

EVOLUTION UNDER THE MICROSCOPE

DISCUSSION GUIDE ANSWER KEY

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Based on the research of Dr. Fazale Rana



CHAPTER 1

WHAT IS EVOLUTION?



1. True or false? Evolution eliminates the need for a Creator.

False

2. What is a general definition of the term “evolution”?

Biological change over time

3. What are the five categories of evolution?

1. **Microevolution**
2. **Speciation**
3. **Microbial evolution**
4. **Macroevolution**
5. **Chemical evolution**

4. Which categories of evolution do not challenge the notion of God as Creator?

Microevolution, speciation, and microbial evolution

5. Which categories of evolution challenge the notion of God as Creator?

Macroevolution
Chemical evolution

6. Briefly define each of the following terms:

Microevolution: **Variation within the same species. This process does not create a new species.**

Speciation: **Long-term microevolution due to population isolation. Creates two closely related species, but changes are not radical enough to make something genuinely new.**

Microbial evolution: **Microbial evolution occurs when viruses, bacteria, and single-celled organisms (often in large populations) undergo change (such as a few beneficial mutations) without creating a new species.**

7. How do chemical evolution and macroevolution challenge the Christian worldview?

Chemical evolution (or the origin of life or abiogenesis) refers to the process in which a complex chemical mixture underwent a series of transformations generating the very first cells or life-forms. This idea says that nature can create life from chemical processes alone. This challenges the notion that a Creator is necessary for life to be possible.

CHAPTER 1: WHAT IS EVOLUTION?

Macroevolution refers to the process in which evolution can transfer one major biological group into another (e.g., dinosaurs evolving into birds, or apes evolving into human beings). This idea says that life’s diversity can be explained through unguided, undirected evolutionary mechanisms.

The claim that evolution has genuine creative power and can create life all on its own challenges a Creator’s role in that process.

8. Which versions of evolution have the best scientific evidence?

Microevolution

Speciation

Microbial evolution

9. What is the “shell game” of evolution?

This refers to the assumption that, because of the overwhelming evidence for microevolution, microbial evolution, and speciation, scientists will apply that evidence to concepts like chemical evolution and macroevolution, claiming that these concepts are also true.

10. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 2

MICROEVOLUTION



1. Is evolution a fact?

Yes and no. Some types of evolution have been established as a fact (microbial evolution, microevolution, and speciation). Other types of evolution (chemical evolution and macroevolution) have significant scientific problems associated with them and have not been established as fact.

2. What is microbial evolution?

This refers to a process in which viruses, bacteria, and single-celled eukaryotic organisms undergo evolutionary change without changing species.

3. Bacterial resistance to antibiotics is often put forth by evolutionary biologists as a real-time example of evolution. What category of evolution is this an example of?

Microbial evolution. (Note: Bacteria exist in such vast populations within nature that when they are exposed to antibiotics, some of those species are going to go through simple mutational changes and acquire the ability to resist a particular antibiotic. If they are able to resist the antibiotic, that particular cell will increase in number within the population and will out-compete the bacteria that are killed off by the antibiotic.)

4. What type of evolution is the peppered moth phenomenon? Explain the peppered moth phenomenon and how it is an example of that type of evolution.

Microevolution. Changes in the environment caused the white wing variety of peppered moths to disappear and the dark wing varieties to increase—presumably because dark wing varieties avoided predation whereas the white wing varieties were more susceptible to being consumed by birds. This is an example of variation within a species due to environmental changes. The peppered moth did not undergo radical transformation.

5. What other example of microevolution does Fazale Rana talk about? Please describe the process.

Horses appear to microevolve. The first horses, which appeared over 50 million years ago, were about the size of a dog and had feet like that of a dog's (four toes pointing forward, one toe pointing backward). Over time the horses increased in size and some of the toes decreased in size (due to atrophy) and one toe became large and transformed into a single hoof. Their teeth also transformed as a result of changes in their diet and what was available to eat. These are microevolutionary changes that took place over 50 million years and did not radically transform the horse.

