

**Westfield Studios**

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**BIOLOGY 101**

# Guidebook and Quizzes

A companion guide to the Biology 101 DVD set

**Wes Olson**

**BIOLOGY 101**

# Guidebook and Quizzes

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# A guide to the Guidebook

**Side Bar Trivia.**  
The text on the left side of the page contains interesting facts on a whole host of biology related (and unrelated!) subjects. Could be on a quiz...never know!

## **Biology Trivia.**

Trivia is information that is interesting but not necessarily important. For instance, if I said that flamingo birds are in the class Aves and that there are four distinct species living in the United States, that would be interesting information, especially if it showed up on a test. But if I told you that the flamingo's eye is larger than its brain (which it is) or that the word *flamingo* comes from the Latin word for *flame* (which it does), that would be interesting but not necessarily important. This stuff goes in the trivia category.

## **Flying Vertebrates**

The text on this particular page is just filler. I thought I'd provide a source of mild entertainment for those of you who occasionally read everything. I remember making up stuff like this in some of my college term papers. I'd make some outrageous comment halfway through the manuscript to see if the professor was actually reading my whole paper. Some did. Some didn't. Some thought it was mildly entertaining. Some didn't. If you read this, email me and let me know.

### 1. Introduction

1. Insects are in the kingdom Animalia<sup>1</sup>, which may seem kind of weird because, really, who thinks of insects as animals?
2. There are thousands of different insects. In fact, scientists now believe that if all the insects in the world were put on the Hawaiian Islands, the tourist industry in Honolulu would suffer greatly.
3. The rear legs on Orthopteran insects are used for hopping. Scientists often refer to these legs as the insect's "hopping legs." This designation helps scientists to differentiate these legs from the insect's "non-hopping legs."

**Film Information.**  
This area with black text is information from the film. This is where most of the quiz questions come from.

Flopsy, Mopsy and Cottontail. Helen Beatrix Potter, the author of *Peter Rabbit* is not to be confused with Wes Olson, the author of *Biology 101*. To begin with, Mrs. Potter lived 100 years before Mr. Olson was even born. Secondly, *Beatrix* isn't even close to the name *Wes* so keeping these two apart should be relatively easy. In fact, to our knowledge, confusing these two people has never really been an issue for anyone.

**Stories & Commentary**  
The text in a box contains interesting biographies and observations. Some of this information may show up on a quiz!

1. Dr. Bob Schwartz, *Fun with Stingy Creatures*, P. 28. Dr. Schwartz shows how a sea wasp can make an entertaining and friendly companion for your whole family.

## **Footnotes.**

Footnotes show where I obtained much of my information. They are another source of trivia, commentary and information. Nothing here is on a quiz.

