

Evolutionist Quotes that Question Evolution

Nearly all of the following quotes are from evolutionists—some even from the leading architects of the theory. Even so, all quotes identify serious problems with the theory. Hence, even the evolutionist leaders realize the severe shortcomings of the theory.

What is being said about the problem of chirality by evolutionists (See *Examine the Evidence* Chapter 6 regarding chirality):

- *A recent world conference on “The Origin of Homo-chirality and Life” made it clear that the origin of this handedness is a complete mystery to evolutionists.*¹

The Web site of the University of California at Davis observes (regarding chirality),

- *Obviously, the origin of chirality is linked with the origin of life as we know it, so that same sorts of problems arise.... There are several theories for the origin of chirality, none of them obviously superior to the others.*²

An article in *Science* magazine reported:

- *Origin of life researchers are attempting to look for weak forces that might explain how life consists of left-handed amino acids and right-handed sugars. Some of the “classic” mechanisms, such as circularly-polarized light from supernovae and other explosive astronomical events, have now been eliminated. Researchers have shown that such [circularlypolarized] light can skew chemical reactions toward producing one particular chiral molecule at the expense of its twin. But supernovae and other astronomical sources would generate both the left- and right-spinning forms equally and so would be unlikely to produce an imbalance in organic molecules. Even these problems ignore the more fundamental problem of high radiation levels that would be produced by these astronomical sources that are incompatible with living organisms or even complex organic chemicals.*³

Charles Darwin

- *Natural selection can act only by the preservation and accumulation of infinitesimally small inherited modifications, each profitable to the preserved being.*⁴

- *Why, if species have descended from other species by insensibly fine gradations, do we not everywhere see innumerable transitional forms? Why is not all nature in confusion [he is talking about today’s plants and animals]*

¹ Behe, pp. 74-97. © 1996 by Michael J. Behe. By permission of The Free Press, a Division of Simon & Schuster Adult Publishing Group.

² Russell Doolittle, “The Evolution of Vertebrate Blood Coagulation: A Case of Yin and Yang,” *Thrombosis and Haemostasis*, vol. 70 (1993), pp. 24-28; as cited in Behe, pp. 74-97. © 1996 by Michael J. Behe. By permission of The Free Press, a Division of Simon & Schuster Adult Publishing Group.

³ R.F. Service, “Chemistry: Does Life’s Handedness Come from Within?” *Science*, vol. 286 (1999): pp. 1282-83.

⁴ Charles Darwin, *On the Origin of the Species* (Cambridge, MA: Harvard University Press, 2000), p. 95.

*instead of the species being as we see them, well defined?*⁵

- *But, as by this theory innumerable transitional forms must have existed, why do we not find them embedded in countless numbers in the crust of the earth?*⁶
- *If numerous species, belonging to the same genera or families, have really started into life all at once, the fact would be fatal to the theory of descent with slow modification through natural selection.*⁷ [Reference to the Cambrian Explosion]

British zoologist Mark Ridley

- *The gradual change of fossil species has never been part of the evidence for evolution. In the chapters on the fossil record in *On the Origin of the Species*, Darwin showed that the record was useless for testing between evolution and special creation because it has great gaps in it. The same argument still applies...In any case, no real evolutionist, whether gradualist or punctuationist, uses the fossil record as evidence in favor of the theory of evolution as opposed to special creation.*⁸

T.N. George (1960):

- *There is no need to apologize any longer for the poverty of the fossil record. In some ways it has become almost unmanageably rich. And discovery is outpacing integration.*⁹

Michael Denton, MD and PhD, (molecular biologist)

- *Not only has paleontology failed to come up with the fossil “missing links” which Darwin anticipated, but hypothetical reconstructions of major evolutionary developments—such as that linking birds to reptiles— are beginning to look more like fantasies than serious conjectures.*¹⁰

George Gaylord Simpson (paleontologist)

- *This [the gap in the proposed progression of horses] is true of all thirty-two orders of mammals....The earliest and most primitive known members of every order already have the basic ordinal characters, and in no case is an approximately continuous sequence from one order to another known. In most cases the break is so sharp and the gap so large that the origin of the order is*

⁵ Darwin, p. 171.

⁶ Darwin, p. 172.

⁷ Darwin, p. 302.

⁸ Mark Ridley, *New Scientist* 90:830 (1981); as cited in Duane T. Gish, PhD, *Creation Scientists Answer Their Critics* (El Cajon, CA: Institute for Creation Research, 1993), p. 113.

⁹ T.N. George, *Science Progress* 48:1 (1960); as cited in Gish, *Creation Scientists*, p. 113.

¹⁰ Michael Denton, *Evolution: A Theory in Crisis* (Chevy Chase, MD: Adler & Adler, 1997).