CHAPTER 2: MICROEVOLUTION

6. Summarize why microevolution is not in conflict with the Christian faith.

Microevolution is not in conflict with the Christian faith because it does not demonstrate creative power, only small changes within the same species.

7. What is speciation?

Speciation is where one species can give rise to a closely related sister species.

8. Explain how the finches of the Galapagos Islands demonstrate speciation.

Two populations of finches became isolated from each other on the Galapagos Islands, and, as a result, underwent superficial changes in size, beak shapes, and beak sizes, but no radical transformation took place.

9. How does Fazale Rana see these three types of evolution as a part of God's design?

Dr. Rana considers microbial evolution, microevolution, and speciation as examples of a feedback-regulation mechanism. God has provided this mechanism for his creation so that organisms can adapt to changes in the environment.

10. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 3

A CLOSER LOOK AT CHEMICAL EVOLUTION



1. What is chemical evolution or abiogenesis?
The idea that life comes from nonlife
2. List the two scientists who first proposed the idea of chemical evolution or abiogenesis.
J. B. S. Haldane and Alexander Oparin
3. What is the name of this famous hypothesis?
Oparin-Haldane hypothesis
4. Summarize the basic idea of this hypothesis.
Energy discharges (e.g., lightning) on early Earth transformed chemical materials into organic materials that accumulated Earth's oceans to form a primordial soup. Chemical reactions with that "soup" produced increasingly complex molecules and eventually gave rise to the first life-forms. These life-forms then evolved to produce the evolutionary tree of life.
5. Explain the Miller-Urey experiment, including the approximate chemical reaction.
The Miller-Urey experiment demonstrated how organic compounds could form under simulated early Earth conditions.

Longer explanation: It was an experiment using a glass apparatus that was supposed to simulate the conditions of early Earth. Miller set up a beaker full of boiling water that was supposed to simulate the hot temperatures and boiling oceans of early Earth, and that beaker sent steam into the headspace of the apparatus, while at the same time excluding oxygen. He then introduced methane, ammonia, and hydrogen gas (believed to be present in the early atmosphere) and had a continuous electrical discharge going through the simulated atmosphere. Miller then took note of the chemical reactions taking place in the apparatus and was eventually able to show that amino acids (the building blocks of proteins) formed in the system.

$\text{H}_2 (\text{g}) + \text{CH}_4 (\text{g}) + \text{NH}_3 (\text{g}) + \text{H}_2\text{O} (\text{g}) = \text{amino acids (especially the simplest amino acid, glycine, where the R is a hydrogen)}$

6. Does the Miller-Urey experiment verify the Oparin-Haldane hypothesis? Why or why not? Include information about the chemical reaction.

No, because it does not appropriately simulate early Earth's atmosphere. Miller thought early Earth's atmosphere consisted of water vapor, hydrogen, methane, and ammonia, but it instead consisted of mostly carbon dioxide, nitrogen, and water. When you replace Miller's experimental gases with those that actually existed on early Earth, those gases do not generate amino acids, and in fact, they do not generate anything at all. It is a chemically inert, or nonreactive, system.



7. List the names of the two origin-of-life researchers who summarized the significance of the Miller-Urey experiment this way: "But is the prebiotic soup theory a reasonable explanation for the emergence of life? Contemporary geoscientists tend to doubt that the primitive atmosphere had the highly reducing composition used by Miller in 1953."

Jeffrey L. Bada and Antonio Lazcano

8. What is the critical component of chemical evolution or abiogenesis?

Life comes out of a primordial soup.

9. Describe the evidence (if any) in support of chemical evolution.

There is no evidence for a primordial prebiotic soup. If a primordial soup existed on early Earth, then Earth's oldest rock formations (which date to 3.8 billion years old) would reveal a chemical signature left behind by this prebiotic soup. However, there is no evidence in these oldest rock formations that a prebiotic soup existed. The primordial/prebiotic soup is a scientific myth.

10. Which origin-of-life researcher summarized the current state of origin-of-life research this way: "So far, no geochemical evidence for the existence of a prebiotic soup has been published. Indeed, a number of scientists have challenged the prebiotic soup concept, noting that even if it existed, the concentration of organic building blocks in it would have been too small to be meaningful for prebiotic evolution."

