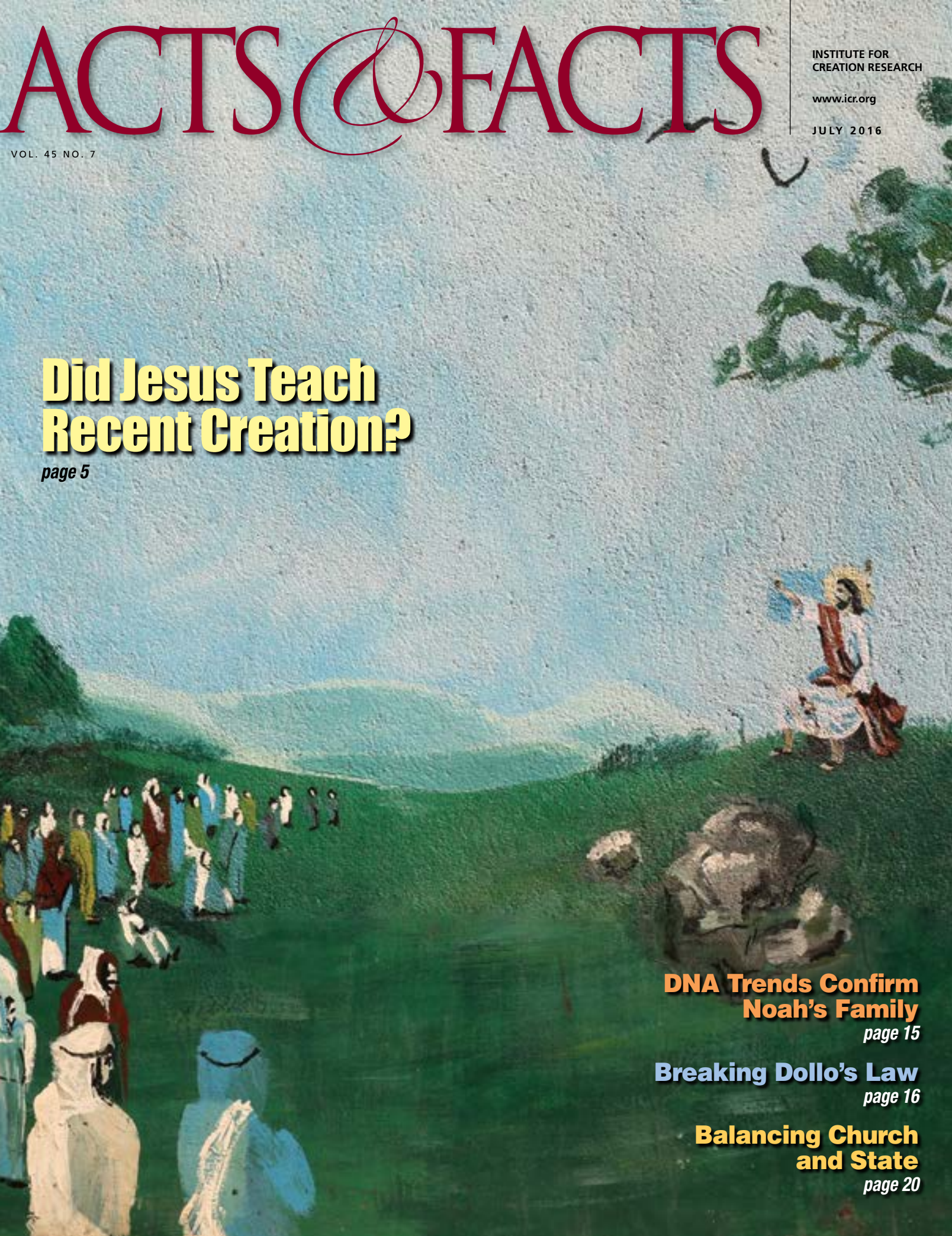
ACTS & FACTS

INSTITUTE FOR CREATION RESEARCH

www.icr.org

JULY 2016

VOL. 45 NO. 7



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VOLUME 45 NUMBER 7
JULY 2016

Published by
INSTITUTE FOR CREATION RESEARCH
P. O. Box 59029
Dallas, TX 75229
214.615.8300
www.icr.org

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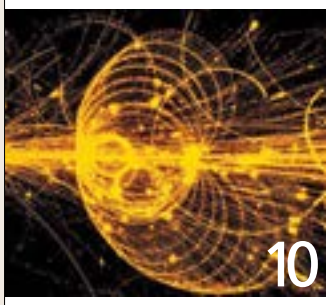

The Mighty Cypress

Hopefully you've been able to take some time off this summer for a much-needed vacation or at least a little break from your busy schedule. I just returned from Caddo Lake in Texas, where ICR's DVD production team filmed some incredible scenes for our upcoming dinosaur series. (We'll share more in the upcoming months—you can look for details in the fall.) While it wasn't a vacation, it provided a nice change of pace from my normal work routine.

One day, the film crew piled into boats early in the morning and spent much of the day chasing down the perfect shot with just the right lighting on the beautiful water lilies, ethereal Spanish moss, and majestic cypress trees. Near the end of the day as the director called it a wrap, huge, dark clouds rolled in. We made it to the dock as raindrops began to pound the wooden planks. Most of our group hurried off to their rooms, but I stayed behind, watching the storm, mesmerized by the rhythm of the rain on the boathouse roof and the swaying of the trees that dotted the lake. As I looked across the lake, my eyes zeroed in on a lone cypress tree in the middle of the water.

In that moment, God brought to my mind His words about the cypress tree. He called it a mighty tree (Zechariah 11:2). The temple contained cypress wood overlaid with fine gold (2 Chronicles 3:5). In the Song of Solomon, the bride points out to her husband that the rafters of their houses are made of fir (Song of Solomon 1:17; some Bible scholars think that the fir and the cypress were the same tree). And Isaiah referred to the cypress when he described the renewed earth our coming Lord will bring: "Instead of the thorn shall come up the cypress tree, and instead of the brier shall come up the myrtle tree; and it shall be to the LORD for a name, for an everlasting sign that shall not be cut off" (Isaiah 55:13). Referring to this passage, ICR founder Dr. Henry Morris says, "The thorns were manifestations of God's great curse on earth because of man's sin (Genesis 3:17), but the curse will finally be forever removed (Revelation 22:3)."[1]

In this issue of *Acts & Facts*, we're reminded that Jesus Himself believed and taught a recent creation (pages 5-7). We also take a journey into the realm of the smallest things in the universe in the first in a series on subatomic particles—God's building blocks (pages 10-13). These amazing particles not only demonstrate the intricate genius of our Creator but also provide a demonstration of His faithfulness in "upholding all things by the word of His power" (Hebrews 1:3).

The very tree that Isaiah talked about so many years ago continues to remind us of the faithfulness of God. Slow down long enough to enjoy His presence and the things He whispers to you in quiet moments. Remember that He stands beside you every moment of every day—He's always there to turn to and is interested in every detail of your life. God is never in a rush. Take time to marvel over His creation and His words this summer.