*speculative and much disputed.*¹¹

- *This regular absence of transitional forms is not confined to mammals, but is an almost universal phenomenon, as has long been noted by paleontologists. It is true of almost all orders of all classes of animals, both vertebrate and invertebrate. A fortiori [even more strongly], it is also true of the classes, and of the major animal phyla, and it is apparently also true of analogous categories of plants.*¹²

Jeffrey H. Schwartz (paleontologist)

- *Given that evolution, according to Darwin, was in a continual state of motion...it followed logically that the fossil record should be rife with examples of transitional forms leading from the less to more evolved....Instead of filling the gaps in the fossil record with so-called missing links, most paleontologists found themselves facing a situation in which there were only gaps in the fossil record, with no evidence of transformational intermediates between documented fossil species.*¹³

David B. Kitts (paleontologist)

- *Despite the bright promise that paleontology provides a means of “seeing” evolution, it has presented some nasty difficulties for evolutionists, the most notorious of which is the presence of “gaps” in the fossil record. Evolution requires intermediate forms between species and paleontology does not provide them. The gaps must therefore be a contingent feature of the record.*¹⁴

David Raup (paleontologist)

- *A large number of well-trained scientists outside of evolutionary biology and paleontology have unfortunately gotten the idea that the fossil record is far more Darwinian than it is. This probably comes from the oversimplification inevitable in secondary sources: low-level textbooks, semi-popular articles, and so on. Also, there is probably some wishful thinking involved. In the years after Darwin, his advocates hoped to find predictable progressions. In general, these have not been found; yet the optimism has died hard, and some pure fantasy has crept into textbooks....One of the ironies of the creation–evolution debate is that the creationists have accepted the mistaken notion that the fossil record shows a detailed and orderly progression.*¹⁵

Niles Eldredge (evolutionist)

¹¹ G.G. Simpson, *Tempo and Mode in Evolution* (New York: Columbia University Press, 1944), p. 105; as cited in Duane T. Gish, *Evolution: The Fossils Still Say No!* (El Cajon, CA: Institute for Creation Research, 1995), p. 334.

¹² Simpson, p. 107; as cited in Gish, *Evolution*, p. 334.

¹³ Jeffrey H. Schwartz, *Sudden Origins* (Hoboken, NJ: John Wiley & Sons, 1999),

p. 89; as cited in Genesis Park: “Dinosaurs: Living Evidence of a Powerful Creator (www.genesispark.org), Genesis Park Exhibit Hall, “Room 3—The Story of the Fossils”; <www.genesispark.org/genpark/gaps/gaps.htm>. Used by permission.

¹⁴ David B. Kitts, “Paleontology and Evolutionary Theory,” *Evolution*, vol. 28, 1974, p. 467; as cited in Genesis Park. Used by permission.

¹⁵ Cited in David Raup, “Geology,” *New Scientist*, vol. 90 (1981), p. 832; as cited in Genesis Park. Used by permission.

*The record jumps, and all the evidence shows that the record is real: the gaps we see reflect real events in life's history—not the artifact of a poor fossil record.*¹⁶

Stephen J. Gould (evolutionist)

- *The absence of fossil evidence for intermediary stages between major transitions in organic design, indeed our inability, even in our imagination, to construct functional intermediates in many cases, has been a persistent and nagging problem for gradualistic accounts of evolution.*¹⁷
- *I think I can see what is breaking down in evolutionary theory—the strict construction of the modern synthesis with its belief in pervasive adaptation, gradualism, and extrapolation by smooth continuity from causes of change in local populations to major trends and transitions in the history of life. [This is the entire basis of neo-Darwinism.] I do not know what will take its place as a unified theory.*¹⁸

Evolutionists John Maynard Smith, Emeritus Professor of Biology at the University of Sussex in Great Britain, Eors Szathmary of the Institute for Advanced Study in Budapest (Noted authors of popular books explaining evolution.)

- *The theory of evolution by natural selection **does not predict that organisms will get more complex.** It predicts only that they will get better at surviving and reproducing in the current environment, or at least that they will not get worse.*¹⁹
- *The problem of the origin of life is the problem of how entities with multiplication, variation, and heredity could arise, the starting-point being the chemical environment of the primitive Earth...But first, we must say a word about the possibility that life originated elsewhere in the Universe, either accidentally or by deliberate action of **extraterrestrials.***²⁰
- *Any one of them **might not have happened,** and if not, we would not be here, nor any organism remotely like us.*²¹ [Regarding, any one of the eight transitional steps of evolution identified by these two evolutionists.]
- *For the present, we have to accept that the origin of molecules with unlimited heredity is an **unsolved problem.***²² [Regarding the 1st supposed stage of evolution identified by Maynard Smith, Szathmary]

¹⁶ Niles Eldredge, *The Myths of Human Evolution* (New York: Columbia University Press, 1982), p. 59; as cited in Genesis Park. Used by permission.

¹⁷ Stephen J. Gould, "Is a New and General Theory of Evolution Emerging?" *Paleobiology*, vol. 6 (1980), p. 40; as cited in Genesis Park. Used by permission.

¹⁸ Stephen Jay Gould, "Is a New and General Theory of Evolution Emerging?" *Paleobiology* 6, no. 1 (1980): pp. 119-30, as cited by Michael Ruse, ed., *But Is It Science?* (Amherst, NY: 1996, Prometheus Books), p. 190.

¹⁹ John Maynard Smith and Eors Szathmary, *The Origins of Life* (New York: Oxford University Press, Inc., 2000), p. 15.

²⁰ Maynard Smith and Szathmary, p. 6, emphasis added.

²¹ Maynard Smith and Szathmary, p. 19, emphasis added.

²² Maynard Smith and Szathmary, p. 34.

