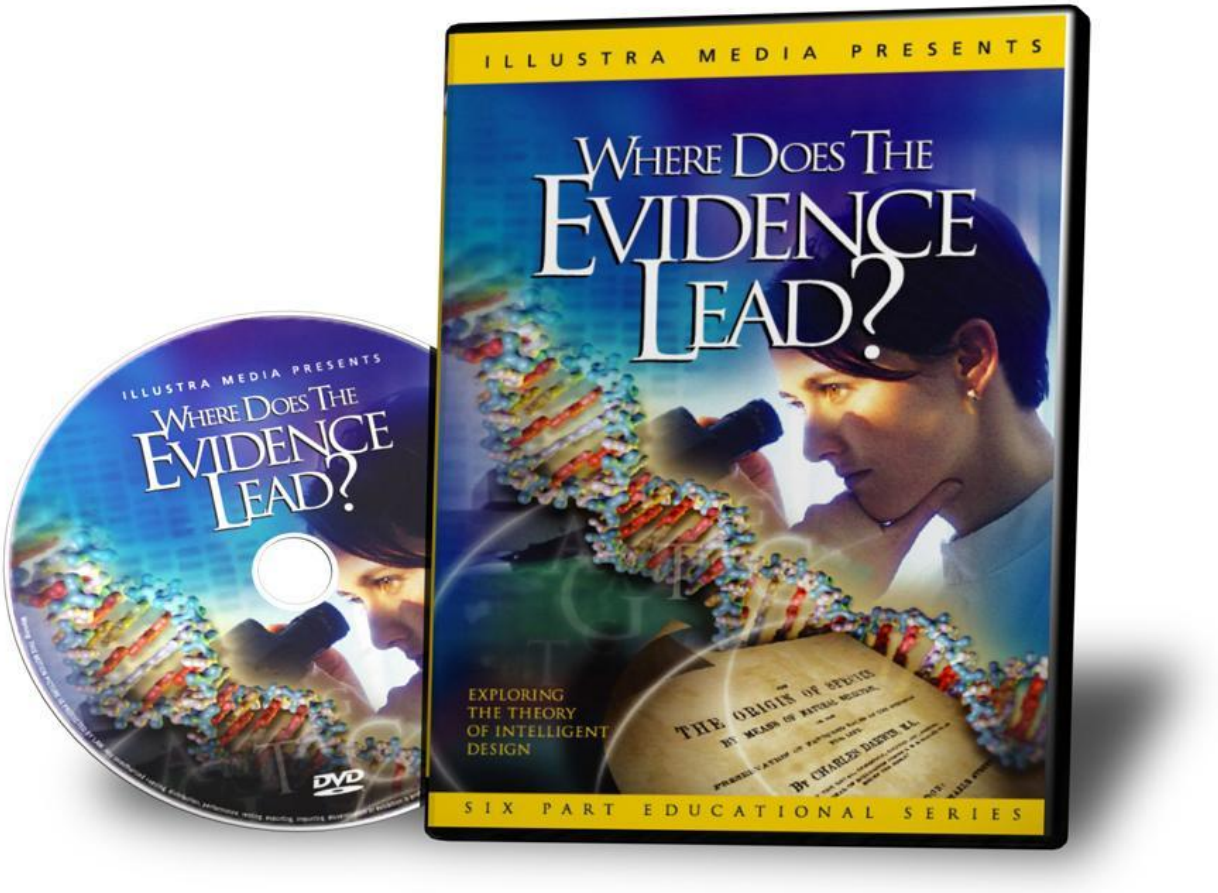

DISCUSSION & STUDY GUIDE

By Ryan Huxley

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Introduction

The theory of intelligent design (ID) is a fascinating topic and of great interest to many people. However, many people have inaccurate understandings of the basic concepts associated with ID. In an effort to provide more clarity, Illustra Media produced a series of engaging and informative documentaries covering many of the different types of scientific evidence supporting ID. Stunning computer animation and interviews with leading academic experts provide the viewer with powerful illustrations and explanations for many of the key ID concepts. Illustra's documentary *Where Does The Evidence Lead?* is geared specifically for instructional purposes to highlight basic ID concepts, especially regarding the evidence for design in biology.

This Discussion & Study Guide ("guide") is designed to help you and others learn about these concepts in more detail. The guide should be used in conjunction with viewing the Illustra Media documentary *Where Does The Evidence Lead?* The film and guide are broken into six segments. Each video segment is between eight and fourteen minutes in length. The guide has short-answer-style questions, fill-in-the-blank and true/false statements as well as discussion questions. It can be used for individual or group study, though the discussion questions are ideal for group learning situations. Answers to questions are provided at the back of the guide. Additional resources are referenced in the 'Answers' portion for those interested in gaining a more detailed understanding of a particular topic.

The short-answer questions are taken directly from the film. More difficult questions or statements are usually at the end. Discussion questions are often open-ended and have been broken into two different categories: 1) those relating directly to a video topic, and 2) those that relate to a video topic, but are not explicitly covered in the video. Answering questions that extend the material covered in the video may require "a little digging" to arrive at an answer using additional resources.

If you would like to start a club to discuss ID and evolution at your school, university, or in your community, consider starting an Intelligent Design and Evolution Awareness (IDEA) Club! The IDEA Center helps students start IDEA Clubs on college and high school campuses, as well as in communities, around the U.S. and the world. The IDEA Center can provide resources to help you start an IDEA Club - and you do not have to be an ID expert to start one. Please see www.ideacenter.org for further information.

Please direct any feedback or input about the guide to ryan@ideacenter.org.

Part 1: Life – The Big Questions

Basic Questions:

1.1. List two of the four 'big life questions' noted in the video.

1.2. What was the name of Charles Darwin's famous book?

1.3. When was Darwin's book published?

1.4. Darwin proposed a new explanation for the diversity of life. What was it?

1.5. List one example of a functional advantage given in the video segment.

1.6. What explanation for life's origin and development did Darwin try to replace with his theory?

1.7. What personal experience and knowledge did Darwin base his theory upon?

1.8. Why was Darwin's new explanation considered radical for its time?

1.9. What are some of the key questions noted in the video segment regarding Darwin's theory?

Discussion Questions:

1.10. Describe the purpose of Darwin's journey on His Majesty's Ship (HMS) Beagle in 1831.

Part 1: Life – The Big Questions

1.11. What were some of his key findings during the journey?

1.12. What did it cause him to do?

1.13. In your own words, try to retell the explanations and examples given using the wildlife on the Galápagos Islands to illustrate the main points of Darwin's theory.

Discussion Questions Beyond the Video:

1.14. The video began with some big life questions. What are some other questions people must answer or topics they must consider when forming their own worldview?

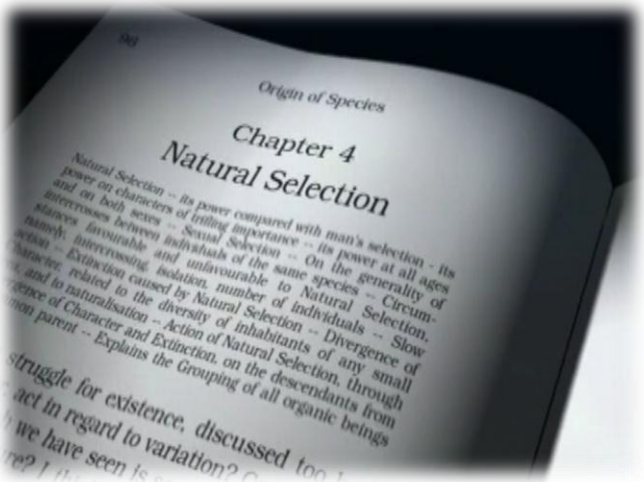
1.15. How should a person test proposed answers to worldview questions?