Jayme Durant

Jayme Durant
EXECUTIVE EDITOR

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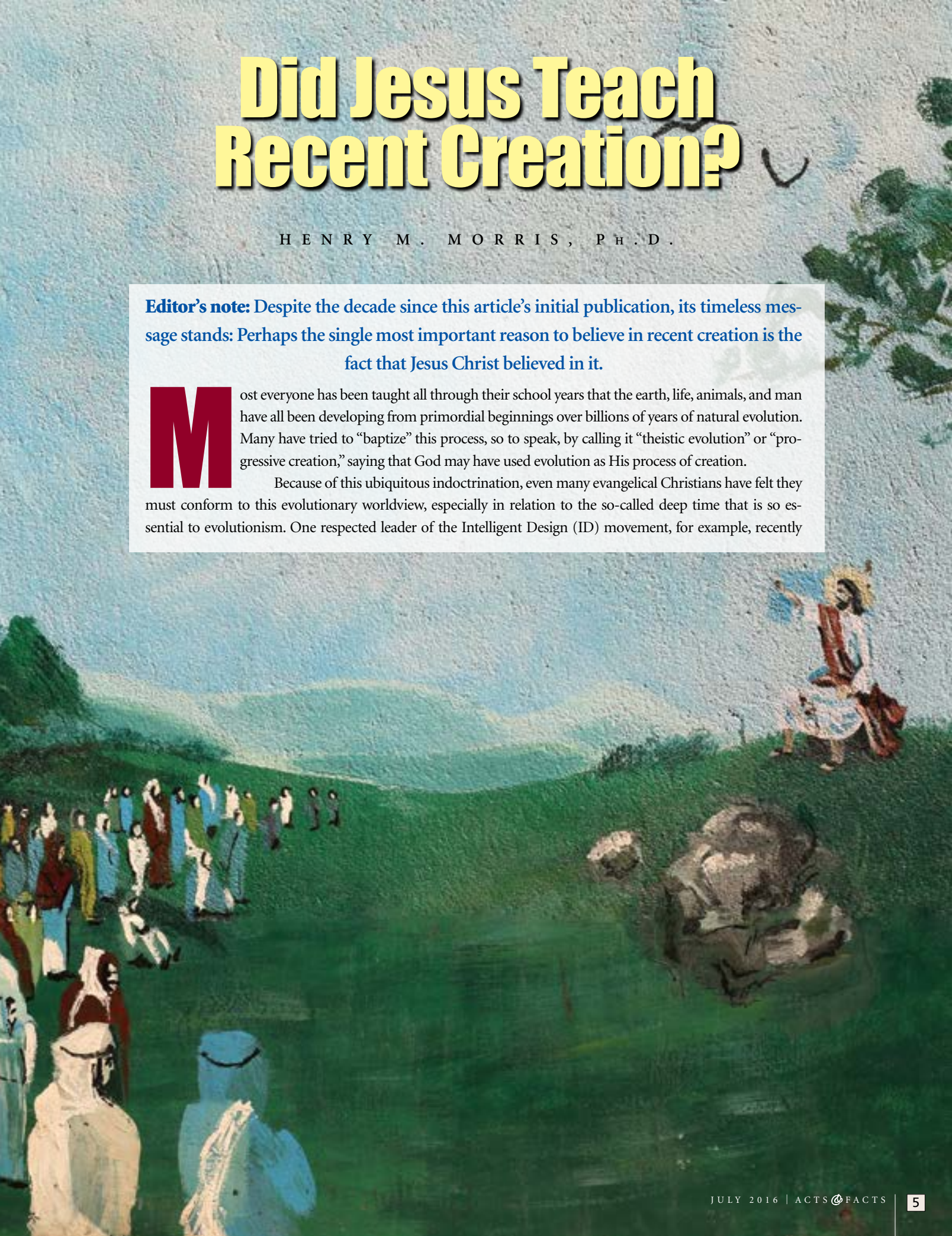
Did Jesus Teach Recent Creation?

HENRY M. MORRIS, PH.D.

Editor's note: Despite the decade since this article's initial publication, its timeless message stands: Perhaps the single most important reason to believe in recent creation is the fact that Jesus Christ believed in it.

Most everyone has been taught all through their school years that the earth, life, animals, and man have all been developing from primordial beginnings over billions of years of natural evolution. Many have tried to "baptize" this process, so to speak, by calling it "theistic evolution" or "progressive creation," saying that God may have used evolution as His process of creation.

Because of this ubiquitous indoctrination, even many evangelical Christians have felt they must conform to this evolutionary worldview, especially in relation to the so-called deep time that is so essential to evolutionism. One respected leader of the Intelligent Design (ID) movement, for example, recently



wrote to me that he would prefer to believe in a young earth but that science had proved the earth was very old, so he had to go with science. Two other leaders of this ID movement told me personally on two separate occasions that they could not even afford to *listen* to my arguments for a young earth because they were afraid they would be convinced and that this would halt their opportunities to speak to college groups and others about Intelligent Design.

So I have written this brief article to show once again that the Lord Jesus Himself believes in recent creation and the young earth. Assuming that a *Christian* is a person who believes in the deity and inerrant authority of Christ, it would seem that this fact alone should be sufficient to convince him.

What I will do here, therefore, is list three key reasons for concluding that our Lord Jesus Christ believed and taught literal recent creation of all things essentially instantaneously by the omnipotent command of God, who "spoke, and it was done" (Psalm 33:9).

1. The Bible nowhere allows for long ages. One can search the Scriptures (see my book *Biblical Creationism* for proof) from beginning to end without finding even a hint of evolution or long ages. To Jesus, every "jot or one tittle" of Scripture was divinely inspired (Matthew 5:18), and He warned us severely against adding any other words to it (Revelation 22:18). The Bible, therefore, would certainly not leave the vital doctrine of creation open to human speculation.

2. The Bible explicitly states how and when creation took place. Although many evangelicals have long equivocated as to the meaning of the "days" of creation, this type of ad hoc handling of Scripture is never justified in the context, and Christ Himself would never have interpreted them as indefinite ages of some kind. Not only is "day" (Hebrew *yom*) defined in this context the first time it is used (Genesis 1:5), but the writer conclusively restricted its interpretation to the literal meaning by numbering the days ("first day," "second day," etc.) and by indicating their boundaries ("evening and morning"), both of which restrictions elsewhere in the Old Testament limit the meaning to literal days. The question seems to be even more firmly settled when God wrote with His own finger that "in six days the LORD made the heavens and the earth, the sea, and all that is in them, and rested the seventh day. Therefore the LORD blessed the [seventh] day and hallowed it" (Exodus 20:11), thereby basing our calendar's seven-day week on this primeval creation week. Jesus referred to this divine example when He said that "the Sabbath was made for man" (Mark 2:27) to meet our weekly need of rest from work.

3. The Lord Jesus recognized that men and women existed right from the beginning. The current opinion is that the cosmos evolved about 16 billion years ago, the earth about 4.6 billion, primitive life perhaps two billion, and human life about one million years ago. The Lord Jesus, on the other hand (who was *there,* having Himself created all things—note John 1:1-3), taught that men and women were made essentially at the same time as the cosmos itself when He said that "from the beginning of the creation, God 'made them male and female'" (Mark 10:6). "The beginning" obviously was a reference to Genesis 1:1, and Christ was specifically citing Genesis 1:27.

On another occasion, speaking especially of Adam's son Abel, He referred to "the blood of all the prophets which was shed from the foundation of the world" (Luke 11:50-51), thereby acknowledging that Abel was the first prophet, martyred in the very first generation—not 4.6 billion years after the formation of the earth. Jesus also said that Satan, using Cain to slay Abel, "was a murderer from the beginning" (John 8:44).

Note also that the father of John the Baptist, prophesying when filled with the Holy Spirit, said that God's holy prophets had been predicting a coming Savior "since the world began" (Luke 1:70). Then the apostle Peter later preached that the second coming of Christ and the ultimate removal of the great Curse on the earth had even been events that "God has spoken by

> **The Lord Jesus taught that men and women were made essentially at the same time as the cosmos itself when He said that "from the beginning of the creation, God 'made them male and female'" (Mark 10:6).**

> **There are now thousands of scientists, fully credentialed with post-graduate degrees from accredited universities, who have become convinced believers in recent creation.**

the mouth of all His holy prophets since the world began" (Acts 3:21). The apostle Paul wrote that evidence of God as Creator should have been "clearly seen" (by men, of course) ever since "the creation of the world" (Romans 1:20).