- *To explain its [the genetic code's] origin and evolution is a major challenge, which is just beginning to be met.*²³ [Regarding the 3rd supposed step of evolution.]
- *We can only answer this question [that is, how a replicating system could evolve into today's "protein synthesizing machinery"] in vague outline.*⁷ They further add, "*This outline is necessarily speculative.*"²⁴ [Regarding the 3rd supposed step of evolution.]
- *Although we are still far from the artificial synthesis of such a system in the laboratory, this may happen in a few decades.*²⁵ [Regarding the 4th supposed step of evolution.]
- *Even if we accept the symbiotic theory of the origin of organelles, this does not explain the origin of the eukaryotic cell itself.*²⁶ [Regarding the 4th supposed step of evolution.]
- *Because of these complications [the complexity of meiosis—the process of sexual reproduction in cells] and the obvious disadvantages associated with them, it is not surprising that the origin and maintenance of sex continue to be a matter of controversy among biologists.*²⁷ [Regarding the 5th supposed step of evolution.]
- "*Most mutations reduce fitness.*"²⁸ [Regarding the 6th supposed step.]
- *The existence of non-reproductive castes, the so-called workers, in the social insects, and in some other social animals, poses a formidable problem to the theory of evolution, as Darwin already recognized.*²⁹ [Regarding the 7th supposed step of evolution.]
- *As yet, the role of genetic predisposition in insect colonies is a matter of speculation rather than solid knowledge.*³⁰ [Re: the seventh supposed step.]
- *If we depend on genetics alone, a population will never evolve the capacity to perform the action, because the chance that a genotype specifying all the correct settings will arise by chance is vanishingly small. Even if such a genotype does arise, it will be broke up by genetic recombination in the next generation.*³¹ [Regarding the eighth supposed step of evolution.]

Sir Frederick Hoyle (mathmetician)

²³ Maynard Smith and Szathmary, p. 46.

²⁴ Maynard Smith and Szathmary, p. 44.

²⁵ John Maynard Smith and Eors Szathmary, *The Origins of Life* (New York: Oxford University Press, Inc. 1999), p. 50.

²⁶ Maynard Smith and Szathmary, p. 60.

²⁷ Maynard Smith and Szathmary, p. 81.

²⁸ Maynard Smith and Szathmary, p. 34.

²⁹ Maynard Smith and Szathmary, p. 125.

³⁰ Maynard Smith and Szathmary, p. 133

³¹ Maynard Smith and Szathmary, pp. 165,166.

- *The likelihood of the formation of life from inanimate matter is one to a number with 40 thousand naughts [zeros] after it. It is enough to bury Darwin and the whole theory of evolution. There was no primeval soup, neither on this planet nor on any other, and if the beginnings of life were not random they must therefore have been the product of purposeful intelligence.*³²

Richard Goldschmidt (University of California evolutionist, professor, c. 1950's)

- *It is true that nobody thus far has produced a new species or genus, etc., by macromutation. It is equally true that nobody has produced even a species by the selection of micromutations.*³³

Dr. Lee Spetner, who holds a PhD in physics from MIT and accepted a fellowship in their department of biophysics

- *Random variations cannot lead to the large-scale evolution claimed by the neo-Darwinians... There is a lot of evidence for nonrandom [purposeful, therefore intelligent] variation.*³⁴
- *But so far as known, or at least so far as I know, there are no such examples [of mutations adding information].*³⁵
- *We see that no new information got into the genome. Indeed, it turns out that each of those mutations actually lost information. They made the gene less specific. Therefore, none of them can play the role of the small steps that are supposed to lead to macroevolution.*³⁶ [Regarding common examples where mutations have been thought to lead to a new, improved species—such as high yield wheat, or dairy cows, or DDT resistant insects]

Christian de Duve of the Institute of Cellular Pathology in Brussels, Belgium

- *Little is known, however, of the manner in which these...compounds interacted further to generate increasingly complex molecules and molecular assemblages, up to the first living cells. To date, in spite of much experimental and theoretical work, a striking dis-continuity still separates the most successful attempts at reproducing biogenic processes in the laboratory from the manner in which these processes take place in living organisms.*³⁷ [Regarding the second supposed step of evolution]

³² Sir Frederick Hoyle, as cited in Chuck Missler, *The Creator Beyond Time and Space* (Costa Mesa, CA: The Word for Today, 1996), p. 60.

³³ Goldschmidt, as cited in Gish, p. 3.

³⁴ Spetner, p. 209.

³⁵ T.K. Gartner and E. Orias, University of Santa Barbara, 1966; in Spetner, p. 131.

³⁶ Spetner, p. 150. The references are to Lerner et al., 1964; Wu et al., 1968; Rigby et al., 1974; Burleigh et al., 1974; Inderlied and Morlock, 1977; Thompson and Krawiec, 1983. Used by permission.

³⁷ Christian de Duve, "Clues from Present-Day Biology: The Thioester World" in A. Brack, ed., *The Molecular Origins of Life* (Cambridge, UK: Cambridge University Press, 1998); as cited in Michael Ruse, ed., *But Is it Science?* (Amherst, NY: Prometheus Books, 1996), p. 219.

- *The proposed explanation does not entirely solve the chirality problem.*
[Regarding his ideas of molecular modeling and evolution.]
- *Molecular modeling could not possibly help clarify this issue.*³⁸ [Regarding his ideas of molecular modeling and chirality.]

James Ferris of the Rensselaer Polytechnic Institute Department of Chemistry

- *...no prebiotic simulation experiments have been reported in which polymers are formed directly from simple inorganic and organic starting materials.*³⁹ [Regarding the 3rd supposed step of evolution.]

