria, yeast, etc. are unicelled living creatures. But viruses are not alive.*)

Homeostasis - ability to maintain steady internal conditions when outside conditions change
(*Extra: It literally means "stays same". Example: to stay about 98.6 degrees, the body sweats if hot and shivers if cold.*)

Growth – means becoming bigger. All cells do this. Unicellular cells can ONLY do this and then divide into two new cells.

Development – means becoming more mature. Cells of multi-celled organisms transform into different kinds of cells (skin, muscle, nerve...) and their bodies mature until they become an adult. (*Extra: a butterfly does this twice – metamorphosis.*)

Reproduction – process when organisms make new organisms. Different organisms do this in different ways.

Stimuli (= changes in the internal and external environment) and Responses (reaction) – read about examples

Energy for Life - the sun is the first source of energy for most organisms. Plants and algae use its light to make their food. Other creatures eat plants and some eat each other to get their energy. This energy is transferred from creature to creature as they feed on one another. REMEMBER, nephesh (see the appendix addition at the end of these notes).

Characteristics of Life (6) – see the chart on page 15 in the textbook for the six you need to learn.

(Extra: your secular textbook misses THE TWO MOST IMPORTANT characteristics of life:

1. *The first characteristic missed by your secular textbook is coded bio-info in DNA. You are just a bunch of chemicals just like a rock. You're alive because DNA info is a computer programs that produces their unique form/function in you. All creatures have coded bio-info as the basis for their physical life.)*

2. *The second is a characteristic found only in special animals and all humans. It is called "nephesh" in Old Testament Hebrew and it means a "soul". It's the exact same term for humans and for vertebrate animals (mammals, birds, reptiles, amphibians, and fish). The term nephesh-soul means the ability to think and feel. New research shows that many nephesh animals have amazing abilities to reason and to feel joy, affection, trust, loyalty, and form deep relationships, etc. Humans are unique, however, because our nephesh can also think and feel about GOD. Animals do not know He exists. So, they cannot sin against Him. By the way, great scholars of Scripture have shown that nephesh animals, yes - your pets, will be embraced into the Good Shepherd's New Creation. Isaiah 11; Romans 8, etc. We will study this later a bit more in this course, and much more in 8th grade Bible.)*

LESSON 2 – Classifying Organisms

BASIC SCIENCE TERMS AND CONCEPTS FROM THE TEXTBOOK.

Binomial nomenclature - naming system that gives each organism a two-word scientific name

Cladogram - branched diagram that shows the relationships among organisms

Dichotomous key - series of descriptions arranged in pairs that can be used to identify an unknown organism

Kingdom - classification category that ranks above phylum and below domain

Genus - group of similar species

Species - group of organisms that have similar traits and produce fertile offspring. But this definition has been proven wrong.

Aristotle's Categories – except for God's description in Genesis, Aristotle's simple categories were the first man made up.

Linnaeus's Categories – he was a Christian and he started the formal binomial nomenclature system.

Domains – (3) Bacteria, Archaea, Eukarya

Kingdoms – (6) Bacteria, Archaea, Protists, Fungi, Plants, Animals

Mr. G's phrase to help remember the categories in each kingdom: Kings, Puts, Crowns, On, Faithful, Godly, Servants
Kingdom, Phylum, Class, Order, Family, Genus, Species

Scientific Naming - Binomial Nomenclature, Scientific name = *Genus species*,

Bear Classification – look at the chart in the textbook and simply notice the names for the levels of bear categories.

Classification Tools - Dichotomous Keys, Cladograms,

* The following term, baraminology, is a new term coined by PhD scientists who are also creationists.

Baraminology – the study & classification of *CREATED KINDS* (creatures according to God's created "Kinds" (Hebrew term "min"). Hebrew term "Bara" = create something new. Logy = Greek term for logical study. So baraminology = logical study of created kinds.

GOD'S Categories – Genesis 1-2, Nephesh vs. Non-nephesh, (Nephesh = Swimmers, Flyers, Walkers), HUMANS and angels are special creatures with nephesh that can think, feel, and choose about God. Animals do not know about God. Humans and angels were created to be servant leaders, like Christ, over the rest of creation, NOT like Satan and the world system.