There can be no reasonable doubt that Jesus was what evolutionists today (both theistic and atheistic) would call a "young-earth creationist." It would seem that this should settle the question for all true Christians, who should certainly—on the authority of Christ Himself—completely reject the notion of vast geologic ages.

But they don't! For one thing, not all who consider themselves Christians really believe the Bible, especially its unpopular teachings. Unfortunately, many who think they are Bible-believing Christians have become adept at "twisting" the Scriptures (note 2 Peter 3:16-17), even the recorded words of Jesus and the apostles, to make them conform to the scientism of evolutionary speculation. As noted above, there is not the slightest suggestion of millions and billions of years anywhere in the Bible when it is taken simply to mean what it says. That is why we young-earth creationists have to keep on reemphasizing the pervasive Bible teaching of just *thousands* of years of Earth and cosmic history.

But what are we supposed to do when the Bible disagrees with the majority of scientists on such matters?

We are to believe the Bible—that's what! When the teachings of men conflict with the Word of God, it would be wise to go with God.

Furthermore, there are now thousands of scientists, fully credentialed with post-graduate degrees from accredited universities, who have become convinced believers in recent creation. No doubt we are still a minority, but it is a growing minority.

There is also a rapidly growing body of scientific data that not only shows the impossibility of macroevolution but also much that repudiates the so-called evidences of billions of years. Creationist geologists have been developing an abundance of evidence of global catastrophism instead of uniformitarianism in Earth history—thus confirming the biblical record of the great Flood as the major explanation for the fossil-bearing rocks in the earth's crust, instead of having to invent imaginary long ages of evolution to account for them.

When the teachings of men conflict with the Word of God, it would be wise to go with God.

It is possible now even to amass a list of dozens of worldwide natural processes (e.g., accumulation of salt in the sea) which, even on uniformist assumptions, will yield ages much too brief for evolution. Thus, even without referring to the Bible at all, it is possible to make an impressive case for recent creation. One cannot determine the *exact* age of the earth by science, of course, and these various processes may yield various values, but all prove too small for evolutionism to be possible.

With the supposed exception of radiometric dating, that is. The decay of uranium into lead, rubidium into strontium, and a few other such processes can be made to show extremely long ages, so radioactive decay processes have been considered by evolutionists to be firm proof of the billions of years.

But Christians need to remember that such calculations, like all the others, are based on the arbitrary assumption of uniformitarianism, which not only is unprovable but contrary to the Bible. The apostle Peter calls it "willing ignorance" (note 2 Peter 3:3-6, KJV) when this assumption ignores the world-changing impact of special creation of all things in the beginning and the worldwide geologic impact of the global Deluge in the days of Noah.

Furthermore, the publication of the ICR/CRS RATE Initiative shows strong scientific evidence that even these radioactive decay processes really provide convincing arguments that the earth is thousands of years old—not billions![1,2]

Therefore, we plead once again with our Christian theistic evolutionists, progressive creationists, gap creationists, and Intelligent Design minimalists to come back to the Bible for their view of the world and its history. We should most certainly believe the words of our Lord Jesus Christ on this vital subject. "But why do you call Me 'Lord, Lord,'" He might well say, "and [believe] not the things which I say?" (Luke 6:46).

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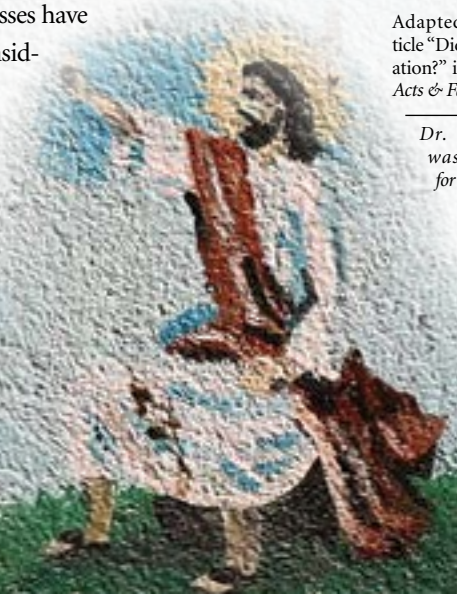
2. ICR Research Associate Dr. Vernon Cupps wrote an eight-part series on radioactive dating in *Acts & Facts* between October 2014 and June 2015. Visit ICR.org to read his conclusions.



Adapted from Dr. Morris' article "Did Jesus Teach Recent Creation?" in the June 2005 issue of *Acts & Facts.*

Dr. Morris (1918-2006) was Founder of the Institute for Creation Research.

July 2016 Events

ICR Michigan Tour!

◆ **Wednesday, July 27**	Taylor, MI – Canaan Baptist Church (T. Clarey) 313.292.6280
	Ann Arbor, MI – Fellowship Bible Church (J. Hebert) 734.971.2837
	Roseville, MI – Cornerstone Baptist Church (R. Guliuzza) 586.445.8910
	Troy, MI – Calvary Chapel Oakland County (F. Sherwin) 248.457.9673
	Birmingham, MI – Grace Baptist Church (J. Lisle) 248.646.2000
◆ **Thursday, July 28–Saturday, July 30**	**Creation Research Society's 2016 Conference** Ann Arbor, MI – Concordia University (J. Lisle, J. Tomkins, R. Guliuzza, T. Clarey, J. Hebert, F. Sherwin) 928.636.1153
◆ **Sunday, July 31**	Midland, MI – Calvary Baptist Church (T. Clarey) 989.832.2991
	Garden City, MI – Merriman Road Baptist Church (J. Lisle) 734.421.0472
	Milan, MI – Milan Baptist Church (F. Sherwin) 734.439.8180
	Canton, MI – Friendship Church (J. Hebert) 734.710.9370

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April 28–29, 2017 (Fri. / Sat.)

Back to Genesis Conference
St. Peter's Lutheran Church
Big Rapids, MI
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For more information on these events or to schedule an event, please contact the ICR Events Department at **800.337.0375**, visit **ICR.org/events**, or email us at **events@icr.org.**

JAKE HEBERT, PH.D.

Seafloor Sediment Research:

Nearing Completion

Secular scientists use the Milankovitch theory to explain the 50 or so ice ages they believe occurred in the last few million years. According to this theory, slow changes in Earth's orbital and rotational motions change the amount of sunlight falling on the northern high latitudes during the summer months. Supposedly, ice ages result when this summer sunlight is at a minimum.

However, the Milankovitch theory has serious problems. For instance, the calculated changes in sunlight are too small, by themselves, to cause an ice age.[1] Nevertheless, the Milankovitch theory was seemingly vindicated by an iconic 1976 paper titled "Pacemaker of the Ice Ages."[2] Analysis of chemical "wiggles" within two deep-sea sediment cores from the Indian Ocean revealed patterns consistent with the Milankovitch theory, convincing many uniformitarian scientists that the theory is correct.[3] In fact, it is no exaggeration to say that the only real evidence for the Milankovitch theory comes from analysis of such chemical wiggles.[4]

For this reason, invalidating the original Pacemaker results would seriously weaken the Milankovitch theory. But these results may already have been invalidated—by secular scientists themselves! Before they could analyze the chemical wiggles in the two Indian Ocean cores, the Pacemaker authors had to construct timescales for these cores. Their timescales were dependent on an assumed age of 700,000 years for the most recent magnetic reversal.[2,5] Yet secular scientists later revised the age of this reversal upward to *780,000* years.[6] Incredibly, it seems that secular scientists never bothered to check what effect this age revision would have on the original results.