Noam Lahav in *Biogenesis*

11. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 4

WHY DOES SCIENCE LEAVE GOD OUT?



1. What central idea to the evolutionary paradigm has no scientific evidence to support its hypothesis?

Chemical evolution

2. Prominent origin-of-life researcher Leslie Orgel said that metabolism-first scenarios require:
An appeal to magic, a series of remarkable coincidences, or a near miracle.

3. In describing the RNA world hypothesis, Orgel also said it would be a near **miracle** if a strand of RNA ever appeared on early Earth.

4. If many scientists admit that the origin of life appears to be a miracle, then how do they explain what (or who) prompted life's origin?

The scientific community refuses to entertain the idea that God, a Creator, is responsible for bringing life into existence.

5. Dr. Rana says the theory of evolution is as much about **philosophy** as it is about science.

6. What additional requirement do many scientists add to hypotheses, theories, and models to explain phenomena in nature?

They require that those hypotheses, theories, and models must rely exclusively on naturalistic mechanisms. It must exclude any involvement on the part of a Creator. The lack of a Creator's involvement is also called methodological naturalism.

7. What are some relevant quotes from evolutionary biologist Richard Lewontin regarding the commitment to the philosophy of methodological naturalism? (Note: Fazale Rana is using an entire quote here. The instructor may pause the video, or students may paraphrase.)

“We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfill many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.”

CHAPTER 4: WHY DOES SCIENCE LEAVE GOD OUT?

Essentially, Lewontin is saying that the scientific community has a precommitment to materialism and methodological naturalism. Because of that commitment, even if the evidence is pointing to the work of a Creator, the scientists cannot go down that path.

8. Evidence for evolution can also be understood from a **creation** model perspective.
9. Other than gradual evolution, what is another way to explain the gradual change from simple to complex life-forms throughout Earth's history? How does the fossil record support that alternative?

A Creator, on the different days of creation, could have created life-forms that existed for a period of time and then were replaced by different life-forms during the next day of creation. The fossil record that is so often cited as evidence for evolution could also be evidence for the work of a Creator.
10. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 5

CREATING LIFE IN THE LAB



1. A new area of science focused on creating and manipulating artificial, nonnatural life-forms is called what?

Synthetic biology

2. Synthetic biology brings up what big question?

Is the ability to create life in the lab evidence for biological evolution, or is it evidence that supports the Christian faith?

3. What are proto-cells?

Single-celled entities that look like bacteria or artificial microbes

4. Why would scientists want to create proto-cells?

Scientists envision that these proto-cells would function as bio-reactors or mini-factories that can take inexpensive, raw materials and convert them into highly valuable products (e.g., biomedicines, bioplastics, agricultural materials, biofuels).

5. Why do some scientists feel that synthetic biology will answer the origin-of-life question?

They believe that if they can create life in the lab, then it will verify that the first life-forms could have evolved naturally from simple chemical materials.

6. Synthetic biology depends on intelligence to create life.

7. How does synthetic biology undermine the evolutionary paradigm?

Synthetic biology involves intelligent scientists employing elaborate strategies and sophisticated laboratory manipulations to create artificial life. It implies that life cannot come from non-life unless intelligent agency is involved.

8. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 6

DOES MACROEVOLUTION FIT THE FOSSIL RECORD?



1. What is macroevolution?

The idea that evolutionary mechanisms can transform one biological group into another biological group with radically different properties

2. If evolution is true, what would we expect to see in the fossil record?

Gradual evolutionary transformation and innumerable numbers of transitional forms

3. What do we actually see in the fossil record?

Sudden appearance of new life-forms, the absence of transitional intermediates, and stasis (unchanged species over vast periods of time)

4. List four major features of the Cambrian explosion.

Complex multicellular animal life
50–80% of animal phyla that have ever existed
Brief window of time: 2–3 million years
Diverse and complex animal life

5. Who wrote the following about the Cambrian explosion?

“William Buckland knew about it, Charles Darwin characteristically agonized over it, and still we do not fully understand it. ‘It,’ of course, is the seemingly abrupt appearance of animals in the Cambrian ‘explosion.’”