LESSON 3 – Exploring Life

BASIC SCIENCE TERMS AND CONCEPTS FROM THE TEXTBOOK.

Atom - building block of matter composed of protons, neutrons, and electrons

Hooke – the first to make and use a light microscope and he saw cork tree cells. He called them cells.

Light microscope - uses light and lenses to enlarge an image of an object

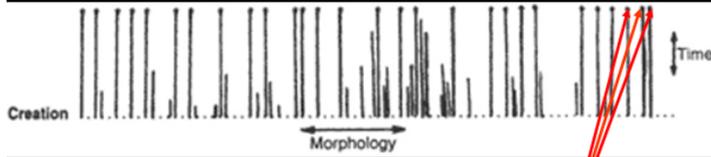
Compound microscope - uses more than one lens to magnify an image

Electron microscope - uses magnetic field to focus a beam of electrons through an object or onto an object's surface

Surface vs. Transmission electron microscopes – surface shows only the outside / transmission shows inside objects

Identify/Identification – is needed to determine or know the characteristics of a person or thing

Linnaeus "Lawn"



- His 'lawn' concept hypothesized that:
 - Each Genesis "kind" was unrelated to others
 - Each "kind" stayed the same without variation
 - Today's species = the original "kinds"
- He was right about unrelated "kinds".
- He was wrong about **NO variation** and species.

Evolution's Imaginary "Tree" of DEATH vs. **Creation's "Orchard" of Kinds**

The top diagram shows a branching tree with the text "Molecules ... to Mice ... to Men by mutations?" and axes for 'Morphology' and 'Time'. A blue arrow points from this tree to the 'Evolution's Imaginary "Tree" of DEATH' text. The bottom diagram shows a 'lawn' of vertical lines with two circled areas labeled 'Dog KIND' (in red) and 'Human KIND' (in blue). A green arrow points from the 'Creation's "Orchard" of Kinds' text to this diagram.

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FLOOD-ARK caused a Genetic "Bottleneck"

The diagram shows a tree of cat species. A horizontal line represents the 'Flood'. Below the line, 'Saber-tooth cats' and 'Main cat kind' are shown. Above the line, 'Smilodon (sabre-tooths)', 'Panthera (big cats)', 'Felis (smaller cats) domestic cat bred from this kind', and 'Acinonyx (cheetahs)' are shown. A red arrow points to a small group of lines labeled 'Representatives of the cat kind taken on the Ark'. A yellow box on the right contains the text: 'EXAMPLE START & RE-START of the proposed original FELINE created "kinds"'. A URL is provided: <http://creation.com/ligers-and-wholphins-what-next>.

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PARENTS AND STUDENTS, the material below is Mr. Galloway's **BONUS** at this point in the year. It will be integrated unit by unit later. (see AIG, CMI, ICR, & LRA organizations for supportive evidence.)

*** BIBLICAL INTEGRATION – FOR PARENTS AND STUDENTS (BONUS MATERIAL that we will cover as the year unfolds)**

Man's modern amazing technology is NOT because we are getting smarter. In fact, Dr. Sanford at Cornell and even many secular scientists have confirmed that NEW mutations added with every generation have caused decreasing IQ (intelligence), ever since Adam sinned. This matches the Bible's claim that sin and separation would cause all things to decay/degenerate/gradual-death until Christ returns. Dr. Sanford calls this "mutation meltdown". That is BAD NEWS. Plus Jesus will return to judge this old, infected creation and its sinful human creatures. The GOOD NEWS (GOSPEL) is that He will recreate a NEW CREATION that will be like the garden of Eden. Even the nephesh animals will live again in peace and harmony (no predators/parasites). Isaiah 11; Romans 8, Rev 20-22. It will be just like the first garden of Eden.

*** BIBLICAL INTEGRATION – SCIENCE (His World) IN THE LIGHT OF SCRIPTURE (His Word).**

*** PARENTS-STUDENTS**, In the box is Mr. Galloway's biblical integration that we will cover as the year unfolds.

SCIENCE LAWS & GOD'S WORD: The Nature and Limits of Science. "Science" is a Greek term "Scientia" that means "knowledge".