As I indicated in last month's article, I have been examining the results published in the Pacemaker paper.[7] Part 1 of my research provided an overview of problems with the paper, including the age revision problem described above.[8] Part 2 describes the mathematics used in the Pacemaker paper and shows that I can reproduce the paper's original results with reasonable precision.[9] Both of these papers have been published online. I encourage *Acts & Facts* readers to compare Figures 9-17 in my second paper with the graphs in Figure 5 of the Pacemaker paper, copies of which can also be found online. Even if one doesn't understand all the technical jargon in the captions, it should be evident that there is generally a good match between my results and theirs.

Now that I have shown that I can replicate the original results, the last phase of this part of the research is to re-do the calculations using secular scientists' new age estimate for this magnetic reversal. By the time you read this, Part 3 will likely be submitted for publication and possibly even have been published online. The results have the potential to be profoundly embarrassing to secular scientists. I hope to discuss this research in an easy-to-understand way in future Impact articles. Stay tuned!

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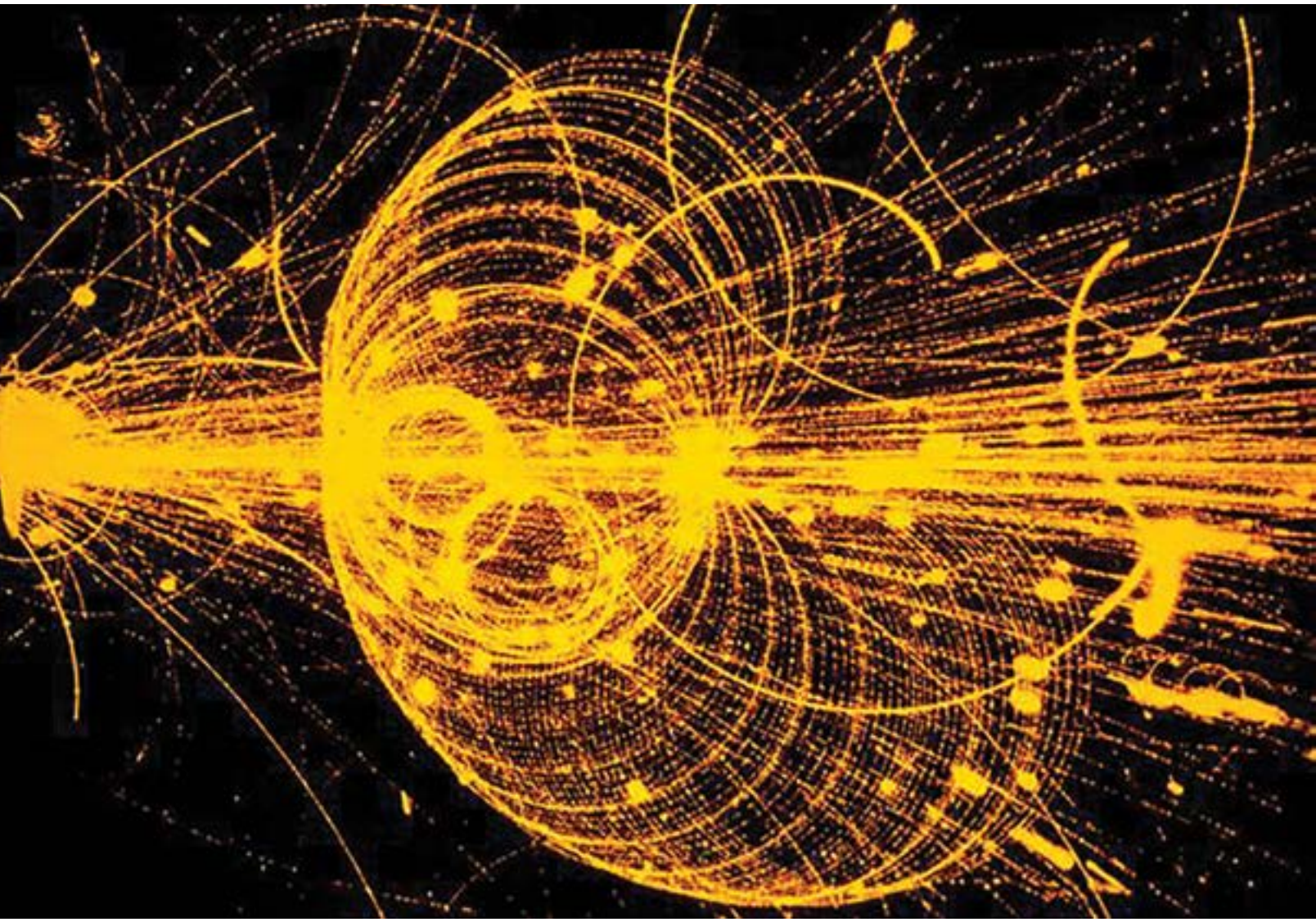
Dr. Hebert is Research Associate at the Institute for Creation Research and earned his Ph.D. in physics from the University of Texas at Dallas.



SUBATOMIC PARTICLES, PART 1: LEPTONS

JASON LISLE, PH.D., AND VERNON R. CUPPS, PH.D.

As you read this sentence, trillions of invisible particles called *neutrinos* are streaming harmlessly through your body. These ghostly particles are produced in the core of the sun and other stars, where they stream away at nearly the speed of light. Their ability to pass through solid matter makes neutrinos very difficult to detect, yet we know they exist. How is this possible? And why are neutrinos able to pass through solid matter?

Neutrinos are merely one of the several dozen subatomic particles that exist in nature.[1,2] Since God is a rational Being and has imposed order on creation,[3] physicists can classify particles by their properties in a hierarchy much the same way biologists classify living organisms. Just as a cat is a mammal, a vertebrate, and an animal, so a proton is a baryon, a hadron, and a fermion. In this series of four articles, we will examine the various families of subatomic particles, their interesting behaviors, how they are classified, and how they often confound secular thinking. We begin our journey with something familiar: the atom.

Since God is a rational Being and has imposed order on creation, physicists can classify particles by their properties in a hierarchy much the same way biologists classify living organisms.

Atoms

In school, students are taught that atoms are the basic building blocks of matter, comprising everything we can touch. But atoms are composite particles, meaning they are made of even smaller particles. An atom consists of a central positively charged nucleus surrounded by one or more electrons, which have a negative electrical charge (Figure 1). The nucleus is made of positively charged protons and neutral neutrons. The number of protons determines the type of atom. Since opposite electrical charges attract, electrons orbit the nucleus, much as planets orbit the sun. But there are some differences.

Figure 1. *Helium atom (not to scale). Two electrons (blue) orbit the positively charged nucleus. The nucleus is composed of two protons (red) and two neutrons (white).*

First, planets orbit the sun because of the force of gravity, whereas electrons orbit due to the force of electromagnetism. Second, given the right speed, a planet can orbit at virtually any distance from the sun. But electrons can only orbit at certain specified distances from the nucleus. These special distances are called *orbitals*. In physics, when only certain values are allowed (i.e., physically possible), like the orbitals of an atom, the system is said to be *quantized*. This is where we get the term *quantum physics*.