Simon Conway Morris in “The Cambrian ‘Explosion:’ Slow-fuse or Megatonnage?”

6. Who wrote the following about the Cambrian explosion?

“There is another and allied difficulty which is much more serious. I allude to the manner in which species belonging to several of the main divisions of the animal kingdom suddenly appear in the lowest known fossiliferous rocks. . . . To the question why we do not find rich fossiliferous deposits belonging to these assumed earliest periods prior to the Cambrian system, I can give no satisfactory answer.”

Charles Darwin in *On the Origin of Species*

7. What was Darwin’s hope and expectation?

He hoped that the Cambrian explosion would be resolved. He expected that future studies would uncover those missing transitional forms.

CHAPTER 6: DOES MACROEVOLUTION FIT THE FOSSIL RECORD?

8. Has further scientific study met Darwin's expectations?
No. The fossil record looks identical today as it looked in Darwin's time. The Cambrian explosion is still unresolved after more than 150 years.
9. Regarding the animals of the Cambrian explosion, who wrote, "It is as though they were just planted there, without any evolutionary history."
Richard Dawkins in *The Blind Watchmaker*
10. How does the Cambrian explosion provide evidence for the work of a Creator?
The sudden appearance of complex animal life is consistent with a Creator's involvement in life's history.
11. Besides the Cambrian explosion, list at least five other patterns in the fossil record.
Repeated explosive appearance of new organisms
Radiation events
Mass extinction events
Extinction events closely followed by explosive appearance of entirely new life-forms and ecosystems
Pattern doesn't match predictions of macroevolution
12. So the fossil record points to what?
The fossil record, cited as evidence for macroevolution, is anything but evidence for macroevolution. Instead, it points to the work and the necessity of a Creator to explain the history of life on Earth.
13. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 7

CAN BIOLOGICAL EVOLUTION EXPLAIN THE HISTORY OF LIFE?



1. What do we see in the fossil record?

An absence of numerous transitional forms

2. Which evolutionary biologist said the following? “All paleontologists know that the fossil record contains precious little in the way of intermediate forms; transitions between major groups are characteristically abrupt.” What is the significance of this quote?

Stephen Jay Gould in *The Panda’s Thumb*

The fossil record does not support macroevolution.

3. What are the evolutionary scientists’ proposed solutions to the lack of evidence supporting evolution?

They say the fossil record is incomplete and point to examples of transitional forms.

4. What are the two most common textbook examples of transitional forms?

Fishapods

Whales

5. If tetrapods are transitional forms, what would the fossil record reveal about them?

Changes would appear gradually over a vast period of time and would require significant anatomical and physiological changes.

6. What are the key pieces of data from the fossil record for tetrapods?

Rapid transition from water to land (in only 10 million years)

Overlapping transitional forms—they appear at the same time rather than transition from one form to another

Out of order from what would be expected—such as digits before fins

7. What is the temporal paradox?

A sequencing problem when transitional forms appear in the fossil record after the appearance of the forms they’re supposedly evolving into

8. List two problems with whale origins from an evolutionary perspective.

Rapid transition from land to water (only 10 million years), which is too fast for Darwinian evolution

Overlapping transitional forms appearing out of sequence (temporal paradox)

CHAPTER 7: CAN BIOLOGICAL EVOLUTION EXPLAIN THE HISTORY OF LIFE?

9. How could these so-called “transitional forms” be explained from a creation model perspective?

They are created animals fully formed by God.

They are well-designed organisms, not transitional forms.

They are *mosaic* designs.

10. Define the term “mosaic designs.”

It’s the blending of characteristics of two designs into a new design.

11. What example of mosaic design did Dr. Rana give? How does this example connect to the discussion of transitional forms?