REVELATION: God has revealed Himself and truths about His creation in two main ways. General and special revelation.

- **GENERAL** Revelation = God has revealed truths through His WORLD. The study of His world is called **SCIENCE**.

- **SPECIAL** Revelation = God has revealed truths through His WORD. The study of His word is called **THEOLOGY**.

* Theology is Greek for "the logical study of God". All of the founders of science were Christian men led by the Word of God.

DIALOG = Greek term DIA = thru, LOG = logos or logic and is the term used in John 1:1 "In the beginning was the WORLD (LOGOS)"

- so real dialog that seeks TRUTH should be discussions about and thru God's WORD as the AUTHORITY over our human sciences.

APOLOGETICS: In 1 Pet 3:15, the Greek term translated, DEFENSE, is apologia (apo = from; logia = logic/Logos). So, = from the Logos.

* Remember, every **FORM** (PARTS in PROCESSES) has a **FUNCTION** for a **PURPOSE**. (that is DESIGNED).

* **SIN** caused **SEPARATION** from God and the **STRUGGLE** and **SUFFERING** that now infects God's creation. (violent survival of the fittest with predators and parasites)

* **DOUBT** → **DISRESPECT** → **DISOBEDIENCE** → **DISORDER** → **DYSFUNCTION** → **DEVOLUTION** → **DISEASE** → **DEATH**

- all parts, processes, and organisms have **DEGENERATED** more and more, beginning with sin and separation

(mutations and malfunctioning parts and processes are progressively **DESTROYING** all living organisms and populations)

* SEE the book, **GENETIC ENTROPY**, Creationist **Dr. John Sanford of Cornell University**, famous inventor of the Gene Gun.

FAITH: Hebrew 11:1 says "Faith is the ... EVIDENCE of things not yet seen." Smoke is evidence for faith in an unseen fire somewhere.

- Science reveals the universe/life is full of coded information, beauty, complexity, etc. that is evidence for an unseen Intelligent Designer.

- Scripture reveals who the Designer is, YHWH/YESHUA, and is supported by a massive mountain of evidence.

HYPOTHESIS = compound Greek term (hypo = under; thesis = belief) that means an underlying belief.

A scientific definition of hypothesis is a **TESTABLE PREDICTION**.

Hypothesis → Theory → Law. This is the order of science ideas as they are considered more strongly supported by tests.

If it is tested many times and always supported, and not YET proven FALSE, then it can be called a THEORY, and much later called a LAW.

FALSIFIED: It only takes one negative test/experiment to PROVE as FALSE any HUMAN belief in a hypothesis, theory, or law.

LAWS are non-physical realities that always come from a non-physical LAW-MAKER'S MIND.

LAWS of logic, math, language, and morality are real & must have a super-natural law maker's mind as their source NOT natural matter.

A science LAW of THERMODYNAMICS says that matter/energy cannot be created **naturally** out of nothing or destroyed naturally into nothing.

The science LAW of BIOGENESIS says all life always comes from a previous life, NEVER **naturally** from non-living chemicals. Therefore,

matter/energy and life (a cell with DNA) must have come from a **supernatural** source. God in His Word tells us when and how He did it. The

Hebrew term "bara" is a special word for a kind of creating that ONLY God can do. It means to create something totally NEW that never existed before OUT OF NOTHING. Bara is used 3x's in Gen 1 revealing three totally new things God created out of nothing:

v.1 Universe (space, time, matter, energy); v.21 Nephesh Animals; v.27 Humans

CREATED "KINDS": Genesis 1 repeats 10 x's the phrase "according to its kind". The Hebrew term "kind" is min and

- **BIO-INFO:** all biological creatures have coded information in the DNA of their cells. This BIO-INFO is proof that an Intelligent Designer created them. **INFORMATION** always comes from an **INTELLIGENCE**, NEVER from **natural** chemical reactions.