The reason orbitals are quantized has to do with the wave nature of electrons. Physicists have discovered that subatomic particles do not always behave as if they were at one specific location in space. Rather, they sometimes act as if they were "spread out" much like the wave that forms when a rock is dropped in a lake. An electron can only orbit at distances where the peaks and troughs of its wave self-align. Otherwise, a peak would "cancel out" a trough; there would be no wave left and hence no electron (Figure 2).[4]

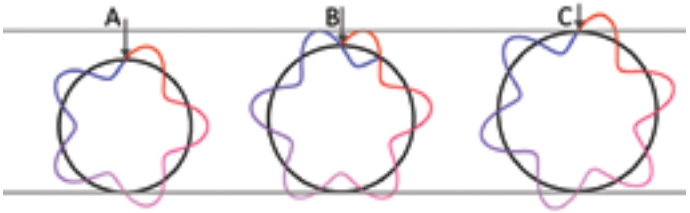


Figure 2. *Simplified illustration of an electron orbital. A. The circumference of the orbital is exactly five wavelengths, so this level is allowed. B. The circumference is 5.5 wavelengths; this orbital is disallowed (not physically possible) because the wave cancels itself out on each loop. C. The next allowed orbital is exactly six wavelengths.*

Generally, the number of electrons in the orbitals of an atom exactly matches the number of protons in the nucleus, resulting in an electrically neutral atom.[5]

Almost all the mass of an atom is contained in its nucleus. This is because protons and neutrons are each over 1,800 times more massive than an electron. The nucleus of an atom is unimaginably small, even when compared to the size of an atom. Consider a hydrogen atom. Its diameter is roughly 1.06×10^{-10} meters; that is one ten-millionth of a millimeter. The nucleus of the hydrogen atom—a single proton—is more than *10,000 times* smaller! The implication is hard to imagine but quite clear: Atoms are mostly empty space.

Leptons

Electrons are thought to be *elementary* (or *fundamental*)—meaning they are not made up of other particles. The electron is one of the 18 known types of elementary particles and is a member of a class of particles called *leptons*. Lepton comes from a Greek word and basically means small or thin—a reference to the extremely low mass of the electron relative to protons and neutrons. There are six types (called *flavors*) of leptons, and five of the six are indeed very low-mass. (Physicists had not yet discovered the heaviest lepton, the tau, when they coined the name.)

Three of the six leptons—the electron, the muon, and the tau (or tauon)—have an electrical charge of negative one (-1).[6] Of these, the electron (represented by the symbol e^- or β^-) is the lightest, with a mass of only 9.109×10^{-31} kilograms. It is thought to be the least-massive charged particle. The electron is stable, meaning it will never spontaneously change into any other particle. The muon (μ^-) is essentially identical to an electron except that it is 207 times more massive. Muons are unstable and will spontaneously decay into other particles. Typically, muons last only 2.2 microseconds before they decay. The tau particle (τ^-) is the heaviest lepton, with a mass 3,477 times greater than that of an electron. Tau particles are very unstable and typically last only 2.9×10^{-13} seconds before they decay into other particles. Already we can see a general trend—heavier particles tend to be more unstable than the lighter particles of a given class.

As for the other three leptons, we can think of them as neutral versions of the previous three. These neutral leptons are called *neutrinos*, represented by the lowercase Greek letter *nu* (ν). These are the ghostly sun-generated particles that can easily travel through solid matter. Each of the three types of neutrinos corresponds to its electrically charged brother. So there is an electron neutrino (ν_e), a muon neutrino (ν_μ), and a tau neutrino (ν_τ). All three are *much* lighter than the electron, and they are apparently stable.[7] The exact masses of the three neutrinos are not yet known because they are so small and difficult to measure. Figure 3 lists the six leptons and their properties.

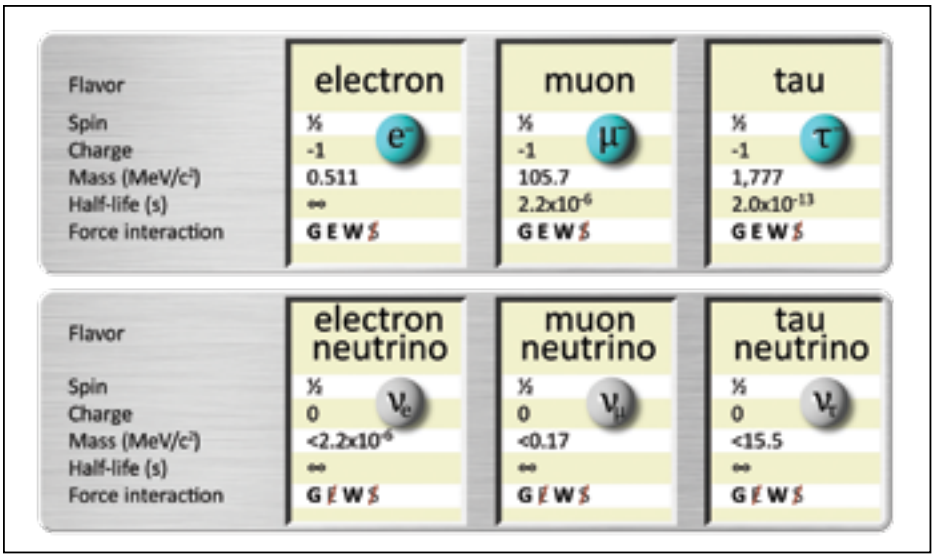


Figure 3. *The six leptons and their properties. Particles may interact with any of the four fundamental forces (to be discussed in a future issue), which are (G) gravity, (E) electromagnetism, (W) the weak nuclear force, and (S) the strong nuclear force, but none of the leptons interact with the strong nuclear force.*

If neutrinos are merely neutral versions of electrons, muons, and tauons, then why are they so much less massive? There is a good reason for this. Albert Einstein showed that energy has mass. Electrons have some internal potential energy because of their charge. Therefore, a charged particle—whether it's positive or negative—will always be more massive than an otherwise identical particle that lacks such a charge due to its internal potential energy.

How can neutrinos pass right through ordinary matter? The answer involves the nature of the neutrino and the nature of ordinary matter. First, recall that atoms are mostly empty space. This is because the distance between the nucleus and any orbiting electrons is enormous compared to the size of the nucleus. Second, neutrinos are electrically neutral. So, they are neither attracted to nor repelled by the electrons or nucleus of an atom. The only way to stop a neutrino is if it essentially collides with the nucleus or electrons, but the chances of this are extremely remote. It would be like trying to hit a bullet in mid-air with another bullet from a mile away.

So, neutrinos will of course pass through atoms since atoms are almost entirely empty space. A better question is this: Why doesn't *everything else* pass directly through atoms? The answer is that many other particles are charged and therefore are influenced by (repelled by or attracted to) the electrons or nucleus of an atom even at some distance. This is why electrons or other atoms cannot pass through each other—they are mutually repelled by the negatively charged electron shell (the region in which electrons move).

Particles also have a quantum property called *spin*. We can think of a particle as a rotating sphere, like a planet, where spin represents that rotation. However, the allowed values are quantized; only integers (0, 1, 2…) and half-integers (1/2, 3/2, 5/2…) are permitted. Particles with integer spins are called *bosons*. Particles with half-integer spins are called *fermions*. All six leptons have a spin of 1/2 and are therefore fermions. So are protons and neutrons. Half-spin particles can be either spin up (+1/2) or spin down (-1/2), just as a spinning globe seems to reverse direction when turned upside down.[8]

All fermions obey a rule called the *Pauli Exclusion Principle*. This principle states that no two identical fermions can occupy the same quantum state at the same time. Basically, this means they cannot be in the same place with the same energy, angular momentum, and spin states at the same time. This is why only two electrons are allowed in a given orbital sub-shell; one must be spin up (+1/2) and the other spin down (-1/2). Conversely, bosons do *not* obey the Pauli Exclusion Principle. We can put as many bosons into the same quantum state as current technology will allow.