1.16. Can all answers to worldview questions be correct? Can some answers be more 'correct' than others? Why or why not?

Part 1: Life – The Big Questions

1.17. When did you first learn about biological evolution?

1.18. Did it cause you to shift your thinking about the world?



1.19. What were your thoughts about it at that time?

1.20. How about now?

1.21. Is natural selection random? Explain.

1.22. Are mutations random? What are the implications of your answer?

1.23. When talking about biological evolution with others, strong feelings or emotions or even name-calling can creep into the conversation unexpectedly. Have you ever experienced this? If so, how have you attempted to make it a civil discussion?

Part 1: Life – The Big Questions

1.24. What are your thoughts on the potential limits for natural selection? How do you go about substantiating those views?

1.25. Darwin's ideas have had a significant impact on current scientific thinking in many different areas. What other fields and intellectual areas can you identify that have adopted Darwin's ideas?

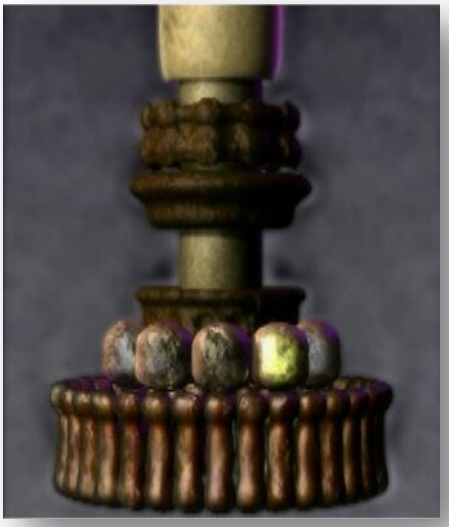
1.26. Darwin has made such an impact on Western society that some people want to have his birthday (February 12) named "Darwin Day." What kinds of activities or celebrations have you noticed at those times?

1.27. Can you think of any other scientific figure that has garnered such appreciation their birthday is celebrated in similar fashion?

Part 2: What Darwin Didn't Know

Basic Questions:

2.1. What was the name of the book that Michael Behe read that caused him to question evolution? Who authored the book?



2.2. What did scientists think cells were made of at the time Darwin was writing his book?

2.3. How fast can some flagella spin?

2.4. How quickly can they (flagella) stop?

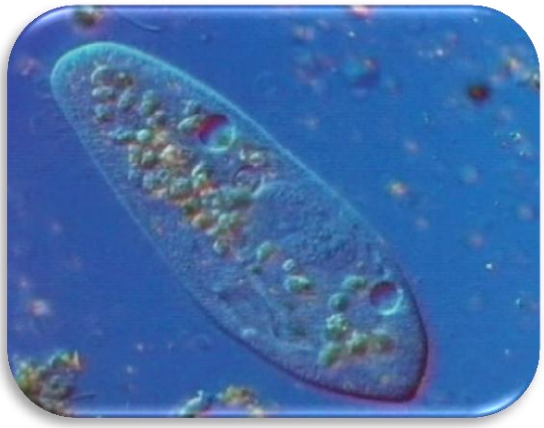
2.5. Prior to the discovery of molecular _____ in the cell, Darwin's theory was more plausible.

2.6. Does life get more or less complex the smaller you go from the whole organism to the sub-cellular level?

2.7. Harvard Professor Howard Berg describes the bacterial flagellum as the most efficient _____ in the known universe.

2.8. Name two or more examples of complex elements within cells.

2.9. Jed Macosko noted that there is not just one or a few miniature machines in the body but as many as there are _____ _____.



Discussion Questions:

2.10. What did you find to be the most interesting or surprising aspect of this video segment? Why?

Part 2: What Darwin Didn't Know

2.11. What are some of the discoveries over the last several decades that have led to a significant change in the understanding of the cell?

Discussion Questions Beyond the Video:

2.12. At one time in the distant past, some people thought the Earth was flat or that the sun revolved around the Earth. However, scientific discoveries changed that thinking, eventually giving rise to the current views. What other kinds of scientific discoveries have dramatically changed the way people think about things?

2.13. Have you ever been confronted with evidence or reasoning that challenged your previous views?

2.14. What kinds of evidence or reasoning do you find the most, and least, persuasive? Why?

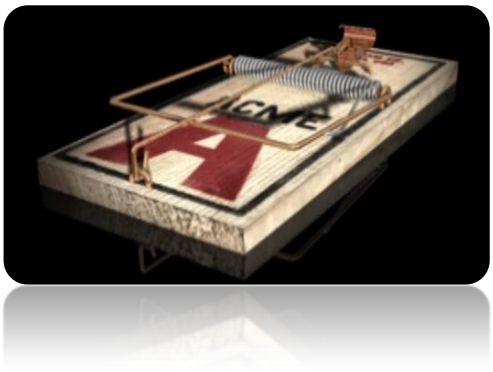
2.15. Do you know of any past scientific views that, despite new and mounting evidence to the contrary, seemed to persist?

2.16. Based on those examples, what other non-scientific factors explain how quickly a new theory is accepted?

Part 2: What Darwin Didn't Know

2.17. What are some of the 'stages' associated with the acceptance of a new scientific view?

Part 3: Molecules and Mousetraps



Basic Questions:

3.1. What molecular machine is discussed in this segment?

3.2. What is the definition of irreducible complexity (IC)?

3.3. Because of the interdependent nature of the molecular machines, not only do IC systems require the equivalent of blue prints, but also assembly instructions that show the _____ of when each part must be added during construction.

3.4. Molecular machines often require other molecular machines for their construction. True or false?

3.5. According to the quote given from Darwin, how does natural selection work on organisms?

3.6. Critics of IC suggest that parts from other molecular machines somehow combine together to form new machines that function differently from those that supplied the parts. This theory is referred to as _____.

3.7. One of the flaws of this theory is that it fails to provide a plausible explanation of what must first occur before the machine can begin to function. What must occur first?

3.8. What is the Darwin quote that shows why IC is so challenging to neo-Darwinism?

3.9. What was the name of the book discussed, written by Michael Behe, who has a doctorate in biochemistry?

Part 3: Molecules and Mousetraps

Discussion Questions:

3.10. Why is IC a challenge to natural selection?

3.11. Do you find this to be a compelling argument? Why or why not?

3.12. Some critics have suggested that because there are other simpler molecular machines that make use of some of the same protein components, these molecular machines provide actual counter-examples to supposedly IC molecular machines since these show prior function for such elements upon which natural selection can act. Is such a rebuttal to IC correct? Why or why not?

Discussion Questions Beyond the Video:

3.13. While some critics of the mouse trap analogy for IC have pointed out simpler versions of a mouse trap, such as a box with one open end and very sticky glue on the inside, does this show that the mouse trap analogy or IC is wrong? Why or why not?

3.14. Some critics have claimed that IC is actually just an argument from ignorance - simply because we cannot think of how the flagellum arose through natural processes does not mean it did not. How would you respond to such claims?

Part 3: Molecules and Mousetraps

3.15. Some critics have pointed out that there is variability in the number of proteins required for different types of flagella. Based on this, they suggest that the flagellum is not IC. How would you respond to such claims?

3.16. Some critics suggest that computer simulations have generated IC systems through evolutionary means, thus supposedly falsifying IC. How would you respond to such claims?

3.17. Some critics claim that intelligent design is not falsifiable and is, therefore, not scientific. Does this claim make sense in light of some of the other criticisms? Why or why not?

Part 4: How Did Life Begin?

Basic Questions:

4.1. Darwin compared the development of life to a _____

4.2. Darwin addressed the origin of life from non-living components in his book, *The Origin of Life*. True or false? Explain.