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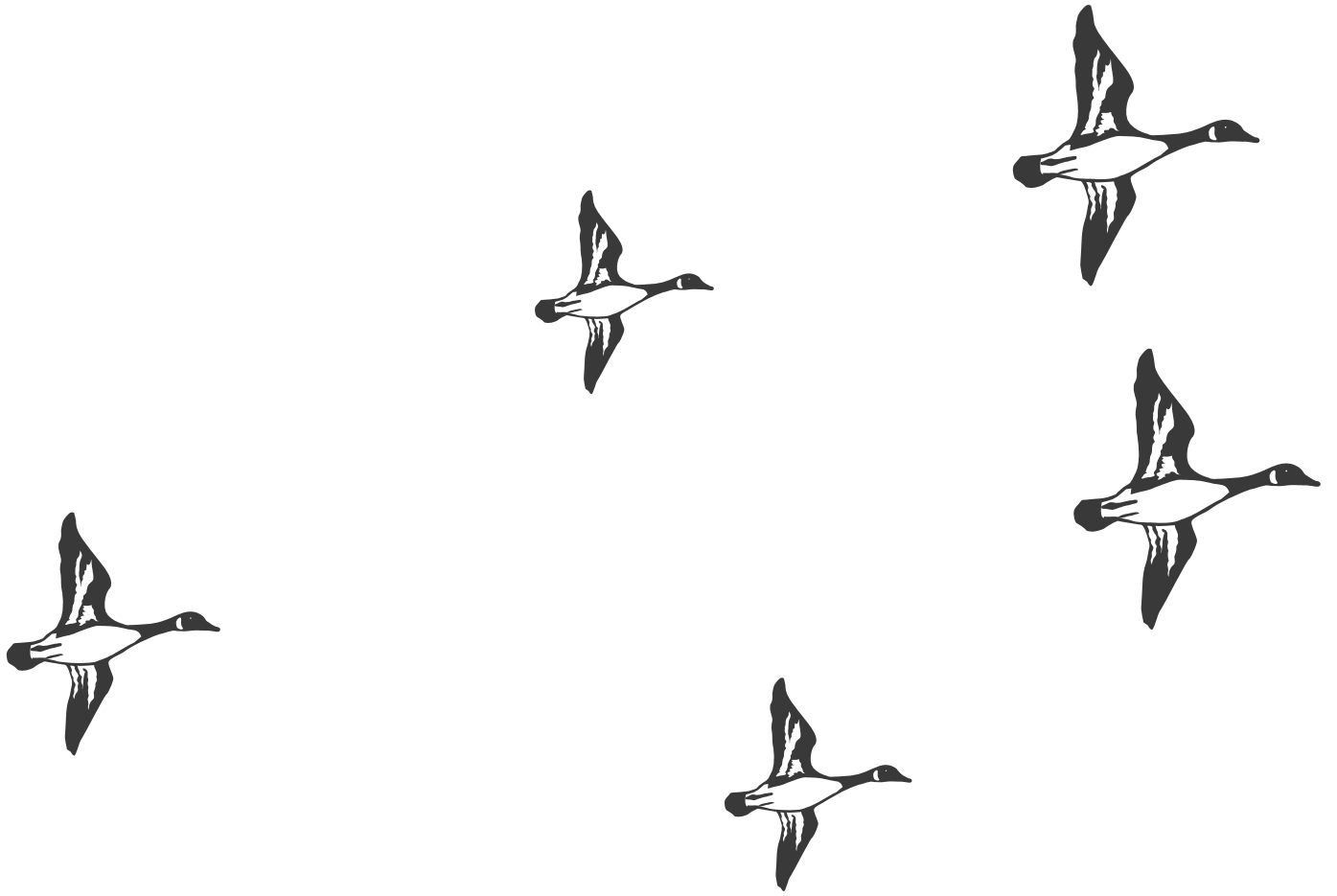
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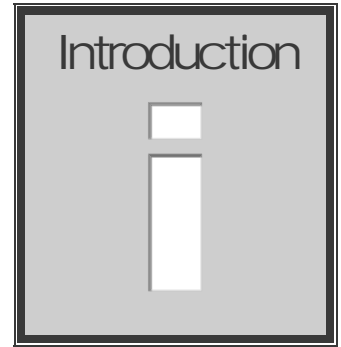
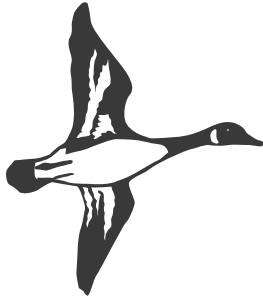
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## Life Defined

**D**efining life is almost impossible. All definitions fall short of nailing down exactly what life is. The best we can seem to come up with is defining what living things do.

1. Biologists generally define life as *being associated with things* like the ability to take in energy, do work, respond to the environment, develop, and reproduce.
2. Some *dictionaries define life* as “That quality that distinguishes a living organism from a dead organism.” Look it up in your dictionary and see what it says.
3. *Biology* comes from two Greek words: *bios*, meaning *life*, and *logos*, which means *word* or *study*. Biology is the study of life.
4. Perhaps life is difficult to define because it is essentially a spiritual, not a material, quality.