Spork—a functional combination of a spoon and a fork

12. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 8

BIRDS IN THE FOSSIL RECORD



1. List three things observed in the fossil record:
 - Sudden appearance of new life-forms**
 - Stasis—unchanged life-forms over long periods of time**
 - Near absence of transitional forms**
2. Darwin lamented the absence of **transitional** forms.
3. What is evolutionary scientists' solution to the lack of transitional intermediates?
 - So-called transitional forms like archaeopteryx (appearing 155 million years ago in the fossil record)**
4. What is archaeopteryx and what is its significance to the evolutionary paradigm?
 - It is the link between reptiles and birds.**
 - It is one of the first true birds.**
 - It belongs to the ancient group Archaeornithes.**
 - They appear suddenly in the fossil record.**
5. Summarize the first theory that scientists proposed to explain archaeopteryx.
 - Birds evolved from a reptile.**
6. What are two key problems with this theory?
 - There is a 100-million-year gap between the appearance of thecodont and archaeopteryx, and there are no transitional forms connecting the ancient reptile to the first birds.**
 - Thecodonts and birds also lack similar characteristics.**
7. Summarize the second theory that scientists proposed to explain archaeopteryx.
 - Feathered dinosaurs (theropods) gave rise to birds.**
8. List five key features theropods share in common with birds.
 - Cladistics**
 - Feathers**
 - Pygostyle**
 - Nesting behavior**
9. Summarize the key evolutionary prediction that would demonstrate that this theory is true.
 - There should be transitional forms from theropod to archaeopteryx in the fossil record.**

CHAPTER 8: BIRDS IN THE FOSSIL RECORD

10. What does the theropod data show?
They do appear as feathered dinosaurs.
11. List four key problems with the theropod-to-bird theory.
Temporal paradox
Questionable classification of feathered dinosaurs
Questionable interpretation of feathers
Features of bird anatomy—such as digits, footprint analysis, forelimb structure, lung structure—are very different from theropod anatomy
12. How might feathered dinosaurs in the fossil record be explained from a creation model perspective?
Feathers might actually be useful to theropods.
The Designer reused similar designs.
13. Summarize what Dr. Rana thinks is the key feature of the bird fossil record that undermines the evolutionary paradigm.
Birds appear suddenly and explosively in the fossil record.
14. Summarize the other major features of the bird fossil record.
The first bird archaeopteryx appeared suddenly 155 million years ago.
Cretaceous radiation 140 million years ago caused explosive diversification of different bird forms—e.g., enantiornithines, Mesozoic bird-like creatures.
After dinosaurs went extinct 65 million years ago, another radiation (the first modern birds) appeared suddenly 60 million years ago.
15. Do the overall features of the fossil record match the predictions of the evolutionary paradigm?
No.
16. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 9

HOMOLOGY



1. Define homology.
Homology refers to structural features that are shared by organisms that seem to be related to each other.
2. What is pentadactyl architecture?
A single upper arm bone attached to double bones in the forearm, linked to a wrist, and attached to digits (phalanges)
3. Pentadactyl architecture is seen in all mammals, in fact it's seen in all vertebrates.
4. How is homology used by evolutionary biologists to support their model?
It's used as a sign of common descent/common ancestry.
5. How could homology be understood from a creation model perspective?
It could serve as an example of common design.
6. Who was the original interpreter of homology?
Sir Richard Owen
7. Compare and contrast analogies and homologies.
**Analogies are structures that use different designs but perform the same function.
Homologies are structures that use same designs (architecture) but perform different functions.**
8. How did Owen interpret homologies and analogies?
Homologies and analogies reflect a Creator using the same design in different organisms, emphasizing either function or architecture (common design).
9. Darwin replaced Owen's archetype model with what?
Common descent as evidence for evolution, rather than evidence for a Creator
10. Homology can be interpreted from a creation model perspective just as well as from an evolutionary perspective.
11. What is comparative genomics?
The act of sequencing the genomes of a wide variety of organisms and comparing the DNA for similarities and differences