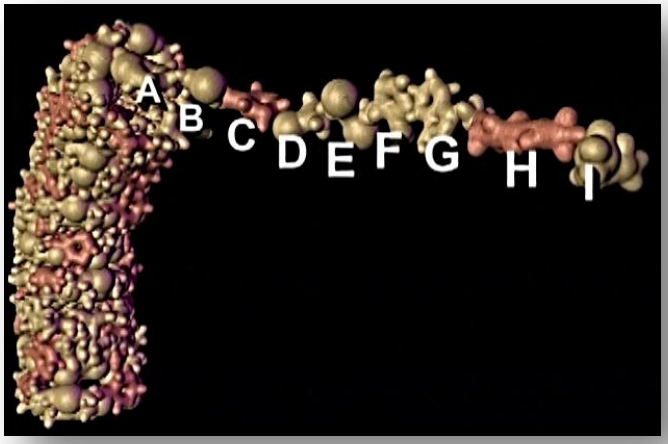
4.3. Origin-of-life theorists perform experiments to try to create the "building blocks" of life from natural, unguided processes. These "building blocks" are called _____ _____.

4.4. About how many different types of these "building blocks" are needed for life?

4.5. When chained together in the right sequence, these "building blocks" create _____.

4.6. The 'day-to-day' tasks within cells that keep them alive and functioning are performed by _____.

4.7. Approximately how many "building blocks" are in the simplest functional chain?

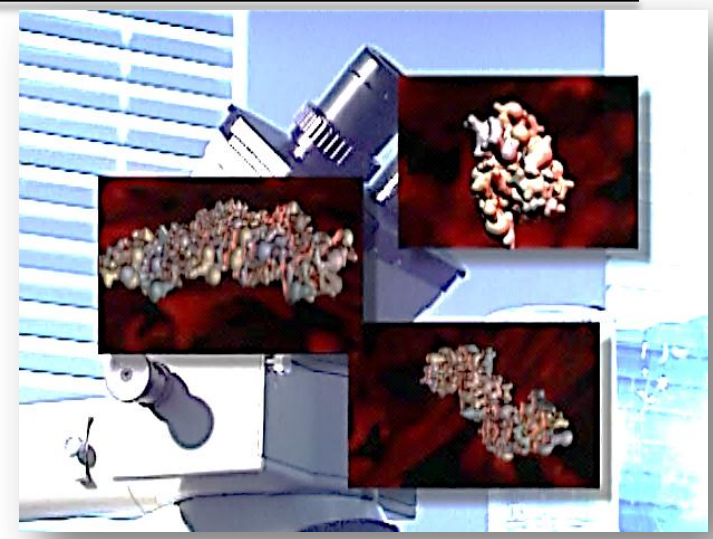


4.8. Mathematicians have estimated that if the early Earth was covered in primordial soup with all of the relevant "building blocks" present, it would require about _____ years to get the right sequence by chance alone to create simple proteins.

4.9. Chance is still considered a valid avenue of research by origin-of-life scientists. True or false?

Part 4: How Did Life Begin?

4.10. The proteins of the hypothesized first life were of similar complexity to those we see today. True or false?



4.11. Name one of the two big questions biology faces.

4.12. Even simple cells contain thousands of _____.

Discussion Questions:

4.13. According to this video segment, why is sequence important in the chains making the "building blocks"?

4.14. What are some of the key questions origin-of-life researchers grapple with in their experimental scenarios?

4.15. Name and explain the basic model of the origin-of-life theory proposed by Russian scientist Alexander Oparin in the 1920's and 1930's.

Discussion Questions Beyond the Video:

4.16. In response to criticisms of the naturalistic explanations in this video segment, some skeptics point out that there have been experiments which resulted in the creation of some "building blocks" through natural processes. Let's assume that they are correct. Is this sufficient to provide a naturalistic explanation for the origin of life?

Part 4: How Did Life Begin?

4.17. Name some of the basic functional characteristics required for something to qualify as "living."

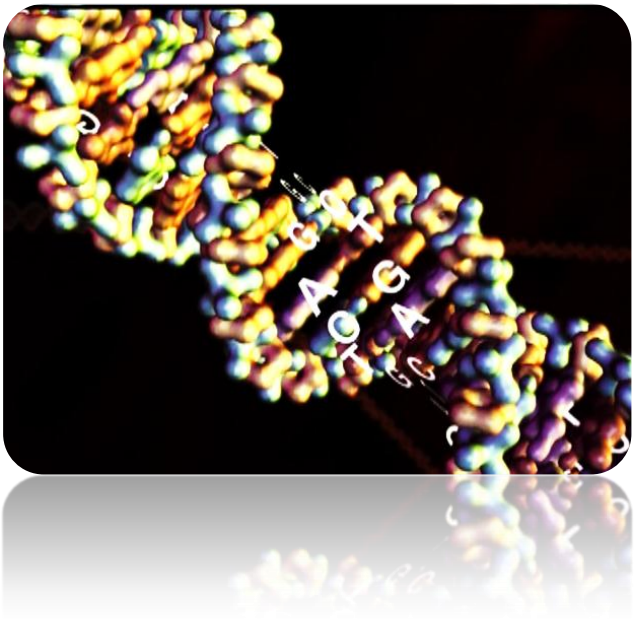
4.18. Based on your answer, describe what else must be present beyond mere "building blocks" for living things to survive.

Part 5: The Language of Life

Basic Questions:

5.1. What book did Professor Dean Kenyon co-author?

5.2. What was the main hypothesis of that book?



5.3. What dictates amino acid sequences?

5.4. What is the key aspect of the amino acid sequence that cannot be explained by natural processes?

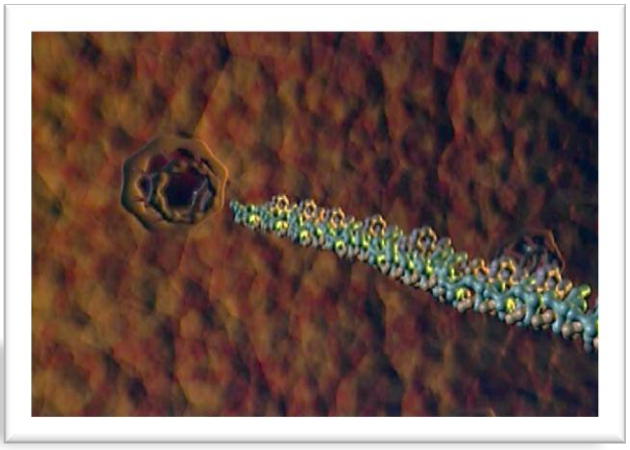
5.5. What is known as the language of life?

5.6. Amino acids have an ability to self-organize into meaningful and functional biological sequences through unguided processes. True or false? Explain.

5.7. Natural selection is possible without a system that can replicate, like DNA. True or false?

5.8. Origin-of-life scientists are attempting to develop self-organization hypotheses other than the one proposed by Dean Kenyon. True or false? Explain.

5.9. What is the classic analogy one could use to describe the problem for the origin of proteins and DNA?



Part 5: The Language of Life

Discussion Questions:

5.10. Describe the basic problem that the presence of information in the genome poses to naturalistic processes or explanations.

5.11. Explain the role DNA plays in natural selection in life today.

Discussion Questions Beyond the Video:

5.12. What are some of the positive repercussions that could follow if a professor publicly stated that, based on the evidence, what he/she had stated in the past was incorrect? What are some of the negative repercussions?

5.13. Frequently, science investigates nature from a reductionist perspective where only material causes and explanations are allowed. Is this approach appropriate for studying the language of life? Why or why not?