In addition to charge and spin, leptons also have a quantum value called *lepton number*.[9] It is positive one (+1) for every lepton and zero (0) for non-leptons. Additionally, there are three lepton-family numbers—the electron number, muon number, and tau number—based on the type of lepton. The electron number is positive one (+1) for all electrons and electron neutrinos, and zero (0) otherwise. Likewise, muons and muon neutrinos have a muon number of one, and so on. These quantum numbers are important when we consider how particles decay.

Antiparticles and Particle Decay

For every type of particle, there is an equal and opposite antiparticle. An antiparticle has the same mass as its corresponding particle, but other properties such as electrical charge and lepton number are reversed. Just as there are six leptons, there are six antileptons. As one example, the antimuon has the same mass as a muon but has a charge of +1, a lepton number of -1, and muon number of -1.

Particles obey conservation laws that require that certain quantities cannot be created or destroyed. Such laws are a consequence of the fact that God is no longer creating the universe but is upholding what He has made.

Neutral antiparticles are represented by a bar over their symbol. So, an antielectron neutrino would be $\bar{\nu}_e$. For charged particles, the bar is usually omitted since the sign of the charge makes it unnecessary; so, the antimuon would be μ^+. Most antiparticles have the same name as their corresponding particle but with the prefix "anti." The one exception is the antielectron, which is normally called a *positron.*

In many cases, you can actually predict which particles are unstable and how they might decay. This is possible because particles obey conservation laws that require that certain quantities cannot be created or destroyed. Such laws are a consequence of the fact that God is no longer creating the universe (Genesis 2:2) but is upholding what He has made (Hebrews 1:3). For example, energy is a conserved quantity. This means that when a particle decays, it cannot transform into a heavier particle because more mass means more energy. It can, however, transform into one or more lighter particles because they can carry away the energy difference as kinetic energy (motion).

For example, can a muon decay into a tau particle? No, this would violate the conservation of energy since the tau is heavier than the muon. Spin, charge, and lepton number are also conserved quantities. So, whatever these quantities are before the decay, they must add up to the same value after the decay. Some quantum numbers are only partially conserved; the electron, muon, and tau numbers are conserved in almost all decays but may be violated in rare instances.[10]

To see how these conservation laws constrain the ways in which a particle may decay, consider the decay of a muon.

$$\mu^- \rightarrow e^- + \nu_\mu + \bar{\nu}_e$$

The muon normally decays into three lighter particles: an electron, a muon neutrino, and an antielectron neutrino. We can see that this decay is indeed allowed because it conserves energy and all the quantum numbers. The total mass of the resulting three particles is lighter than the mass of the single muon, with extra energy being carried away kinetically. In fact, Austrian physicist Wolfgang Pauli proposed the existence of neutrinos before they were experimentally detected on the basis that the electron alone cannot account for all the energy. He once stated, "I have done a terrible thing. I have postulated a particle that cannot be detected."[11]

The total charge before and after the decay is negative one (-1). The lepton number and muon number before and after decay are both positive one (+1). The electron number before the decay is zero (0), and this is the total electron number afterward because the electron's positive one (+1) cancels the antielectron neutrino's negative one (-1). Spin is also conserved because if the neutrino is spin up (+1/2), then the antineutrino will be spin down (-1/2), and vice versa. Including the electron, the total spin remains +1/2.

We can see why the electron must be stable. There is no known lighter charged particle; thus, any decay would violate the laws of either conservation of charge or conservation of energy. From these patterns, we begin to perceive the awesome intelligence of the mind of God and the consistent way He upholds what He has made, from the largest galaxies to the smallest particles (Hebrews 1:3).

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5. In cases where the number of electrons is less or more than the number of protons, the atom is called an *ion.*
6. This number represents the smallest observable electrical charge. The negative value means that electrons have the same charge sign as the negative terminal of a battery.
7. There is evidence of "oscillations" in neutrinos—meaning they can actually change flavors. However, they remain neutrinos.
8. Strange as it may seem, particles with 1/2 spin will either be measured to be spin up or spin down. Anything in between is not allowed. This is just another strange consequence of the world of quantum physics.
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JEFFREY P. TOMKINS, PH.D.

Circadian Clocks, Genes, and Rhythm

Life could not exist without organisms' engineered ability to keep track of time on a 24-hour day-night cycle called a *circadian rhythm*. Even sophisticated electronic machines such as computers or microcontrollers have a central clock or an oscillator. This critical design feature must be in place for complex systems to work on a schedule, interface with other system components, and interact with the environment.

The circadian clocks in plants and animals are far more advanced than those in man-made systems. These living clocks regulate many aspects of genetics, metabolism, physiology, growth, and behavior in numerous types of cells and tissues throughout the entire organism.[1,2] In fact, animals typically have not only a centralized circadian clock in their brain but also many peripheral clocks in different tissues and organs. These peripheral clocks regulate temporal and spatial organization and physiology in whatever cell, tissue, or organ they are located, and they also keep systems in sync with the central clock in the brain. Clearly, a complex cellular communication network connects tissues and body parts within a time-based context—a phenomenon that still isn't fully understood.

Because biological networks in plants and larger animals are so complicated, such systems are best studied in "simpler" organisms like fruit flies. A number of key regulatory gene families at the apex of circadian rhythm control—given clever names like CLOCK, CYCLE, PERIOD, and TIMELESS—have been found to play major roles in cellular system oscillation.[1,2] These genes produce proteins called *transcription factors* that act as master switches in the genome, turning on other genes in a hierarchical, highly coordinated fashion. In fact, several of these genes produce proteins that are also responsive to light, modulating their function in the cell according to external light intensity and the type of light (e.g., blue light). Perhaps the most amazing thing is that the specific functions of these "peripheral clock" genes vary depending on the type of tissue the cell resides in, yet its localized systems still keep in overall sync with the organism's central clock.

Not even electronic devices exhibit this level of dynamic complexity, with numerous circadian clocks interactively communicating across networks of tissues as well as within the same tissue.

This level of interconnectivity and complexity is essentially impossible for humans to comprehend and unravel, yet its existence is unscientifically ascribed to the random processes of evolution. An internetworked and interdependent system like this is an excellent example of irreducible complexity, specifically the myriad of components that must be in place all at once for it to work.

Appealing to evolution to develop this vast complexity through random mutations and alleged selective pressures bit by bit is absurd. Only a masterful, omnipotent Engineer could have put such a fantastic and orchestrated system as this into place—not just once but in thousands of uniquely created kinds of plants and animals. The more we understand about the genetics of living things, the more glory we should give their Creator.

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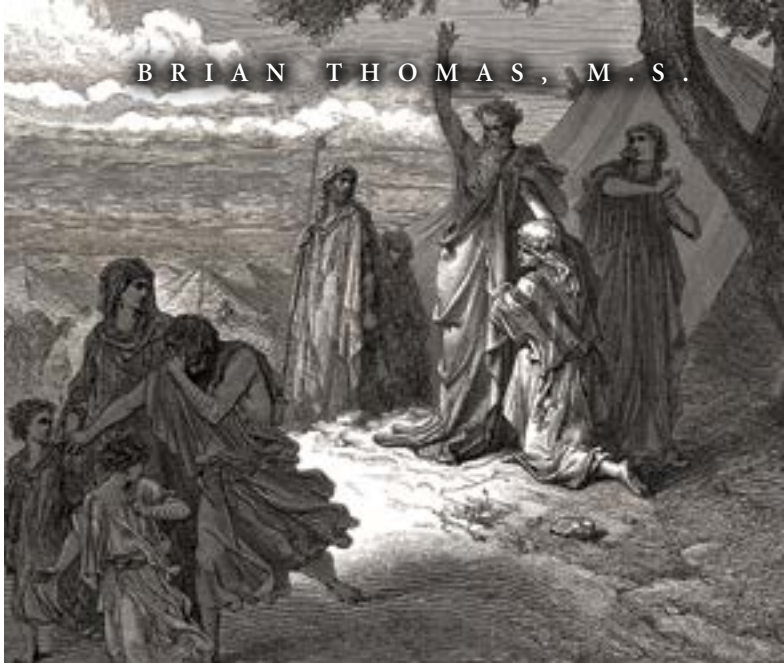
DNA Trends Confirm Noah's Family

BRIAN THOMAS, M.S.