### Call me a cab

The Greek word *taxis*, from which we get *taxonomy*, has no relationship to the Latin word *taxa*, we use for a hired cab, *taxi*. The word *taxi* is a shortened word for *taxicab*, which itself was a shortened form of the word *taximeter cab*, which itself was short for *taximeter cabriolet*.

A cabriolet is a two-wheeled, horse-drawn carriage with a hood that came over to protect the passengers.

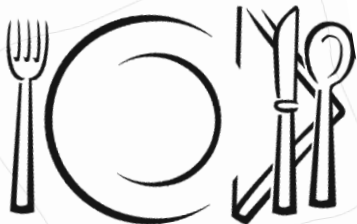
The taximeter part was introduced around 1900 as a mechanical device to measure the amount owed to the driver of the cabriolet. It was a metered tax on the cab...a taximeter cab...a taxicab...a taxi.

## Life Classified

Science may not do well at accurately defining what life is, but it excels at taking it apart, analyzing the parts, and classifying it into various categories for further study.

### 1. Compelled to classify

- A. People seem driven to find patterns and systems in everything they touch. We are compelled to classify and categorize.
- B. We categorize our home, garages, clothes, dresser drawers and the kitchen utensil drawer. It keeps life orderly.
- C. Biologists classify living creatures. They call this system of categorizing life *taxonomy*.
- D. Taxonomy comes from two Greek words: *taxis*, meaning *to arrange* or *to classify*, and *nomos*, meaning *the laws*. Taxonomy is the law of classification.
- E. Life can be classified by habitat, creation date, physical structure, their early embryonic properties, genetics, or any other method one chooses.



There is no *absolute* way to classify things. Organizing items, including life forms, reflects the interests and personality of the organizer far more than it reflects any objective standard. There are many legitimate ways to classify things. That includes living organisms as well.



## 2. Modern Classification

### Linnaeus and Humans

Linnaeus listed man as having a structure similar to primates. Linnaeus also subcategorized men into what are often called “races”: African, Asian, Native American, and European, with a regrettable emphasis, like most Europeans in his day, on the superiority of Europeans.

There is no dispute, from any source, that Linnaeus was a devout Christian. He took the scriptures seriously, even if some of his ideas were based more on the culture of his day than sound theology or science.

In spite of his shortcomings, Linnaeus recognized all creation as ordered by a Divine plan where man is in the unique position of administrator over that creation.

### Kind vs. Species

The Biblical *kind* is a broader category than the modern *species* and the terms are not entirely interchangeable. Biblical *kinds* generally represent animals that can interbreed with one another.

- A. Modern taxonomy classifies life according to *physical structure*.
- B. Although this type of system was toyed with for many centuries, a Christian biologist named Carolus Linnaeus systematized the living world into distinct categories. His book was called *Systema naturae*.
- C. Linnaeus was greatly influenced by the writings of another biologist, a Christian clergyman named John Ray. Ray’s book, *The Wisdom of God Manifested in the Works of the Creation*, recognized that similarity in structure was evidence of a common Designer.
- D. Linnaeus also came up with a system of naming all the kinds of organisms. Using a unique Latin *two-name identifier* for every species, every animal and plant in the world has a unique name. Latin is an effective language for classification because it is a “dead” language. It is no longer in use by any culture and therefore it never changes.

### Linnaeus’ Categories

**Kingdom** ► The largest category. (Animal and Plant are kingdoms). However, there is a grouping called *Domains* which was recently added above kingdoms.<sup>1</sup>

**Phylum** ► Greek for *tribe*. Mollusks, arthropods and echinoderms are all phylum names. For the plant kingdom, *division* is used in place of *phylum*.