Dr. Robert Shapiro (PhD from Harvard, postgraduate work at Cambridge) has

spent his life researching DNA and RNA. He takes a very firm stand against the speculation that RNA could have served as an intermediary in the development of the first cell of life

- *A number of scientists are advocating the idea that life began with an “RNA world” in which oligonucleotides catalyzed key reactions, including those needed for metabolism and their own replication. I have argued, in books and review articles, that this scheme is implausible on synthetic grounds: **the complexity of RNA is too great for spontaneous, unassisted assembly of the first molecules to take place.***⁴⁰

Dr. Alan Schwartz of the Evolutionary Biology Research Group at the University of Nijmegen in the Netherlands

- *In an experiment designed to test the requirement for chiral purity, it was demonstrated that incorporation of even a single mononucleotide of opposite chirality into the end of a growing chain in template-directed oligomerization is sufficient to terminate the reaction (Joyce et al., 1984).*⁴¹ [Regarding tests that indicate that it is impossible for DNA to function properly with even a single nucleotide of opposite chirality.]

Marcel Schutzenberger of the University of Paris

³⁸ Christian de Duve, “Clues from Present-Day Biology in the Thioester World,” *The Molecular Origins of Life*, André Brack, ed. (Cambridge, UK: The Cambridge University Press, 1998), p. 222.

³⁹ James P. Ferris, “Catalyzed RNA Synthesis for the RNA World,” in Michael Ruse, ed. *But Is it Science?* (Amherst, NY: 1996, Prometheus Books), p. 255.

⁴⁰ Robert Shapiro, PhD, New York University faculty resume, New York University Web site: <www.nyu.edu/pages/chemistry/Faculty/shapiro.html>, emphasis added.

⁴¹ Alan W. Schwartz, “Origins of the RNA World,” Brack, ed., p. 247.

- “There is no chance ($<10^{-1000}$) to see this mechanism appear spontaneously; and if it did, even less for it to remain.”⁴²

Harold Morowitz, (Molecular biologist) calculated

- ... that, if every chemical bond were broken in the simplest living cell, the odds of it reassembling under ideal conditions would be $10^{-100,000,000,000}$ ⁴³

Edward Argyle, Astrophysicist

- a simple *E. coli* bacterium, with an information content of about 6 million bits, would have required about $10^{1,800,000}$ cases, or “states,” to occur on the early earth for its inception to occur.⁴⁴

John Horgan stated in a *Scientific American* article,

- “Some scientists have argued that, given enough time, even apparently miraculous events become possible—such as the emergence of a single-cell organism from random couplings of chemicals.

David Foster –re: Thomas Huxley, an ardent supporter & contemporary of Darwin,

- (Thomas Huxley) once supposedly stated that six monkeys typing randomly for millions of years could type out all the books in the British Museum. David Foster, a cyberneticist, concluded that “Huxley was hopelessly wrong in stating that six monkeys allowed enormous time would randomly type all the books in the British Museum when in fact they could only type half a line of one book if they typed for the duration of the universe.”⁴⁵

Sir Frederick Hoyle, the British astronomer (and his associate Chandra Wickramasinghe)

- such an occurrence (random development of life) is about as likely as the assemblage of a 747 by a tornado whirling through a junkyard. Most researchers agree with Hoyle on this point.”⁴⁶
- The odds that all the functional proteins necessary for life might form in just one

⁴² Marcel P. Schutzenberger, “Algorithms and the New Darwinian Theory of Evolution,” as cited in John Ankerberg and John Weldon, “Rational Inquiry and the Force of Scientific Data: Are New Horizons Emerging?” *The Creation Hypothesis: Scientific Evidence for an Intelligent Designer*, J.P. Moreland, ed. (Downers Grove, IL: InterVarsity, 1994), p. 274; as cited in Richard A. Swenson, M.D., *More Than Meets the Eye—Fascinating Glimpses of God’s Power and Design* (Colorado Springs, CO: NavPress, 2000), p. 69. Used by permission.

⁴³ Harold Morowitz, as cited in Hugh Ross, *The Creator and the Cosmos: How the Greatest Scientific Discoveries of the Century Reveal God* (Colorado Springs, CO: NavPress, 1995), p. 149.

⁴⁴ Edward Argyle, “Chance and Origin of Life,” *Extraterrestrials—Where are They?* Ben Zuckerman and Michael H. Hart, eds. (Cambridge, England: Cambridge University Press, 1995), p. 131; as cited in Fred Heeren, *Show Me God: What the Message from Space Is Telling Us About God* (Wheeling, IL: Day Star Publications, 1998), p. 61.

⁴⁵ David foster, as quoted in Heeren, p. 68; as cited in Swenson, pp. 70-71. Used by permission.

⁴⁶ John Horgan, as quoted in Gerald L. Schroeder, *The Science of God: The Convergence of Scientific and Biblical Wisdom* (New York: Broadway Books, 1997), p. 142; as cited in Swenson, p. 70. Used by permission.

place by random events (not including all the other problems such as chirality) were calculated by Hoyle and his associate Chandra Wickramasinghe to be 1 chance in $10^{40,000}$.⁴⁷

- *Hoyle and Wickramasinghe provided calculations for a slightly different version of the Huxley claim—that instead of all the books in the British Museum, monkeys could type out the complete works of William Shakespeare. Their calculations indicated that the world was not large enough to hold the hordes of monkeys and typewriters (let alone the wastebaskets) required for such a feat. They indicated this was analogous to the unlikelihood of the random creation of living material.*⁴⁸
- *My impression is that some evolutionists have sought to speed things up by wrongly considering cases where species are only coping with environmental conditions they experienced before, so that memory is being misinterpreted as discovery.*⁴⁹
- *Rarer advantageous mutations are swamped by more frequent deleterious mutations. The best that natural selection can do, subject to a specified environment, is to hold the deleterious mutations in check. When the environment is not fixed there is a slow genetic erosion, however, which natural selection cannot prevent.*⁵⁰ [Regarding Hoyle's belief that mutations were not an adequate mechanism for evolution.]