When research biologist Dr. Nathaniel Jeanson plotted hundreds of human mitchondrial DNA (mtDNA) sequences onto a tree diagram, the project revealed an obvious pattern: The mtDNA stemmed from three central "trunks" or nodes instead of just one. Three trends in Jeanson's data suggest that the wives of Noah's sons Shem, Ham, and Japheth best explain this finding.

Mothers pass mtDNA to every new generation. It comes from the mother's egg cell and contains 16,569 chemical base pairs—either adenine-thymine or guanine-cytosine—organized to encode vital information, like words in an instruction manual. Sometimes a DNA copying error, known as a *mutation*, leaves a different base in place of the original. Several empirical studies reveal that about one human mtDNA mutation occurs every six generations.[1] When a mother's egg cell mtDNA mutates in one place, the child conceived from that egg cell—plus, if the child is female, later descendants—inherits that difference. This leaves a genetic trail that can lead back to mtDNA ancestry.

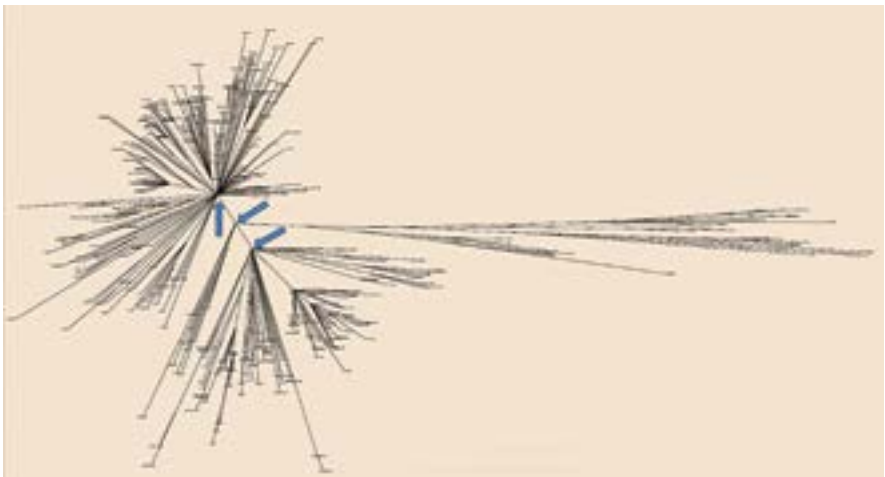
Jeanson first downloaded mtDNA sequences taken from all major people groups. He then used standard software that arranges the most similar sequences closest together. The result is a tree-like diagram depicting lines of ancestry.

Jeanson's data show that the human mtDNA tree has three nodes. Thus, everyone alive today carries one of three unique ancestral maternal sequences. This fits Genesis' claim that all humans who exist today descended from one of the wives of Noah's sons.

We find the second trend in the number of DNA differences between the three central nodes. At today's mtDNA mutation rate, two to eight nucleotide differences would have accumulated in the nine generations between Adam and Noah. And the distance between the three central nodes also shows eight DNA differences.[2]

How many mtDNA differences would mutations cause during the 4,365 years since Noah? That depends on generation times. At most, a culture where the women typically give birth near age 15 could have produced 115 mtDNA differences.[3] Adding those to Jeanson's eight estimated pre-Flood differences gives 123. In a spectacular confirmation of Genesis history, the most diverse human mtDNA on record actually shows 123 differences.[4]

In short, if all peoples descended from three genetically unique mothers, then our mtDNA sequences should trace back to their three nodes. Those nodes should have about eight differences between them. Plus, a strict biblical timeline suggests 123 as the highest number of mtDNA differences that should be observed today. Check, check, and check. These three mtDNA trends trace all of humanity back to Noah's sons' three wives —a striking intersection of biblical history and modern genetics.



The human mitochondrial DNA tree shows three central nodes, marked by blue arrows. These fit the number of expected mtDNA sequence differences between the wives of Shem, Ham, and Japheth. The longest branches represent the highest number of mtDNA differences between people groups, and these numbers match Bible-based predictions. Image adapted from supplemental Figure 1 from Jeanson's paper.[1] Used by permission of Answers in Genesis.

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MAJOR EVOLUTIONARY BLUNDERS

BREAKING DOLLO'S LAW

RANDY J. GULIUZZA, P.E., M.D.

"According to the brilliant conception of the immortal *Charles Darwin* (1809-1882): Evolution—the transformation of organisms—results from the fixation of useful individual variations provoked by the struggle for existence under the influence of *natural selection.* All species—animal or plant—which exist or have existed since the appearance of life on earth, must originate via this fundamental law."[1]

So began "The Laws of Evolution" published in 1893 by Louis Dollo, curator of Belgium's Royal Museum of Natural History. Dollo was a renowned Belgian paleontologist who gained his reputation for his work on *Iguanodon* dinosaurs and for the rules he formulated for paleobiology, the study of the biology of fossil life forms.

Interestingly, Harvard University's eminent paleontologist Stephen Gould contributed to the publishing of *Louis Dollo's Papers on Paleontology and Evolution* in 1980, a date that coincides with the period of considerable debate about Gould's punctuated equilibrium mechanism of evolution. Dollo's first law of evolution was "that evolution occurred by abrupt leaps,"[1] which was also one premise of Gould's mechanism. Dollo actually proposed three laws based on his field observations that have been influential in framing evolutionary research and theory. He is remembered today for his second law, which bears his name.

Dollo's Law of Irreversibility

Dollo stated "that an organism cannot return, even partially, to a previous state already realized in its ancestral series."[1] Today, this is known as Dollo's law of irreversibility. Accordingly, most evolutionists believe that evolution simply proceeds forward. For organisms with a membrane-bound nucleus, they hold that the operation of natural processes is sufficient to account for the diversity of the organisms' genes and traits. They believe there is no specific course that evolution is ordained to follow, but once it proceeds, there is essentially no "reverse evolution."

Paleontological discoveries and theory

have not remained static since Dollo formulated his law. The principle of irreversibility has nevertheless been preserved, though interpretations of findings underlying Dollo's law have changed and the rationale for it has been modified. Those currently believing in irreversibility do not appeal to an abundance of observations. Rather, the belief is justified by the mathematical improbability of a single evolving lineage proceeding and reversing (and re-proceeding) along the same path. Richard Dawkins notes:

> "Dollo's Law" states that evolution is irreversible….Dollo's Law is really just a statement about the statistical improbability of following exactly the same evolutionary trajectory twice (or, indeed, any *particular* trajectory), in either direction.[2]

Gould agrees with this understanding. He says:

> Thus, for example, Dollo's law of irreversibility…only restates the general principles of mathematical probability for the specific case of temporal changes based on large numbers of relatively independent components.[3]

Of course, if re-evolution is prohibited by the exceedingly low probability of a blind process acting on random mutations in this manner, one could ask why such claims wouldn't also apply to evolution itself.