- **MUTATIONS** are errors in the DNA coding. Mutations began as soon as sin caused separation, disorder, and dysfunction. Each generation of creatures adds more and more mutations into their genepool (genome). These mutations are what cause creatures to get old, diseased, and die. Recorded in Gen. 2, God warned that sin and separation from Him (the only source of existence and life) would result in DEATH. The literal Hebrew says, "dying you will die". This means a progressive process of degeneration and death. The whole universe is falling apart ever since sin and separation, when God let go partly and gave Lucifer, Adam, and Eve their choice of independence.

MACRO-EVOLUTION: is a FALSE hypothesis claiming that many M&M's (Mystery Mechanisms) made ALL that we see from NOTHING.

- Stuff from nothing, life/cell/DNA from non-living chemicals, massive amounts of NEW genetic bio-information from mutations, etc.....

MICRO-EVOLUTION: is a TRUE process of simple adaptation by selecting bio-info that ALREADY existed in a

DIRECT-SCIENCE: studies variables that are in the PRESENT. They are measurable, controllable, repeatable, and lead to confident conclusions.

INDIRECT-SCIENCE: studies variables that are GONE in the PAST. They cannot be measured, controlled, repeated, & lead to unsure assumptions.

PARENTS AND STUDENTS, the material below is Mr. Galloway's **BONUS** at this point in the year. It will be integrated unit by unit later. (see AIG, CMI, ICR, & LRA organizations for supportive evidence.)

Importance of the Hebrew terms BARA and NEPHESH especially in Gen 1. Mr. Galloway
*** These truths help to correct and expand the teaching in your textbook about "historical-science".**

BARA: The Hebrew term "*bara*" means to create something brand NEW out of nothing that did not previously exist. This term is only used for something that God can do, not man or angels. There are other terms for "making" or "forming" new things by restructuring stuff that already existed. That would be like me using an old wooden desk to make a set of shelves. Both God and humans are described in the Bible being able to do this. Bara is used 3x's in Gen 1 revealing three totally new things God created out of nothing: *v.1 Matter; v.21 Nephesh Animals; v.27 Humans*

NEPHESH: The Hebrew term "nephesh" means a SOUL, which is a creature with the ability for feeling/thinking. Nephesh creatures can suffer, fear, or feel joy. Nephesh chayah means a living soul.

Plants – God's Word never uses the term "Nephesh" for plants. And the term BARA is NOT used when God made plants, because they are NOT something new that did never exist before. Plants are made of ONLY the same matter/atoms that make up the Earth. Plants have no nephesh, no brain, so they cannot think or feel. They are merely complex organic machines. They do not suffer when cut up for food, clothing, wood, etc. That is why [Genesis 1:29-31](#) says that only vegetation/fruit were to be food for humans and nephesh animals. Remember that fruit bats and pandas have teeth just like a carnivore. Carnivores have adapted to eating meat after sin and separation from God that caused the infection of survival of the fittest in creation. Only AFTER the global catastrophic flood ([Genesis 9:3](#)) did God give permission for the first time for humans (Noah and his family) to humanely kill and eat nephesh animals. Also many kinds of invertebrates are never called nephesh in God's Word. Worms, oysters, jellyfish, and possibly even insects and spiders are like complex robotic drones that cannot think or feel, but merely respond to stimuli. If an insect has a leg bitten off, it just keeps on walking as if nothing happened. Not your dog!

Nephesh Animals – were not originally designed to kill and eat each other. Pain, fear, suffering, and nephesh death was not God's desire or design (Gen 1:29-31; Gen 9:3). God is a Good Shepherd not a Great Predator. Even when God gave permission for humans to eat meat to survive after the flood, He commanded they bury the animal's blood in a memorial service because "the life (nephesh/soul) is in (represented by) the blood" (Lev 17). God wanted us to remember that such suffering and death was not His original way. The full Good News is that God promises when Christ returns, He will restore creation to its original Garden of Eden way (Romans 8). The wolf, lion, leopard, and bear will eat grass like the lamb and the ox (Isaiah 11 and 65). By the way, God will embrace your nephesh pets and all other nephesh animals into His **NEW CREATION** (Romans 8 – see Dr. Wesley's sermon linked on my website, and materials by Dr. Randy Alcorn. They are guaranteed since they are not responsible for our sin. You however must choose to admit your sinful selfishness, repent from it, and ask Christ to forgive and transform you. The New Testament term for transform into a new creature in Christ is **METAMORPHOSIS** (Romans 12:1-3; 2 Cor 3:18; Matt 17:2)