Gerald Schroeder

- *... continues the monkey analogy by stating that the chance of their randomly typing out any sentence at all, only a few words in length, is on the order of 1 in 10^{120} . He goes on to say, “Randomness just doesn’t cut it when it comes to generating meaningful order out of chaos. Direction is required. Always.” The odds with a world of monkeys and typewriters and a universe of time pale in comparison to the odds of just the chirality problem. And the problem becomes far greater when other factors are considered.*⁵¹

Carl Sagan and Francis Crick (noted atheists)

- *...when attempting to build a case for extraterrestrials (to gain research funding in that field). In the process, they estimated the difficulty of evolving a human by chance alone as $10^{-2,000,000,000}$. This would be in the same range as the estimate of Harold Morowitz.*⁵²

⁴⁷ Fred Hoyle and Chandra Wickramasinghe, *Evolution from Space* (London: J.M. Dent and Sons, 1981), p. 24; as cited in Heeren.

⁴⁸ Hoyle and Wickramasinghe, p. 148; as cited in Heeren.

⁴⁹ Fred Hoyle, *The Mathematics of Evolution* (Memphis, TN: Acorn Press, 1999), p. 98.

⁵⁰ Hoyle, pp. 135-36.

⁵¹ Schroeder, p. 93; as cited in Swenson, p. 71. Used by permission.

⁵² Carl Sagan and Francis Crick, as quoted in Ankerberg and Weldon, in J.P. Moreland, ed., p. 272; as cited in Swenson, pp. 70-71. Used by permission.

Stephen C. Meyer, who holds a PhD in the history and philosophy of science from Cambridge University

- “While many outside origin-of-life biology may still invoke ‘chance’ as a causal explanation for the origin of biological information, few serious researchers still do.”⁵³

Sir Ronald Fisher (1890–1962), one of the world’s great experts on the mathematics of evolution, an architect of neo-Darwinian theory (and one of the founders of the field of population genetics), made one of the first mathematical studies on how natural selection works. Essentially he looked at offspring in populations, noting which offspring had a positive survival value (SV) because of a positive mutation or a negative SV because of a negative mutation. After considerable analysis, he concluded that

- ...most mutants, even if they have positive survival values, will be wiped out by random effects.
- ...A single mutation, even if it is a positive one, has only a small chance of survival. As a result, a single mutation is unlikely to play much of a role in evolution.

He summed up,

- If positive mutations are to play a role in evolution, many of them must occur.⁵⁴

Dr. Michael Gross, Evolutionist

- Let us have a first look at these “natural nanomachines,” to see whether they could serve as models for scientists and engineers trying to develop new technologies.⁵⁵ [Reference to human cell components as “machines” implying grand design.]
- We are talking about complicated and highly efficient machines having a size of only a few millionths of a millimeter.⁵⁶
- Nothing ever produced by human engineering efforts comes anywhere near the performance of these biological systems. [For instance,] biomolecules, which are found within every living cell, ...can carry out the most amazing tasks.
- ...It will become clear that nature’s superiority is much more obvious on the nanoscale than in large-scale engineering.⁵⁷

⁵³ Stephen C. Meyer, “The Message in the Microcosm: DNA and the Death of Materialism,” *Cosmic Pursuit*, Fall 1997, pp. 41-42; as cited in Swenson, p. 72, emphasis added. Used by permission.

⁵⁴ As cited in Dr. Lee Spetner, *Not By Chance: Shattering the Modern Theory of Evolution* (Brooklyn, NY: The Judaica Press, Inc., 1998), p. 54. Used by permission of Judaica Press, Inc., www.judaicapress.com.

⁵⁵ Michael Gross, *Travels to the Nanoworld: Miniature Machinery in Nature and Technology* (Cambridge, MA: Perseus, 1999), p. 5.

⁵⁶ Gross, p. 3, emphasis added.

⁵⁷ Gross, pp. 5, xi.

The Issue of the Age of the Universe?

One of the most unfortunate disputes and misunderstandings of biblical theology is regarding the age of the universe (and the earth). Many Christians firmly believe that all of creation took place in six literal 24 hour days as modern translations of the Bible would seem to indicate. This position is termed Young Earth. Many other Christians have dug deeper into the latitude of the original Hebrew that was used in Genesis and have concluded that creation took place over six distinct, long periods of time. This position is termed Old Earth, and fits precisely with the scientific record. The impact of these two viewpoints is discussed in some detail in *Examine the Evidence* by Ralph O. Muncaster.

It is not the intention of this ministry to review these positions in detail, let alone to attempt to persuade someone to adapt one position over the other. It is the intention however, to encourage all Christians to be tolerant of the other side because: (1) it is not a salvation issue, and (2) ample evidence exists to support either point of view.

Tolerance is especially important for those holding a Young Earth viewpoint because the vast majority of the world accepts the scientific position of a universe that is about 15 billion years old, and an earth that is about 4.6 billion years old. For Christians to dogmatically presume to “know better” than the myriad of highly educated experts (many of whom are Christians as well) creates a perception of prejudice and ignorance that makes it virtually impossible for a non-Christian to be receptive to matters of greater importance. Certainly it would be unfortunate to deny proclaiming the gospel over a non salvation issue regarding age of the universe.