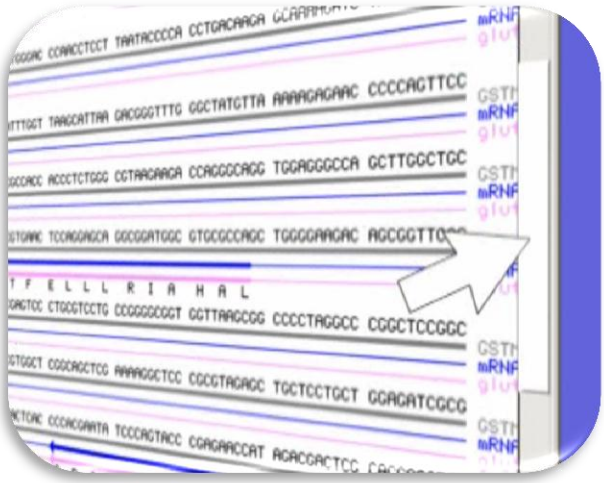
Part 6: The Design Inference

Basic Questions:

6.1. What did Francis Crick say that biologists must constantly remind themselves of?

6.2. Most scientists would agree that science's noblest goal is to seek the truth in understanding our world and universe. True or false? Explain.

6.3. The book *The Design Inference* challenges methodological naturalism and was written by _____, who holds a doctorate in mathematics.



6.4. Intelligent agents are associated with systems considered to be "_____ _____" systems.

6.5. Chance is capable of creating/originating new information. True or false? Explain.

6.6. The reasoning used in intelligent design is non-scientific.True or false? Explain.

6.7. Intelligent design has religious premises. True or false? Explain.

6.8. Intelligent design can have religious implications. True or false? Explain.

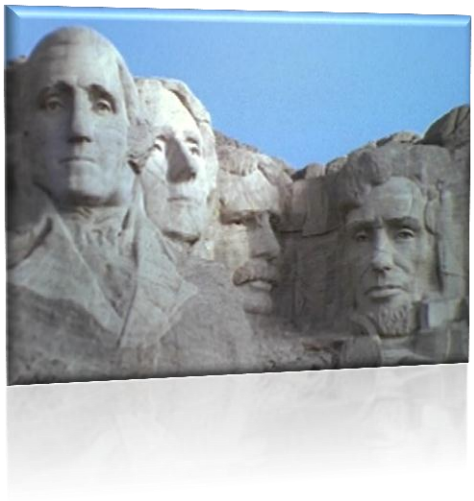
Part 6: The Design Inference

6.9. Intelligent design represents a potential paradigm shift to current scientific thinking. True or false? Explain.

6.10. The third fundamental entity beyond matter and energy that will need to be considered by 21st-century biology will be the origin and development of _____ in biological systems.

Discussion Questions:

6.11. Explain how one can determine whether intelligent design is a religiously based theory.



6.12. In your own words, describe how a design inference is made.

6.13. Some scientists claim that the only proper way to carry out scientific research is to utilize what is known as "methodological naturalism." What is methodological naturalism?

6.14. What causes does methodological naturalism exclude from consideration in science?

Part 6: The Design Inference

6.15. Do you think methodological naturalism is a good restriction on scientific inquiry?

Discussion Questions Beyond the Video:

6.16. Explain the difference between a "premise" and an "implication." What examples can you give?

6.17. What are the basic steps in making the design inference?

6.18. Is the design inference a deductive or inductive type of argument?

6.19. Some critics claim that a designer or designers must be identified and proven before a design inference can be made. What faulty reasoning is being used in this case?

6.20. What examples can you provide in other scientific fields that can help illustrate this faulty reasoning?

Part 6: The Design Inference

6.21. Discuss the difference between creationism and intelligent design.

6.22. If ID is different from creationism, does that mean it is anti-theistic or anti-Christian? Why or why not?

6.23. Some critics claim ID is not scientific because it has purportedly not published in peer-reviewed science journals. Regardless of the validity of this statement, is the reasoning used by it reasonable? Are these claims correct?

6.24. Which definition of intelligent design is correct: a) "Life is so complex that it couldn't have evolved; therefore, it was created by a supernatural being." OR
b) "Many features of nature are best explained by an intelligent cause because, in our experience, the types of informational properties observed are caused by an intelligence."
What is wrong with the incorrect definition?

6.25. Have you ever seen either definition used in newspaper articles? Which one?

Answers

Please note: Many of these answers contain links to other websites. These were accessed between October 2012 and January 2013. Simply because a link is provided does not necessarily imply endorsement of that site or the views expressed on that site. In the discussion questions, while answers are frequently provided, individual responses are likely to vary; the answers provided for the discussion questions give some of the basic points that could be included in a response.

Part 1: Life: The Big Questions

Basic Questions:

1.1. Where did we come from? How did we get here? What is our relationship to reality? What brought about all of life?

1.2. *The Origin of Species.* (Full title: *On the Origin of Species by Means of Natural Selection, on the Preservation of Favored Races in the Struggle for Life*.)

1.3. 1859.

1.4. Natural selection.

1.5. Finch beaks becoming larger, sharper, and stronger during droughts compared to normal weather periods for that region.

1.6. Design/creation. He substituted random mutation and natural selection as the mechanism through which life developed rather than by a designer/creator.
For more information on the theological underpinnings of Darwin's views, see the following:
- Cornelius G. Hunter, Darwin's God: Evolution and the Problem of Evil (Brazos Press, 2001).
- Michael Flannery's blog posts at *Evolution News and Views*:
  - "Finding Darwin's *Real* God," (October 11, 2012) at http://www.evolutionnews.org/2012/10/finding_darwins_1065211.html.
  - "More on Finding Darwin's *Real* God," (October 12, 2012) at http://www.evolutionnews.org/2012/10/more_on_finding065221.html.
- Jay Richards et al., God and Evolution, (Discovery Institute Press, October 15, 2010) and the associated website www.faithandevolution.org.

1.7. Domestic breeding, such as pigeon breeding.

1.8. Because it provided a plausible explanation for life developing in an unguided fashion without the need for a designer or Divine Creator.

1.9. What is the creative limit of natural selection? What is its creative extent? It can explain survival of the fittest, but can it explain arrival of the fittest? Is natural selection an adequate explanation for the origin and diversity of life on Earth?

Discussion Questions:

1.10. The purpose of his journey was for a survey expedition for the British Empire.

1.11. During the journey, Darwin stopped at the Galápagos Islands and studied the plant and animal life there. Many of the creatures he had never seen before, nor anything like them.

1.12. Many years later, this caused him to develop his theory of evolution by natural selection.

Answers

1.13. Different species of finches on the islands have beaks of different types and sizes. Depending on changes in climatic conditions, some finches are better able to survive based on food availability and their ability to obtain that food. Those with the appropriate kinds of beaks are better adapted to get the necessary food to survive. Those that survive pass on these variations to their offspring and are then considered to be selected for their adaptations, while others die off. This is how changes to populations can occur over time, bringing about new types of organisms.

Discussion Questions Beyond the Video:

1.14. A worldview generally consists of several basic elements. The answers could include five commonly cited elements:
1) A view or belief about the nature of God.
2) View or belief about ultimate reality (e.g. is the world eternal or finite? Is it the result of creative action or not?).
3) A view or belief about knowledge (what part does experience play in the role of knowledge?).
4) A view or belief about ethics/morality.
5) A view or belief about the destination of humanity (e.g. is there life after death? Are we only material objects? Do we have free will?).

1.15. Answer could include: One can test for consistency of reason or laws of logic, or make a test of experience (i.e., is it consistent with what we know of or about both our inner and outer world - that is, inside and outside of us - for the inside part, does it explain love, guilt, morality, ethics, etc.). One can also make a test of practice - can it be lived consistently?

1.16. It is possible that some answers can be wrong. For example, a materialistic worldview might claim that life can arise by unguided processes. But if the evidence does not support this belief, then a basic tenet of that worldview is wrong. Thus, an answer can be better if it meets the tests listed in the question above. Additionally, objective evidence that supports an answer to a worldview question is superior to subjective evidence or personal experience. Additionally, objective evidence that supports an answer to a worldview question is superior to subjective evidence or personal experience.