Nephesh Man – Humans are unique and distinct from animals, NOT because we have souls (nephesh). The Bible says all vertebrate animals also have souls/nephesh. Scripture uses the exact same Hebrew phrase for these animals as for humans. We are special because HUMANS and angels are special creatures with a nephesh ability to think, feel, and choose about God. Animals do not know about God. We were designed to reflect the image (character) of God and therefore have the ability to know about and choose to follow or reject Him as Lord – a relationship of love and trust. In PRIDE, we humans often want to think of ourselves as "gods" or almost God compared to animals. BUT we are infinitely less than God in every way. Ecclesiastes 3:18 says, "... God tests men so they might see that they are like animals." That is apart from salvation and being born again by God's Spirit.

DAY 7 God RESTED – He ceased from BARA type of creating. God no longer creates totally new things out of nothing that never existed before. However, He is still intimately involved in His creation and with His creatures, especially humans. Soon Christ will return to again BARA a NEW CREATION.

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HUMAN Roles, Ranks, Responsibilities: Our NICHE in God's Ecology

* See JESUS'S teaching in MATTHEW 20:20-28 about the difference between leaders in His kingdom vs. leaders of this sinful world. This is a central teaching, commandment, and mandate of our HUMBLE Good Shepherd Lord. He came "not to be served, but to serve, and give His life as a payment for many."

The ROLE for humans in God's creation is **SERVANT LEADERSHIP**, not the use and abuse of God's other creatures or His creation.

- **Genesis Ch 1** states that humans (male and female) were created in God's **image**, to reflect His kind of **character**.

- It says that humans were to **rule over** and have **dominion** over the other creatures. So clearly humans were given delegated authority **under** God's Lordship. Humans' role and rank of authority or leadership is certainly to be **over** the rest of creation.

* But the question we need to answer is: "**What kind** of rulership should it be?" Or "**How** should human leadership be done?"

- **Chapter 2:15** further describes the type of leadership humans were and still are created to exercise over creation. Remember Ch. 1 says that humans' role should reflect the image and character of our Creator. So, **two Hebrew terms** are used in [Gen 2:15](#) to describe human leadership that reflects the **character** of our Creator Christ ([John 1:1-5](#)).

1. The first is **ABAD** which is often translated as "cultivate" or "work". However, the term's primary meaning is "TO SERVE", and describes the role of a **SERVANT**. That means humans' rulership over the creation should be a **SERVANT LEADERSHIP**, NOT the tyrannical way of our current sinful, selfish world. This world is now infected by sin and separation from God, so that worldly leaders become predatory and parasitic politicians. They selfishly use, abuse, oppress, and enslave those under their authority.

* See Jesus's profound teaching on this paradox of His kingdom leadership in **Matthew 20:20-28**.

** See below the contrast between Christ's Way vs. Sin's Way (or the way of survival of the fittest)

2. The second term is **SHAMAR** which is often translated "to keep". Yet it does not merely mean to hold on to something as we often use the word "keep" today. It means to protect or guard. Shamar conveys the meaning more like a **ZOO-KEEPER**, like I was back when I served at the Audubon Zoo caring for elephants, lions, tigers, bears, etc. I am still sort of a zookeeper even now with our little NCZoo classroom. The role, rank, and responsibility of a zookeeper is to protect, guard, care for, serve, and preserve the creatures in the zoo.

*** We are the original ecologists. By the way, this is a wonderful way to witness to and build a bridge of common agreement with unsaved people who care about animals and the environment!

**** Together the terms ABAD and SHAMAR are like the motto on the side of Law Enforcement vehicles: To Serve & Protect!

Christ's Way - ([Luke 9:23-26](#); [Romans 5:5-10](#)) = the way of the cross, of love. His way sacrifices *self* for the *needs* of *others*.

Sin's Way - (Gen 3) = survival of the fittest. It's way sacrifices *others* for the *desires* of *self*.

It is the way of Satan/Lucifer and the basis of the philosophy of macroevolution: violent competition, pain, fear, suffering, and death.