The purpose of this section is to inform Christians of how the scientific world has arrived at its conclusions. The intent here is *not* to persuade Young Earth Christians to change their position. It *is* intended to caution anyone to avoid using criticism, and to respect the education and expertise of the scientific world by providing knowledge.

Those having theological concerns are advised to read the section below regarding “General Revelation” and “Special Revelation.” Also, recommended is *Examine the Evidence* by Ralph O. Muncaster; Chapter 4.

How Scientists Determine the Age of the Universe

Scientists have calculated that the universe is about 15 billion years old. This is the number widely accepted today based on the latest information gathered. It is based on analysis of at least three factors:⁵⁸

1. *The redshift.* This is a measurement of the velocities and distances of many different distant galaxies as they move away from the big bang. It calculates the time it would have taken them to get to their present locations from the original center.

2. *Globular clusters.* The brightness and temperature of distant stars can be measured and plotted on a “Hertzsprung– Russell” diagram. The ages of clusters (groupings of stars) can be determined by observing where groupings leave the “main-line sequence” of star development.

3. *The half-lives of radioactive elements* that are abundant in galaxies at the outer edges of the universe (for example, thorium-232) can be measured by nuclear chronometers.

These methods consistently indicate that the universe is approximately 15 billion years old. Because they have been developed over many years and have been

⁵⁸ Dr. Robert Grange, *A Scientist Looks at Creation* videotape (Reel to Real & American Portrait Films: 1-800-736-4567).

supported by thousands of observations, the methods are highly trusted.

Dating the Earth

Determining the age of the earth raises several problems. For example, the crust of the earth today is not the same as the original crust, and therefore it cannot lead us to a direct measurement.

One thing we can be certain of is this: The earth is at least as old as the geological events that could only have happened on it once it was completed—such as volcanic eruptions. Based on this method of measurement, a reliable minimum age would be in the hundreds of millions of years.

Radiometric Dating

Radiometric dating provides the major means of estimating the age of the earth. We should note that there are more than 40 types of radiometric dating. But all of them use essentially the same technique to examine rocks with radioactive elements. The number of *daughter atoms* present (those produced by radioactive decay) are measured in proportion to the number of *parent atoms* remaining (those that still have their original radioactivity). These are known as *half-life* measurements. The number of parent atoms decreases exponentially at each point in time.⁵⁹

The accuracy of radiometric dating is very high. The half-lives of most radioactive isotopes used for dating are known to within plus-or-minus 2 percent. (It is critical for accuracy that the right method of dating is used for the right material. When anomalies appear, materials are often retested using a different method to check for agreement.)

Some of the kinds of events that radiometric dating is best at determining are, for instance, the time that has passed since the cooling of molten lava from a volcano; the end of a period of metamorphic heating (in particular, heating to greater than 1000 degrees); or the time since the death of a living creature (in this case, carbon dating is generally used). And recently, methods have been deployed that can be used to date even certain types of sedimentary rock. This is critical because many fossils are found in this kind of rock.

As mentioned, the dating of the earth itself is difficult since the early crust is long vanished. However, rocks have been found—on 5 different continents—that date to between 3.8 and 3.9 billion years old, and they contain minerals dating to 4.1 to 4.2 billion years old.⁶⁰ Because the rocks are believed to have been formed on earth, not as meteorites in outer space, this would seem to set a lower boundary for the earth's age. However, this is still not an absolute certainty.

“The most direct means for calculating the Earth's age from core samples is a Pb/Pb [lead–lead] isochron age, derived from samples of the Earth and meteorites. This involves measurement of three isotopes of lead (Pb-206, Pb-207, and either Pb-208 or Pb-204).”⁶¹ This methodology has resulted in an empirical age estimate of 4.6 billion years.

⁵⁹ Roger C. Wiens, “The Dynamics of Dating—The Reliability of Radiometric Dating Methods,” *Facts for Faith* newsletter, fourth quarter, 2001, pp. 11-18.

⁶⁰ Chris Stassen, “The Age of the Earth,” Talk. Origins archive: last updated April 27, 1997 (<<http://www.talkorigins.org/faqs/faq-age-of-the-earth.html>>).

⁶¹ Stassen.

The Reliability of Radiometric Dating

The vast body of science accepts radiometric dating as reliable. In fact, several hundred laboratories around the world are active using radioactive-dating methods. For instance, in the year 2001, more than a thousand articles on radiometric dating were published in recognized scientific journals. Hundreds of thousands of dates have been measured and published in the last 50 years—and when it was appropriate to corroborate these dates using different methods, there was very precise agreement in the measurements.

Sometimes the accuracy of radiometric dating is questioned because of anomalies that occasionally occur. It's then suggested that the entire methodology is flawed. This would be like claiming that penicillin doesn't work at all just because some patients are allergic to it. However, in such a case, penicillin might be the incorrect drug for a certain individual. A doctor would then prescribe an appropriate drug for that patient. Likewise, a particular dating method might be the wrong one for a specific situation or type of material. A researcher would then retest the material using the correct dating method.^{1*}

Viewpoints About the Age of the Earth and the Universe

Many scientists—who also believe in the God of the Bible—firmly believe that the universe is about 15 billion years old. Furthermore, they believe that this dating is consistent with the original Hebrew of the Scriptures in Genesis chapter 1. Likewise, many theologians who believe in the Genesis record also accept that the universe is about 15 billion years old. In fact, the number of people who understand that the Bible is consistent with the scientific record is rapidly increasing, according to Craig Hazen, PhD, director of Biola University's Christian Apologetics program and coordinator of periodic conferences on creation.⁶²

It's sometimes argued that a 15-billion-year-old universe contradicts the biblical record in the book of Genesis. However, experts in analysis of the original Hebrew text indicate that the original wording allows some latitude—enough so that the original language can be consistent with either a younger or an older age of the universe.⁶

- Anyone who has concerns about the reliability of radiometric dating should read *Radiometric Dating: A Christian Perspective* by Dr. Roger C. Wiens.