1.17. through 1.20. Answers may vary. For an interesting account of one person's answers to these questions, read Lee Strobel's book *The Case for the Creator*, (Zondervan, March 2005) or watch the video by the same name, a clip of which is at http://www.leestrobel.com/videoserver/video.php?clip=strobelT1001.

1.21. Answers may vary, but may include the following information: natural selection is not random. Based upon changes in an organism due to genetic mutations and the environment in which it lives, it is a certainty that the organism will live or die if the changes affect its ability to survive. This life and death certainty is basically natural selection acting upon the noted changes.

1.22. Answers may vary, but should point out that yes, mutations are random and occur without respect to the needs of the organism. This causes great difficulty for Darwinian evolution to produce new complex features.

Answers

1.23. Answers may vary. One thing to keep in mind when discussing topics that affect one's worldview is that if people realize that they may be basing their view on incorrect information, then they may become defensive - nobody likes being wrong, especially on core, foundational beliefs that can dictate how one directs his or her life. One suggestion for bringing the conversation back to a civil discussion is to remind people you are interested in analyzing concepts and ideas, not in demeaning each other. Ask if they are still interested in focusing on the topic without demeaning comments that sideline an interesting conversation. For additional information, refer to the "FAQ: Why is intelligent design theory often controversial?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1160.

1.24. Answers may vary. It is a well-established fact that microevolution occurs within species brought about by natural selection. Polar bears develop thicker coats, and other physical features that allow them to live in colder climates compared to other bears. Breeders can develop larger and larger dogs. But larger scale changes leading to new species or further up the taxonomic scale, known as macroevolution, is more questionable. In other words, based on the evidence, macroevolution seems to run into evidential problems. Therefore, the extent of credit given to random mutation coupled with natural selection or other naturalistic mechanisms is dubious based on the evidence. This is where the debate lies between intelligent design and neo-Darwinism.

For further discussions of evolutionary theory, see:

- "Primer: Evolutionary Theory in a Nutshell" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1138.
- "Primer: Evolutionary Theory" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1096.
- "What is the modern theory of evolution?" at http://www.discovery.org/a/9491.
- "Primer: Mutations in a Nutshell" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1145.

Regarding substantiating one's view, again, this will likely depend on the background of the individual. Views that are based on the scientific method (i.e., observation of phenomena, hypothesis for what is observed, testing of that hypothesis, and making a conclusion about the validity of the hypothesis based on the testing) should be considered more objective and valid than those based on emotion or unquestioned acceptance.

1.25. Answers might include psychology, sociology, law, theology, politics, and many other conceivable fields.

1.26. Answers may vary. For details on "Darwin Day," see www.darwinday.org.

1.27. Answers may vary, but it is likely that no other past or present scientific figure has achieved the near 'cult status' that Darwin has obtained.

Further Reading:

1. *Where Does the Evidence Lead?* documentary website at http://www.wheredoestheevidencelead.com/.
2. Websites providing lists of famous scientists in history: www.greatscientists.net; www.famousscientists.org; http://www.buzzle.com/articles/list-of-famous-scientists-in-history.html.
3. "What is the modern theory of evolution?" at http://www.discovery.org/a/9491.
4. "Is there scientific evidence against Darwinian evolution?" at http://www.judgingpbs.com/index.html.

Answers

5. "Debate: Was Darwin wrong?" at http://www.faithandevolution.org/debates/was-darwin-wrong.php.
6. "Debate: Is there an "edge" to evolution?" at http://www.faithandevolution.org/debates/is-there-an-edge-to-evolution.php.
7. Explore Evolution: The Arguments For and Against Neo-Darwinism, (Hill House, 2007) at http://www.exploreevolution.com/.
8. Casey Luskin and Ralph Seelke, "Antibiotic Resistance Revisited" at http://www2.exploreevolution.com/exploreEvolutionFurtherDebate/2009/02/antibiotic_resistance_revisite.php.
9. Jonathan Wells, "Misrepresenting the Galapagos Finches" at http://www2.exploreevolution.com/exploreEvolutionFurtherDebate/2009/02/misrepresenting_the_galapagos_1.php.
10. Casey Luskin, "Response to the NCSE's Reply to Explore Evolution on Natural Selection" at http://www2.exploreevolution.com/exploreEvolutionFurtherDebate/2010/03/response_to_the_ncses_reply_to.php.
11. Additional debate topics on the *Explore Evolution: The Arguments For and Against Neo-Darwinism* book can be found at "Further Debate - Continuing the debate for and against Neo-Darwinism" at http://www.exploreevolution.com/further-debate.php.

Part 2: What Darwin Didn't Know

Basic Questions:

2.1. *Evolution: A Theory in Crisis*, by geneticist Michael Denton.
2.2. Simple protoplasm.
2.3. 100,000 rpm.
2.4. 1/4 turn.
2.5. Machines.
2.6. more complex.
2.7. Machine.
2.8. Answers may include circuits, assembly instructions, and miniature machines.
2.9. bodily functions.

Discussion Questions:

2.10. Responses will vary based upon the video, though many will probably note the nanotechnology associated with molecular machines, especially the bacterial flagellum. Others may comment on gaining a better understanding of the purpose and function of proteins.
2.11. The complexities of the cell at the molecular level have led to a dramatically different understanding of the cell. There are circuits, assembly instructions, and a myriad of molecular machines at work within each cell.

Discussion Questions Beyond the Video:

2.12. Answers may vary but could include the discovery of the Big Bang, heliocentric solar system, plate tectonics, solar atmosphere, germs, blood-letting to cure diseases, DNA, etc.
2.13. Answers may vary.

Answers

2.14. Answers may vary. Note that evidence based on personal experiences should not always 'carry as much weight' as those derived from publicly available objective knowledge, knowledge gained through the scientific method, or other accepted methods of inquiry.

2.15. Answers may vary, but good examples include:

- The Big Bang, which replaced the Steady State Theory. Even though the Big Bang was predicted by Albert Einstein's theory of General Relativity in 1916, it was not generally accepted (even though various empirical observations and theoretical work confirmed it) until 1965 based on measurements of the cosmic microwave background radiation (i.e., temperature of the universe, so to speak) work of Arno Penzias and Robert Wilson of Bell Labs.
- Gregor Mendel, an Austrian monk who carried out experiments with pea plants in an abbey, first published his law of inheritance (though, at the time, it was actually thought to be about hybridization) in 1866. Though his readings of his paper in 1865 were well received at meetings of the Natural History Society of Brunn, it was criticized when published. It was subsequently ignored until 1900, when other scientists duplicated his results and realized Mendel had been right over 30 years earlier. He became known as the "Father of modern genetics," and his laws of inheritance became the foundation of modern genetics.
- Max Planck, known as the "Father of quantum mechanics," when asked why the scientific community took so long to accept his ideas, he stated that *"A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it."* (as seen at http://en.wikiquote.org/wiki/Max_Planck: *Wissenschaftliche Selbstbiographie. Mit einem Bildnis und der von Max von Laue gehaltenen Traueransprache*., Johann Ambrosius Barth Verlag, (Leipzig 1948), p. 22, as translated in *Scientific Autobiography and Other Papers*, trans. F. Gaynor (New York, 1949), pp.33-34 (as cited in T.S. Kuhn, *The Structure of Scientific Revolutions*, p. 150).) This has been paraphrased as "Science advances one funeral at a time."