CHAPTER 9: HOMOLOGY

12. What percentage of DNA is similar between chimps and humans?

90–95%

13. Genetic similarities of genomics could represent common descent or common **design**.

14. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 10

HOMINIDS AND NEANDERTHALS



1. How have some Christians tried to make sense of the hominid fossil record?
They say the hominid fossil is not reliable, that it's all made up, and that there's a conspiracy to convince the general public that there's evidence for human evolution, when in fact there's not.
2. What specimen (later discovered to be a hoax) was put forward in 1912 as being a key "transitional form" in the hominid-to-human fossil record?
Pittdown man
3. The 1922 discovery of an eroded tooth initially led scientists to believe they discovered an ape man. However their claim was retracted five years later. What was this discovery called?
Nebraska man
4. Is the fossil record unreliable?
There are vast numbers of hominid fossils in the fossil record, showing that these creatures clearly existed.
5. If these hominids demonstrate the gradual evolution of humans, what five things should we expect to find in the fossil record?
Clear evolutionary pathway
Clear evidence of transitional forms
Gradual growth of brain size
Gradual appearance of bipedalism
Gradual appearance of human culture
6. Summarize four of the failed predictions of the hominid fossil record.
Many hominids we see today are evolutionary dead-ends.
There is no clear direct connection to humans.
There is no clear transitional species.
There is no clear evolutionary pathway.
7. Summarize the current scientific theory of how hominids went from knuckle-walking apes to bipedal (upright-walking) creatures.
They emerged from the forest into the savannah.

CHAPTER 10: HOMINIDS AND NEANDERTHALS

8. What would have been required for a knuckle-walking hominid to evolve into a bipedal human?

It would require a whole reworking of the anatomy of that organism, which would take place over a long period of time, especially complex changes in the pelvic girdle.

9. List three key features of the fossil record as it pertains to the appearance of bipedalism.

Sudden appearance of bipedalism

Early bipedal creatures lived in woodland environments, not the savannah

Long periods of stasis (no evolutionary change)

10. What was the original evolutionary theory about the bipedalism of *Australopithecus afarensis* (“Lucy”)?

People thought Lucy was a kind of crude bipedalism, a cross between knuckle-walkers and fully bipedal creatures.

11. What do scientists now believe about Lucy’s bipedalism?

Lucy walked erect and was fully bipedal.

12. How could bipedalism be understood from a creation model perspective?

God created bipedal creatures already walking upright.

13. What is the sociocultural big bang?

A rapid appearance of culture and use of sophisticated tools

14. How does the sociocultural big bang challenge the idea of human evolution from an ancient ape-like ancestor?

The model of human evolution would expect to see gradual progressive emergence of culture, whereas, in actuality, sophisticated culture appeared explosively, suddenly, and around the time of the first modern humans.

15. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

CHAPTER 11

ADAM AND EVE



1. What do scientists study in the field of molecular anthropology?
They compare the genetic variability of different people groups.
2. Molecular anthropology can give scientists information about what features of the history of human origins?
Approximate date of humanity's origin
General location of humanity's origin
Estimate of original population size
Early human migration
3. List four key conclusions about human origins based on molecular anthropology.
 1. **Humans emerged recently (less than 100,000 years ago).**
 2. **Humans emerged from a single location (east Africa), which fits the biblical model.**
 3. **Humans originated from a small population.**
 4. **Human origins are traceable.**
4. How were mitochondrial Eve and Y-chromosomal Adam traced?
Small pieces of DNA found in the mitochondria traces the maternal lineage of humanity (inherited mother to daughter), while DNA in the Y chromosome traces the paternal lineage of humanity (inherited father to son). Looking at this data leads scientists to believe that humanity originates from a single female individual called mitochondrial Eve and a single male individual called Y-chromosomal Adam.
5. The scientific data in the fossil record is consistent with the **biblical account for human origins** and it contradicts the **traditional evolutionary model for human origins**.
6. If we looked at biblical genealogies as timekeeping devices, humanity's emergence would have occurred about how long ago?
6,000 years ago
7. Why do theologians say that the biblical genealogies are not reliable for calculating the date of humanity's origin?
Biblical genealogies weren't intended to be timekeeping devices.
There are gaps in the genealogies and names have been omitted.
There's ambiguity in the Hebrew words used—"begot" and "son" could mean different things.

CHAPTER 11: ADAM AND EVE

8. Where did humans originate from?

Mesopotamia—a location that matches the biblical data and the scientific data.

9. In your own words, write a 1–2 sentence summary of the key idea of this lesson.

ABOUT THE AUTHORS



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