Dr. Wiens holds a PhD in physics, with a minor in geology. His doctoral dissertation was on the subject of isotope ratios in meteorites, including surface exposure dating. He was employed at the California Institute of Technology's Division of Geological and Planetary Sciences when he wrote the first edition of *Radiometric Dating* (1994; a revised version was written in 2002), and is presently employed in the Space and Atmospheric Sciences Group at the Los Alamos National Laboratory. *Radiometric Dating* can be obtained by writing or e-mailing as follows:

Dr. Roger C. Wiens 941 Estates Drive Los Alamos, NM 87544
RWiens@Prodigy.Net

⁶² Craig J. Hazen, PhD, personal interview, August 29, 2001, Biola University, LaMirada, CA.

It can also be found on the Internet, at:
<http://www.asa3.org/ASA/resources/Wiens.html>.

Further, it's also been suggested that a multibillion-year age for the universe has been promoted by science in order to afford enough time for evolution. But as we've seen throughout this book, it is impossible that the vast complexity of even the simplest cell could have arisen randomly within that time frame—let alone the vast parade of evolutionary development theorized by neo-Darwinists.

Therefore, even if someone holds the viewpoint that the universe is only about 10,000 years old, the conclusions drawn in this book are every bit as valid. After all, if evolution is impossible within 15 billion years, it's certainly far less likely in only 10,000 years.

Principles for Considering the Age Issue

Theologians refer to two vitally important ways that God reveals himself to human beings— *general revelation* and *special revelation*. Since God is one, and since he is unchanging, there can be no contradiction between the two.

General Revelation

God reveals himself to us through his creation. In other words, we can “see God” as we acknowledge the vastness of the heavens with all its starry splendor. We can “see God” in what he's provided for us—the sun for heat, water to drink, food to eat, material for shelter. We can “see God” in the strength of the lion, the delicacy of the butterfly, or the scent of a beautiful flower.

The Bible emphatically states that God is revealed through his creation:

The heavens declare the glory of God; the skies proclaim the work of his hands (Ps 19:1).

Since the creation of the world God's invisible qualities—his eternal power and divine nature—have been clearly seen, being understood from what has been made (Rom 1:20).

Special Revelation

This is the revelation of God through his divinely inspired written Word, the Bible. Just as with the magnificence of creation, we can marvel at the insights about God that are revealed in this unique book. God reveals his nature, his plan, and his guidelines. Furthermore, God provides ways to test the veracity of the biblical text—the most important one being 100-percent-perfect prophecy that can be proven to be statistically impossible without divine inspiration.

The biblical authors leave no doubt that they consider the Bible to be 100 percent from God, specially revealed by him:

All Scripture is God-breathed and is useful for teaching, rebuking, correcting and training in righteousness, so that the man of God may be thoroughly equipped for every good work (2 Timothy 3:16-17).

God would not contradict himself or his own nature. So when we consider the

substantial amount of empirical evidence for a multibillion-year-old universe, we need to keep in mind that general revelation and special revelation must be consistent. God does not deceive us. He would not make things “look old” to cause us to jump to the wrong conclusions. Moreover, God expects us to use our *minds* as an essential part of loving him, as we see in the “greatest commandment”:

Love the Lord your God with all your heart and with all your soul and with all your mind and with all your strength (Mark 12:30, emphasis added).

In Summary

God has given human beings minds to study his creation and marvel at his handiwork. What is revealed to us in his creation is consistent with the account of creation contained in the book of Genesis.

Whether we hold to a 15-billion-year-old age for the universe—or some shorter time frame—it makes absolutely no difference in evaluating the evidence in support of creation.

Specifically, there is not nearly enough time for even the first, simplest cell of life to be formed randomly.

Therefore, since the first cell of life could not have come about by chance, the remaining claims of evolutionary theorists are moot. And even if a first cell could have developed, again, there was not enough time for all the necessary transitions to occur randomly—the many transitions that would have to have happened to bring about the existence of the many different species on earth today.

Earth: God's Amazing Fine-Tuned Planet

Below is the estimated probability of a galaxy, star, planet, or moon falling in a required range for the parameter support of life.

- local abundance and distribution of dark matter .1
- galaxy cluster size .1
- galaxy cluster location .1
- galaxy size .1
- galaxy type .1
- galaxy location .1
- variability of local dwarf galaxy absorption rate .1
- star location relative to galactic center .2
- star distance from corotation circle of galaxy .005
- star distance from closest spiral arm .1
- z-axis extremes of star's orbit .02
- proximity of solar nebula to a supernova eruption .01
- timing of solar nebula formation relative to supernova eruption .01
- number of stars in system .7
- number and timing of close encounters by nearby stars .01
- proximity of close stellar encounters .1
- masses of close stellar encounters .1
- star birth date .2
- star age .4
- star metallicity .05
- star orbital eccentricity .1
- star mass .001
- star luminosity change relative to speciation types and rates .00001
- star color .4
- star carbon-to-oxygen ratio .01
- star space velocity relative to local standard of rest .05
- star short-term luminosity variability .05
- star long-term luminosity variability .05
- number and timing of solar system encounters with interstellar gas clouds .1
- H3+ production .1
- supernovae rates and locations .01
- white dwarf binary types, rates, and locations .01
- planetary distance from star .001
- inclination of planetary orbit .5
- axis tilt of planet .3
- rate of change of axis tilt .01
- period and size of axis tilt variation .1
- planetary rotation period .1
- rate of change in planetary rotation period .05
- planetary orbit eccentricity .3
- rate of change of planetary orbit eccentricity .1
- rate of change of planetary inclination .5
- period and size of eccentricity variation .1
- period and size of inclination variation .1
- number of moons .2
- mass and distance of moon .01