2.16. Some potential factors might include:

- The degree of difference between the new theory and the old theory. The greater the difference, the longer it will take.
- Whether or not the new theory impacts other areas of knowledge, especially in areas affecting worldviews. If a new theory goes against generally accepted ideas regarding the nature of reality, even if only through implications, it is likely to take longer to be accepted.
- The number of scientists able to put forth a convincing case. With more, acceptance will be quicker; if there are only a few scientists and they are ostracized for their views, then their case may take a long time before a sufficient number of qualified scientists in a particular field begin to accept the new theory (see Max Planck quote above).
- What various recognized authorities think about a new theory can influence the speed and degree to which it is accepted by others.
- The technological and analytical sophistication of the culture at the time of a new idea's proposal.
- Whatever may be the consensus view on a given means of acquiring new knowledge - some areas of epistemology are considered more 'valid' than others.

Answers

2.17. Thomas Kuhn provides three basic stages in his book *The Structure of Scientific Revolutions*:
- *Pre-paradigm phase* - this describes a time when there is a lack of a generally accepted overarching theory for a given topical area.
- *Normal science* - this occurs after a given paradigm view is established and provides the background basis for carrying out research within the scientific enterprise.
- *Revolutionary science* - this occurs if, after a time period of carrying out activities in the 'normal science' phase, substantial conflicts or inconsistencies are observed, calling into question the paradigm view.

From a less technical perspective, the well-known Mahatma Ghandi quote summarizes some of the cultural aspects of the stages of acceptance: "First they ignore you, then they ridicule you, then they fight you, and then you win." Based on stages identified in this way, where do you see intelligent design fitting in?

For further reading, see "FAQ: What prompts a group of people to challenge the dominant scientific paradigm?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1168.

Part 3: Molecules and Mousetraps

Basic Questions:

3.1. The bacterial flagellum.

3.2. All the components of a system must be present or it ceases to function.

For further information on IC systems, see the following links:
- "Primer: Irreducible Complexity in a Nutshell" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1142.
- "Irreducible Complexity: The Challenge to the Darwinian Evolutionary Explanations of many Biological Structures," at http://www.ideacenter.org/contentmgr/showdetails.php/id/840.

3.3. Sequence

3.4. True. (For a good short video providing a description of some of the components and showing some aspects of the construction process, see http://www.youtube.com/watch?v=Ey7Emmddf7Y.)

3.5. According to Darwin, natural selection works on slight, successive modifications, only selecting for or against them. Quote: Natural selection is … scrutinizing …the slightest variations; rejecting those that are bad, preserving and adding up all that are good.

3.6. Co-option.

3.7. Co-option does not address the assembly instructions required for proper integration and construction of the various components.

3.8. Darwin stated, "If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down."

3.9. *Darwin's Black Box: The Biochemical Challenge to Evolution.*

Discussion Questions:

3.10. All parts must be present for functioning - there are no 'simpler' versions upon which natural selection can act.

3.11. Answers may vary.

3.12. As noted in the video, there are several items that must be explained:

Answers

- Many proteins lack homologues.
- Any new proteins in the more complex version must be explained.
- The sequence of construction of the new molecular machine for aspects that are 'new' compared to the simpler version.
- A plausible description of intermediate stages that accounts for the genetic changes required to describe not only the new protein components, but other molecular machines involved in the construction that are not present in the simpler version - this is a compounding difficulty since the function and integration of various components into systems must be accounted for in the explanation.

Another problem is that some critics have constructed a strawman argument of the IC definition, claiming that if some proteins that make up flagella are found elsewhere, then IC is incorrect. However, this is an incorrect understanding of IC since IC does not say that the proteins in a given IC system must not be used elsewhere - it says that the particular configuration of the proteins is such that if that configuration is modified by removing a component, *that system* no longer functions. Critics are only focusing on the word "function", rather than keeping that term in context: "*function of that system."* It is the functioning of that final system that is of primary concern, not just the functioning of those proteins in other simpler systems.

Discussion Questions Beyond the Video:

3.13. No, for the following reasons:

- Other simpler examples are often themselves irreducibly complex - without one of the elements, it will cease to function.
- The example given has different components, even if they may serve the same purpose of catching mice.

3.14. This response misses the key aspect of IC systems - they are not visible to natural selection. If other pathways are suggested, they become far more difficult to justify given the lack of a mechanism to maintain the genetic modifications. A multitude of components, integration, and construction sequencing must be explained by natural processes. Furthermore, testing of such claims becomes extremely problematic if there are no environmental stresses that can be applied since natural selection is unable to act on intermediate systems. Evolutionary claims of this type become a "just so" story. Refer to the following for additional information:

- "FAQ: Is intelligent design merely an 'argument from ignorance?'" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1186.
- "FAQ: Does intelligent design theory make the 'Unexplained' = 'Unexplainable' fallacy?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1167.

3.15. Finding that one system works slightly differently does not mean that all of its components are not required. It might be a differently engineered system. Or, there may be an irreducible core system in common between the various flagella. Additionally, citing examples of functioning systems with fewer components does not provide the necessary description of all the prior versions that must have existed for the simpler version.

Answers

3.16. Answers may vary, but may include the following information: When computer simulations are run, the potential for intelligent design to be snuck in through the 'back door' is likely; that is, true modeling of actual conditions consistent with random mutations and natural selection can be 'short circuited' by programming. In fact, when irreducible complexity is properly modeled, computer simulations of Darwinian evolution fail to produce the feature—which is exactly what intelligent design predicts.
For further information, see the following:
- Casey Luskin, "Evolution by Intelligent Design: A Response to Lenski et al." at http://www.ideacenter.org/contentmgr/showdetails.php/id/1319.
- A more recent short blog post on a paper further critiquing the claims made in the Lenski et al. paper: Casey Luskin, "Winston Ewert, William Dembski, and Robert Marks Publish Mainstream Scientific Paper Exposing Flaws in Avida Evolution Simulation," *Evolution News and Views* (December 31, 2009), at http://www.evolutionnews.org/2009/12/winston_ewert_william_dembski030251.html.

3.17. No, it does not make sense. Experiments can be configured to test proposed IC systems by removing components and determining if they still function.

Further Reading:

1. Michael Behe, "Molecular Machines: Experimental Support for the Design Inference" at http://www.discovery.org/a/54.
2. Various authors responding to criticisms of IC: "About Irreducible Complexity: Responding to Darwinists Claiming to Have Explained Away the Challenge of Irreducible Complexity" at http://www.discovery.org/a/3408.
3. Podcast on "Irreducibly Complex: Behe on the Bacterial Flagellum," *ID The Future* (August 22, 2008) at http://www.idthefuture.com/2008/08/irreducibly_complex_behe_on_th.html.
4. Casey Luskin, "Molecular Machines in the Cell" at http://www.discovery.org/a/14791.
5. Videos:
   - Molecular Machines Animations and Movies at http://www.arn.org/mm/mm_movies.htm.
   - Robert Crowther, "William Dembski on Molecular Machines and the Death of Darwinism," *Evolution News and Views* (October 13, 2007) at http://www.evolutionnews.org/2007/10/video_molecular_machines_and_t004297.html.
   - "Journey Inside The Cell" at http://www.journeyinsidethecell.com/.
   - "The Inner Life of the Cell" by XVIVO and Harvard University at http://multimedia.mcb.harvard.edu/anim_innerlife.html.
   - "ATP Synthase" at http://www.youtube.com/watch?feature=player_profilepage&v=XI8m6o0gXDY.
6. For a detailed debate on the blood clotting cascade being IC, refer to:
   - Casey Luskin, "Kenneth Miller, Michael Behe, and the Irreducible Complexity of the BloodClotting Cascade Saga" at http://www.discovery.org/a/14081.
   - Responses to other critics of the blood clotting cascade can be found in Michael Behe's article "In Defense of the Irreducibility of the Blood Clotting Cascade: Response to Russell Doolittle, Ken Miller and Keith Robison" at http://www.discovery.org/a/442.

Part 4: How Did Life Begin?