**Class** ► Osteichthyes, chondrichthyes and reptiles are all class names.

**Order** ► Things like orthopterans, lepidopterans, marsupials, rodents and carnivores.

**Family** ► Family distinctions are the least familiar of the groupings.

**Genus** ► Related to our word *gender*. The genus provides the first of Linnaeus’ two-name label.

**Species** ► Related to our word *special*. This provides the second name of the “binomial” label.

**Restless Classifications.** Scientists are always toying with classification systems and there are constant additions of subclasses, subphylum, and super-orders. They’ve suggested an eight kingdom system, an eleven kingdom system, a two kingdom system again and even scrapping the whole thing for something else. Creature classifications are restless.

<sup>1</sup> The three Domains are Archaea, Bacteria and Eukaryota. These classifications are debated and change depending on the scientist.

### Clean and Unclean

The classification of clean or unclean animals is another method of classification found throughout the Bible:

- At the flood. Gen 7:2
- In the law. Lev 11
- In the prophets. Isa 52:11
- In the Epistles. Acts 10:14

That's because this distinction was an allegory, a symbol. God says the meaning of the allegory is that He wants good separate from evil, the clean from the unclean.<sup>5</sup>

Israel acted out this allegory for 1500 years. The fulfillment of the symbol came through Jesus Christ who makes all clean by faith, not by birth or nationality, or any other distinction.<sup>6</sup> Redeemed humanity are "the clean."

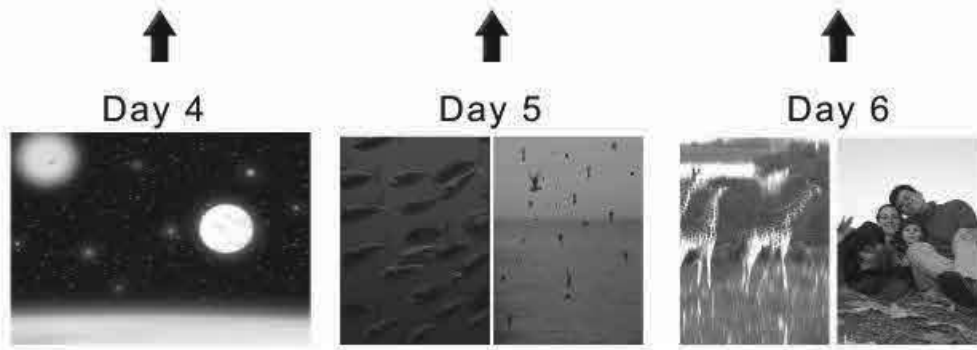
## 3. Biblical Classification

- The Bible classifies the major groups of life according to *the day they were created*.
- God also classifies life according to *value*. Man is first since they reflect God's image. Next are animals with *nephesh*<sup>2</sup> life and finally plants, which the Bible never classifies as *living*. Living creatures are made starting on day five. This concept of giving non-living matter life is something not applied to plants even though we often refer to plants as *living*. Plants as "self-replicating systems" that provide food, oxygen, medicines, and other resources.
  - ◆ God made man to have dominion over all the other creatures and care for them.<sup>3</sup>
  - ◆ Jesus specifically said that man was of more value than the other creatures.<sup>4</sup>
- God builds the backdrops or sets in preparation for the actors: stars, plants, creatures and finally, man.<sup>5</sup>

Scenery :



Actors :



<sup>2</sup> *Nephesh* is a Hebrew word meaning *soul* or the *immaterial part* of a creature as opposed to the flesh or body. Another Hebrew word, *ruwach*, is also used to mean soul. These two words are often used interchangeably like in Isaiah 26:9, "with my *nephesh* (soul) have I desired you in the night, yes by my *ruwach* (spirit) within me I will seek you early." source: Strong's #7307

<sup>3</sup> Gen 1:26 and Psalm 8:6

<sup>4</sup> Matthew 6:26 (*you are more valuable than birds*); Matthew 10:31 (*you are more valuable than many sparrows*); Matthew 12:12 (*you are more valuable than sheep*)

<sup>5</sup> Leviticus 20:24,25 spells out what the clean/unclean animal symbolism meant.