- surface gravity (escape velocity) .001
- tidal force from sun and moon .1
- magnetic field .01
- rate of change and character of change in magnetic field .1
- albedo (planet reflectivity) .1
- density .1
- thickness of crust .01
- oceans-to-continents ratio .2
- rate of change in oceans-to-continents ratio .1
- global distribution of continents .3
- frequency, timing, and extent of ice ages .1
- frequency, timing, and extent of global snowball events .1
- asteroidal and cometary collision rate .1
- change in asteroidal and cometary collision rates .1
- rate in change in asteroidal and cometary collision rates .1
- mass of body colliding with primordial earth .002
- timing of body colliding with primordial earth .05
- location of body's collision with primordial earth .05
- position and mass of Jupiter relative to earth .01
- major planet eccentricities .1
- major planet orbital instabilities .05
- drift and rate of drift in major planetary distances .05
- number and distribution of planets .01
- atmospheric transparency .01
- atmospheric pressure .01
- atmospheric viscosity .1
- atmospheric electrical discharge rate .01
- atmospheric temperature gradient .01
- carbon dioxide level in atmosphere .01
- rate of change in carbon dioxide level in atmosphere .1
- rate of change in water vapor level in atmosphere .01
- rate of change in methane level in early atmosphere .01
- oxygen quantity in atmosphere .01
- chlorine quantity in atmosphere .1
- cobalt quantity in crust .1
- arsenic quantity in crust .1
- copper quantity in crust .1
- boron quantity in crust .1
- fluorine quantity in crust .1
- iodine quantity in crust .1
- manganese quantity in crust .1
- nickel quantity in crust .1
- phosphorus quantity in crust .1
- tin quantity in crust .1
- zinc quantity in crust .1
- molybdenum quantity in crust .05
- vanadium quantity in crust .1
- chromium quantity in crust .1
- selenium quantity in crust .1
- iron quantity in oceans .1
- tropospheric ozone quantity .01

- stratospheric ozone quantity .01
- mesospheric ozone quantity .01
- water vapor level in atmosphere .01
- oxygen-to-nitrogen ratio in atmosphere .1
- quantity of greenhouse gases in atmosphere .01
- rate of change of greenhouse gases in atmosphere .01
- quantity of forest and grass fires .01
- quantity of sea salt aerosols .1
- soil mineralization .1
- quantity of anaerobic bacteria in the oceans .01
- quantity of aerobic bacteria in the oceans .01
- quantity of decomposer bacteria in soil .01
- quantity of mycorrhizal fungi in soil .01
- quantity of nitrifying microbes in soil .01
- quantity and timing of vascular plant introductions .01
- quantity, timing, and placement of carbonate-producing animals .00001
- quantity, timing, and placement of methanogens .00001
- quantity of soil sulfur .1
- quantity of sulfur in planet core .1
- quantity of silicon in planet core .1
- quantity of water at subduction zones in the crust .01
- hydration rate of subducted minerals .1
- tectonic activity .05
- rate of decline in tectonic activity .1
- volcanic activity .1
- rate of decline in volcanic activity .1
- viscosity at planet core boundaries .01
- viscosity of lithosphere .2
- biomass to comet infall ration .01
- regularity of comet infall .1
- number, intensity, and location of hurricanes .02

dependency factors estimate 1,000,000,000,000,000,000,000.

longevity requirements estimate .0000001

probability for occurrence of all 128 parameters 10^{-166}
maximum possible number of planets in universe 10^{22}

Summary

For all these factors to come together in a single planet is less than one chance in 10^{144} . Earth was clearly designed for human beings, and the odds of the existence of another such planet are nil, now that we have a defined boundary for and an estimated number of potential planets in the universe.

Note that different categories of life would be affected differently by variation in the parameters. Some might survive a certain change better; some, worse. For example, unicellular, low-metabolism life is more susceptible to radiation damage and has a very low molecular repair rate. The six categories are:

1. unicellular, low-metabolism life with a short life span
2. unicellular, low-metabolism life with a long life span
3. unicellular, high-metabolism life with a short life span
4. unicellular, high-metabolism life with a high life span
5. advanced life with a short life span
6. advanced life with a long life span

For more information on this and other scientific facts supporting the existence of a God of the universe, contact Reasons to Believe, PO Box 5978, Pasadena, CA 91117, or call (626) 335-1480. See also their Web site: www.reasons.org.

The information in this appendix comes from research by Dr. Hugh Ross and is adapted from Hugh Ross, *The Creator and the Cosmos*, 3rd edition (Colorado Springs, CO: NavPress, 2001), pages 195–198. © 1993, 1995, 2001 Reasons to Believe. Used by permission of NavPress (www.navpress.com). All rights reserved.