Basic Questions:

Answers

4.1. Tree - he referred to it as the "tree of life," starting with simple and going to more complex.
4.2. False, Darwin never wrote a book titled *The Origin of Life*, and barely addressed this topic in his writings.
4.3. amino acids.
4.4. 20.
4.5. Proteins.
4.6. Proteins.
4.7. About 100.
4.8. 15 billion $x10^{60}$ years = $1.5x10^{70}$ years, which is well beyond (trillions and trillions and trillions ….) the 13.7 billion year age of the universe.
4.9. False.
4.10. True.
4.11. 1) How do new body forms and structures (e.g. wings, eyes, etc.) arise? And 2) How did life begin initially?
4.12. Proteins. It should be noted that while simple cells have thousands, the simplest cells still require hundreds of proteins.

Discussion Questions:

4.13. Sequence is important because, without it, the amino acids will not fold properly into the correct three-dimensional shape to perform its function and the sub-cellular machinery destroys it.
4.14. How could life have evolved from simple chemicals? How could amino acids form from simple chemicals? How could amino acids get in their proper sequence by natural processes to form proteins?
4.15. Chemical evolution or abiogenesis. Life developed simply due to chance, natural chemical reactions, and Darwinian principles applied to molecular assemblies, eventually giving rise to the first living cell.

Discussion Questions Beyond the Video:

4.16. No, it is not sufficient because even if the building blocks of life were present on the early Earth, there is no way to explain how they might have organized to give rise to information.
4.17. Life must have the ability to use energy, replicate/reproduce, grow, and respond to its environment. Life also requires information – something which goes beyond the mere building blocks.
4.18. Answers may vary, but may include the need for integrated systems to provide the necessary functions to carry out the noted processes which are protected from potential undesirable chemical reactions.

Further Reading:

1. "Primer: Origin of Life in a Nutshell" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1143.
2. "Problems with the Natural Chemical 'Origin of Life'" at http://www.ideacenter.org/contentmgr/showdetails.php/id/838 (for a shorter version, see "Primer: Summary of Problems with Biological and Chemical Evolution" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1510.

Answers

3. Edward Peltzer's Quiz and Answers for his talk on Intelligent Design and the Origin of Life at the 2002 USF IDEA Conference at http://www.ideacenter.org/contentmgr/showdetails.php/id/818.
4. James Shapiro, "A Simpler Origin For Life," *Scientific American* (February 12, 2007) at http://www.scientificamerican.com/article.cfm?id=a-simpler-origin-for-life.
5. Leslie Orgel, "The Implausibility of Metabolic Cycles on the Prebiotic Earth," *PLoS Biology* 6(1): e18 (January 22, 2008) at http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.0060018.
6. A series of detailed blog posts on the above Shapiro and Orgel references:
   - Casey Luskin, commenting on Shapiro's paper at *Evolution News and Views*:
     - "The Origin of Life: *Not So Simple* (Part 1)," (February 15, 2007) at http://www.evolutionnews.org/2007/02/the_origin_of_life_not_so_simp003192.html.
     - "The Origin of Life: Not So Simple (Part 2)," (February 16, 2007) at http://www.evolutionnews.org/2007/02/the_origin_of_life_not_so_simp_1003193.html.
     - "The Origin of Life: Not So Simple (Part 3)," (February 19, 2007) at http://www.evolutionnews.org/2007/02/the_origin_of_life_not_so_simp_2003194.html.
   - Casey Luskin, commenting on Orgel's paper at *Evolution News and Views*:
     - "Leslie Orgel: Metabolic Origin of Life 'Unlikely'; Complexity Requires 'A Skilled Synthetic Chemist' (Part 1)," (February 3, 2008) at http://www.evolutionnews.org/2008/02/leslie_orgel_metabolic_origin004792.html.
     - "Leslie Orgel: Metabolic Origin of Life 'Unlikely'; Complexity Requires 'A Skilled Synthetic Chemist' (Part 2)," (February 6, 2008) at http://www.evolutionnews.org/2008/02/leslie_orgel_metabolic_origin_1004793.html.

Part 5: The Language of Life

Basic Questions:

5.1. Biochemical Predestination (McGraw Hill, 1969).
5.2. There was chemical affinity between amino acids, which facilitated a chemical basis for the initial genetic code.
5.3. The sequence of codons in deoxyribonucleic acid, DNA.
5.4. Information.
5.5. The information-based code in DNA.
5.6. False.
5.7. False.
5.8. True. Self-replicating chemicals are being explored as possible explanations.
5.9. Which came first - chicken or the egg?

Discussion Questions:

5.10. Complex and specified information cannot be produced by unguided natural processes. Moreover, information does not require material objects for its origin. While it does rely on various material mediums for expression, it is separate from those mediums in meaning. An analogy would be that words written on a sheet of paper convey information that is completely independent of the chemistry of the ink and paper. Information and the medium through which it is expressed are independent entities.

Answers

5.11. Mutations in DNA are thought to bring about physical changes in organisms, upon which natural selection can act. Without DNA, there is no reliable inheritance mechanism to pass on altered traits.

Discussion Questions Beyond the Video:

5.12. Positive repercussions include individuals who admit their mistakes can be esteemed for their honesty. This also encourages scientists to express their views, increasing academic freedom to follow the evidence where it leads. Negative repercussions include the possibility that individuals may be ridiculed for their new views or, in some cases, lose their jobs. For an interesting documentary about individuals who have suffered based on their ventures into the evolution-intelligent design controversy, including some who lost their jobs, see *Expelled: No Intelligence Allowed* with Ben Stein. A clip of that video can be seen at http://www.discovery.org/expelled/, which also has various resource links. Another site with many resource links associated with that video can be found at http://www.arn.org/expelled/.

5.13. No, it is not. The reductionist perspective does not account for information-based systems like language because language cannot be reduced to material causes. Moreover, language cannot be reduced to its individual components. In other words, understanding the proper integration of and proper sequential location of system components within various biochemical processes is critical to the proper functioning of such processes.

Further Reading:

1. Stephen C. Meyer, "Not by chance: From bacterial propulsion systems to human DNA, evidence of intelligent design is everywhere," *National Post of Canada* (December 1, 2005) at http://www.canada.com/nationalpost/news/issuesideas/story.html?id=8f7f51f2-a196-4677-9399-46f4f17b5b61.
2. Stephen C. Meyer, "DNA and the Origin of Life: Information, Specification, and Explanation," in *Darwinism, Design, and Public Education* (Michigan State University Press, 2003 - see http://www.darwinanddesign.com/) at http://www.discovery.org/scripts/viewDB/filesDB-download.php?command=download&id=1026.
3. Stephen C. Meyer, Signature in the Cell: DNA and the Evidence for Intelligent Design (Harper One, 2009) at http://www.signatureinthecell.com/.
4. Video: Journey Inside The Cell at http://www.journeyinsidethecell.com/.
5. Podcasts:
   - "The Mystery of Life's Origin: An Interview with Dr. Charles Thaxton, Part One," *ID The Future* (July 21, 2008) at http://www.idthefuture.com/2008/07/the_mystery_of_lifes_origin_an.html.
   - "The Mystery of Life's Origin: An Interview with Dr. Charles Thaxton, Part Two," *ID The Future* (July 25, 2008) at http://www.idthefuture.com/2008/07/the_mystery_of_lifes_origin_an_1.html.
     - Note: The book The Mystery of Life's Origin is also available online at http://www.themysteryoflifesorigin.org/Mystery%20of%20Life's%20Origin.pdf.
6. William Dembski, "Intelligent Design as a Theory of Information" at http://www.arn.org/docs/dembski/wd_idtheory.htm.

Answers

7. Casey Luskin, "A Response to Dr. Dawkins' 'The Information Challenge'," *Evolution News and Views* (October 4, 2007) at http://www.discovery.org/a/4278.
8. Casey Luskin, "The NCSE, Judge Jones, and Citation Bluffs About the Origin of New Functional Genetic Information," *Evolution News and Views* (March 2, 2010) at http://www.discovery.org/a/14251.