<sup>6</sup> Acts 10:14,28

#### 4. History and Faith.

- A. The Bible is a historically reliable document. With more manuscripts to verify and cross check against, we can be certain, more than any other historical document, that the Bible we have today is closer to the original author's script, than any other document in existence. You may disagree with its content, but its reliability as a historical document is beyond the dispute of knowledgeable scholars.
- B. The central figure of the Bible, Jesus Christ, believed in the literal six-day creation account.<sup>7</sup> We believe Him. This is why we use the creation day account as the primary classification--because that's the way it really happened.



#### 🔗 Biblical Evidence:

Evidences verifying the Bible's reliability as a historical document.

- ✓ The *manuscript evidence* says the Bible we have is the unaltered work of the original authors.
- ✓ The *archeological evidence* continually verifies the Bible is accurate in its historical accounts.
- ✓ The *historical predictions* that came true verify the Bible was directed by someone outside of time.
- ✓ The *unending universal* appeal of the Bible verifies this document was engineered by someone who is intimately familiar with the deepest needs of all mankind.

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<sup>7</sup> Jesus believed the scriptures were literal, historical records (see next page) and Exodus 20:11 explicitly states that God created the heavens, the earth and the seas in six 24 hour days.

# What Jesus Believes.

Jesus said, *“A disciple...who is perfectly trained will be like his teacher.”*<sup>8</sup>

1. He believed the Scriptures were a historical fact.

Adam & Eve were real .....	Mark 10:6
Cain & Abel were real .....	Luke 11:51
Noah was real.....	Luke 17:26
Abraham was real .....	John 8:56
Lot’s wife was real .....	Luke 17:32
Moses and the wilderness wanderings were real.....	John 3:14
Jonah was real .....	Matthew 12:40

2. He believed that:

Moses wrote the Pentateuch .....	Matthew 19:8, Luke 24:27
One Isaiah wrote all of Isaiah .....	John 12:38-40
Daniel wrote Daniel.....	Matthew 24:15

3. He believed the Bible<sup>9</sup> was the word of God .....

Matt. 22:31; John 10:35

*“If you don’t believe Moses’ writings, how will you believe my words?”*<sup>10</sup>

*-Jesus*

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<sup>8</sup> Luke 6:40

<sup>9</sup> The Bible, in Jesus’ day, is what we call the “Old Testament.” It means, “Old Contract”. The New Testament (“new contract”) was verified by Jesus when He gave authority to the Apostles and said the Spirit would remind them of everything He said. John 14:26.

<sup>10</sup> John 5:47

## INTRODUCTION QUIZ

- 1.) Biology comes from two Greek words: bios meaning life and logos which means word or study.
  - a. True
  - b. False
- 2.) Taxonomy means
  - a. the law of classification
  - b. a metered tax
  - c. a hired cab
- 3.) Carolus Linnaeus was a Christian Biologist.
  - a. True
  - b. False
- 4.) Modern taxonomy classifies life according to
  - a. physical structure
  - b. the days of creation
  - c. none of the above
- 5.) Phylum is the largest category in the classification system that Linnaeus came up with.
  - a. True
  - b. False
- 6.) Scientists tend to see plants as “self-replicating systems” that provide
  - a. food, oxygen and medicines
  - b. toxins, helium and paint
  - c. lead, sulphur and gold
  - d. all of the above
- 7.) Jesus specifically said that man was of more value than the other creatures.
  - a. True
  - b. False
- 8.) God made man to have dominion over
  - a. small rabbits only
  - b. the plant kingdom
  - c. all creatures
  - d. he’s not to have dominion
- 9.) The Bible is
  - a. a reliable document
  - b. God’s word
  - c. historically accurate
  - d. all of the above
- 10.) Jesus believed the scriptures were literal, historical records.
  - a. True
  - b. False

*Answers on Page 103*