Part 6: The Design Inference

Basic Questions:

6.1. What they're observing in life is not designed, but evolved.
6.2. True.
6.3. William Dembski.
6.4. information rich.
6.5. False.
6.6. False, ID uses the scientific method to make its claims.
6.7. False.
6.8. True.
6.9. True.
6.10. Information.

Discussion Questions:

6.11. As noted in the video, intelligent design does *not* have any religious premises, though it does have religious implications. Theories that do not have religious premises are not religiously based. Refer to the following for additional information:
- "FAQ: Is Intelligent Design the same as Creationism?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1416.
- "FAQ: Is intelligent design just creationism (or creationism "in disguise")?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1183.
- "FAQ: Is ID just a religious or theological concept?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1162.
- "FAQ: Is intelligent design an appeal to miracles or the supernatural?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1187.

6.12. Answers may vary, but could be something like: First, scientists rule out chance- or law-based explanations. Then they find the type of information which, in our experience, comes from intelligence. In other words does it have the characteristics of designed objects - complexity and specification? If so, then what we observe may be designed. For additional information, refer to the following:
- "FAQ: How do we Detect Design?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1203.
- "FAQ: Can we positively say something was designed?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1152.
- "Primer: Intelligent Design Theory in a Nutshell" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1136.

6.13. It is a limitation that allows only natural or mechanistic causes or events be considered in scientific explanations of observed phenomena.
6.14. Non-natural or intelligent causes are excluded from consideration.

Answers

6.15. Answers may vary, but they may observe that methodological naturalism prohibits scientists from making certain valid scientific conclusions. For details, see "Primer: Naturalism in Science" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1169.

Discussion Questions Beyond the Video:

6.16. A premise is similar to a presumption. An implication is a conclusion that can be determined from the premise, even if not explicitly stated to follow from the premises. Examples: Premises: *All men are mortal. Socrates is a man.* Implication: *Socrates is mortal.*

6.17. Answers may be something like the following: Premise 1: Intelligent/agent causes exist.
Premise 2: Hallmarks/Characteristics of these causes are high levels of specified complexity (SC).
Premise 3: In our experience, intelligent/agent causes are the only cause of SC.
Premise 4: We can empirically detect these hallmarks/characteristics.
Premise 5: Biological life has detectable SC.
Conclusion: Therefore, the best explanation for the SC in life is that it was designed by an intelligent/agent cause.

6.18. Inductive.

6.19. Identification of the designer(s) is not necessary in order to determine something was designed. In SETI, if a signal of prime numbers was received, such as was portrayed in the 1997 movie *Contact*, it would not be required to identify the senders to know it was an intelligent agent that produced the signal.

6.20. Similar examples can be provided in forensics (e.g. a body found in a lake wrapped in plastic with chains and weights wrapped around the plastic and body - the identity of the killer is not needed to deduce that this was a murder), archeology (e.g. the stone faces on Easter Island can be identified as being from intelligent agents, even if those agents are unknown at the time of the discovery of the stone faces), cryptography (e.g. an intercepted code can be identified without being able to identify the sender of the message within the code), etc.
For further reading, see:
- "FAQ: What is the Identity of the Designer?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1204.
- "FAQ: Who designed the designer?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1147.
- "FAQ: According to intelligent design theory, who is the designer and why can't intelligent design theory identitfy the designer?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1190.
- "FAQ: ID is asking us to accept the existence of an intelligent designer. Where is there evidence for the intelligent designer?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1157.

6.21. Creationism generally starts with the Bible and looks then to science to substantiate the views associated with it. Intelligent design does not rely upon the Bible or any other religious text as its basis. Creationism generally identifies the Judeo-Christian God as the creator of life. Intelligent design is unable to identify the designer(s) due to its limited scope of only providing tools to discern designed objects. One could summarize ID in two words: design detection.

Answers

6.22. No. Intelligent design is consistent with many theistic beliefs. While ID does not have religious premises, its conclusion that life was designed is consistent with the teachings of many religions.

6.23. The validity of a scientific claim is not determined by the number of people in agreement with it; its validity is based on how well it is supported by the evidence. Furthermore, the referees who decide what will be published can exert bias and prevent papers from being published in their journals if they disagree with the conclusions or implications of the paper. See the following for additional information:

- "Intelligent Design Is Peer-Reviewed, but Is Peer-Review a Requirement of Good Science?" at http://www.discovery.org/a/18301.
- "FAQ: Why isn't intelligent design found published in peer-reviewed science journals?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1163.
- "Is Peer-Review a Requirement of Good Science?" at http://www.ideacenter.org/contentmgr/showdetails.php/id/1516.

Additionally, this claim is not correct. See "Peer-Reviewed & Peer-Edited Scientific Publications Supporting the Theory of Intelligent Design (Annotated)" at http://www.discovery.org/a/2640 for a list of peer-reviewed publications supportive of intelligent design.

6.24. Definition b is correct: "Many features of nature are best explained by an intelligent cause because in our experience, intelligence is the cause of their informational properties." Definition (a) is wrong because it wrongly frames ID as a strictly negative argument against evolution, and wrongly claims ID identifies the designer. Additionally, definition (a) is incorrect since it ends up being equivalent to an argument from ignorance - claiming something is too complex to have evolved does not actually provide explanatory information.

6.25. Answers may vary. Newspaper articles usually provide something like definition (a).

Further Reading:

1. "What is intelligent design?" at http://www.intelligentdesign.org/whatisid.php.
2. Jonathan Witt, A brief history of the scientific theory of intelligent design at http://www.evolutionnews.org/The%20Origins%20of%20Intelligent%20Design.pdf.
3. Stephen Meyer, "A Scientific History and Philosophical Defense of the Theory of Intelligent Design" at http://www.discovery.org/3241.
4. William Dembski, "The Explanatory Filter" at http://www.arn.org/docs/dembski/wd_explfilter.htm.
5. William Dembski, The Design Inference: Eliminating Chance Through Small Probabilities (Cambridge University Press, 1998) at http://www.arn.org/arnproducts/php/book_show_item.php?id=28.
6. William Dembski, "Detecting Design in the Natural Sciences" at http://www.designinference.com/documents/02.02.POISK_article.htm.
7. Casey Luskin, "Intelligent design (ID) has scientific merit because it uses the scientific method to make its claims and infers design by testing its positive predictions," *OpposingViews.com* (September 8, 2008) at http://www.discovery.org/a/7051.
8. Casey Luskin, "The Positive Case for Design" at http://www.discovery.org/986.

Answers

9. William Dembski, The Design Revolution: Answering the Toughest Questions About Intelligent Design (InterVarsity Press, 2004) at http://www.arn.org/arnproducts/php/book_show_item.php?id=65.
10. Discovery Institute's The Theory of Intelligent Design: A Briefing Packet For Educators at http://www.discovery.org/scripts/viewDB/filesDB-download.php?command=download&id=1453.
11. Casey Luskin, The College Student's Back to School Guide to Intelligent Design - Resources to Help You Understand the Debate Between Darwinian Evolution and Intelligent Design at http://www.evolutionnews.org/backtoschoolguide.pdf.
12. "IDEA Center FAQs and Primers" at http://www.ideacenter.org/resources/faq.php.

For a good list of additional reading references, see the Discovery Institute's essential reading list at http://www.discovery.org/csc/essentialReadings.php.

For several years' worth of the "Top Ten Darwin and Design News and Resources," refer to http://www.arn.org/top10/.

As was noted in the introduction to this study guide, if you would like to start a club to discuss intelligent design and evolution at your school, university, or in your community, consider starting an IDEA Club! The IDEA Center can provide resources to help you with doing just that, and you do not have to be an ID expert to start one - see www.ideacenter.org for further information.