Does Dollo's law deserve the status of scientific law, regardless of the rationale currently invoked to support it? Scientific "law" conveys a very high level of confidence that the principle(s) embodied in the law accurately conform to reality. The status of being called a scientific law is obtained after repeated observations and experiments consistently confirm its principles. True laws are so consistent that any violation of them would constitute a miracle. If Dollo's law is actually repeatedly violated, then that would constitute a major mistake in evolutionary theory. And it would be a blunder that has been reiterated in evolutionary education for decades.

Dollo's Blunder: Traits Do Reappear

If organisms break scientific laws, then it is the law that needs a trial, not the organism. Several researchers have conducted that trial. One evolutionary biologist stated, "Recent phylogenetic studies have revealed several potential examples in which Dollo's law seems to be violated, where lost structures appear to have been regained over evolutionary time." He found mandibular teeth in one lineage of frogs that re-appeared after being lost, he believes, for about 220 million years. He claims this "shows that there is no support for the model of irreversible evolution (Dollo's law)."[4]

If re-evolution is prohibited by the exceedingly low probability of a blind process acting on random mutations…one could ask why such claims wouldn't also apply to evolution itself.

Several 2016 papers deal with evolutionary reversals contrary to Dollo. "Single evolutionary reversals occur when a character changes from an ancestral state to a derived state and then back to the ancestral state within a single lineage," reports University of Hawaii researchers in a study on a native bird species' beak length. "Multiple reversals extend the process by returning to the derived or ancestral state several times within a single lineage." The team documents "three single and two multiple reversals of bill length on six main islands from oldest to youngest, consistent with the phylogeny of the lineage."[5]

Two other evolutionists hope to treat drug-resistant malaria through various paths of "reverse evolution" back to a susceptible state. Their frustration with thought-limiting concepts surrounding Dollo's law spilled over:

> The lack of a coherent understanding of reverse evolution is partly due to conceptual ambiguity: the term 'reverse evolution' is misleading, as it implies directionality in a process (Darwinian evolution) that is near-sighted and agnostic with regard to goal. This has spawned similarly dubious concepts, such as Dollo's Law, asserting that evolution is intrinsically irreversible.[6]

Recently, a study documented "loss and reversals" of a molar tooth crest in a lineage of extinct kangaroos after a time gap believed to be 15 million years.[7] How can this happen? "We found that contrary to Dollo's law in biology, features lost in evolution can re-evolve when evolution 'tinkers' with the way features are assembled in the embryo," reported co-researcher Aidan Couzens of Flinders University.[8] The report continues how "the researchers argue that 'reanimating genetically mothballed features may be "allowed" by evolution when it aligns with pressures that determine an animal's ecology.'" Other true instances of "reverse evolution" may have been missed previously since "biologists have often discounted the potential for evolution to shift into reverse, dismissing such occurrences as convergent evolution, 'where similar features evolve independently in organisms that are not closely related.'"[8]

Scientifically "squishy" invocations of evolution "allowing" or "tinkering with" things, coupled with the mental construct of "convergent evolution" and unquantified "ecological pressures," place Dollo's law squarely in the mystical realm surrounding evolutionary explanations. Which explains why anyone doing an Internet survey discovers violations of Dollo's law, including reversals for wings in stick insects, coiling in snail shells, color vision, eggshells in boid snakes, and many more.

Some scientists, however, criticize findings that question Dollo's law. They defend Dollo by asserting that their phylogenetic trees are superior to "the moderate level of robustness of many phylogenies" in critical studies.[9] One researcher allows some latitude for Dollo's mistake but not for its continued perpetuation. He implies that Dollo made a valid law but not in the sense of criminal law. Rather, it is actually

more akin to tax law in that it is has some "loopholes." Yet, he asserts that the theoretical work of Dollo's present defenders may have "devastating flaws" of its own.[10]

An evolutionary law that is violated constitutes a major evolutionary blunder. Possibly Dollo only made a minor blunder in mislabeling an inference as a law, but his overstated and under-supported conjecture misled research for decades. Also, once striking evidences of "re-evolution" were discovered, repeated salvage efforts like classifying them as merely loopholes hinder scientific progress. For example, since Dollo's law was one element of evolutionary theory that actually was predictive (i.e., that "re-evolution" would not be observed), when observations showed that the prediction was faulty, pursuing non-evolutionary explanations would be sensible—but has frequently not been done.

Since Dollo's law was one element of evolutionary theory that actually was predictive (i.e., that "re-evolution" would not be observed), when observations showed that the prediction was faulty, pursuing non-evolutionary explanations would be sensible—but has frequently not been done.

Overlooking Design-Based Explanations

Perhaps reappearing traits may *not* be a violation of any law. Nor are they improbability-conquering miracles. This phenomenon is feasibly the outworking of an ingenious design for the purpose of enabling creatures to continually "fill the earth" (Genesis 1:28).

One study on owl monkeys correctly notes that if organisms become too specialized to a niche, then this could "lead to a genetic constraint on adaptation if the environment subsequently changes."[11] In other words, specialization could force organisms down an unrecoverable one-way street. How might human engineers address this issue? For some uses, they may design an entity to stay constrained. In contrast, they may also design mechanisms within self-adjusting entities to turn off in order to go one direction and turn back on to reverse direction. That entity could escape a one-way specialization trap—especially if a trap was assured to happen repeatedly. Do organisms display this turn-off/turn-on characteristic?

Researchers found that after the loss of a structure, in many cases "the genetic and developmental architecture to develop such structures continues to be fully present."[12] Couzens also reviewed how reversibility may be variably widespread among organisms:

> It has been argued that trait reversibility may be promoted when there is re-utilization of *conserved* developmental pathways…[and] the reutilization of regulatory pathways and constituent genes is widespread in development… and ancestral states are recoverable across a diverse spectrum of metazoan structures.[13]

So, many organisms do have mechanisms to allow recovery of ancestral states. These mechanisms remain in place, but they can be deactivated for generations and then reactivated and accessed during embryonic development in other generations. What can explain the persistence of this underlying "developmental architecture" that "reanimates genetically mothballed features"?

Evolutionists claim that the information is "conserved." Conserved is the evolution-speak label tagged to the phenomenon of finding nearly identical traits across *many* wildly different organisms. Such organisms supposedly "emerged" from unrelated pathways and carried unchanged (i.e., "conserved") information for the similar trait across evolutionary time—while many other traits were greatly changing. Finding information for similar traits is certainly a factual observation. But believing that they are "conserved" is a declaration based in imagination…and firm convictions that evolution happened. In contrast, if the common trait is found in only a few diverse creatures, evolutionists then imagine "convergent evolution" happened.

There is a less mystical, more straightforward explanation that is consistent with what engineers do. It may be that different creatures are designed to retain specific developmental architecture for the common purpose of reutilizing regulatory pathways to recover ancestral states when the situation for them is suitable. Stable mechanisms that can be reactivated when useful are more consistent with intelligent forethought since "Darwinian evolution…is near-sighted and agnostic with regard to goal."[14] This may be just one of many incredibly complex innate mechanisms that enable organisms to match their traits to dynamic environmental conditions so they can continually fulfill their God-given mandate to be fruitful, multiply, and fill seas, sky, and Earth (Genesis 1:22, 28).

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BRIAN THOMAS, M.S.

Q: Why Did Neanderthals Look Different From Us?

A: When people think of Neanderthals, an evolutionary image of primitive cave men might come to mind. This is bolstered by the perception that they looked very different from modern humans. However, Neanderthals bore four key features that assure us they were human and confirm the Genesis account of humanity's recent origin.

First, Neanderthal (pronounced Nee–AN–der–tahl) peoples acted quite human. Instead of leaving their dead out in the open, they buried them in caves found in Europe and parts of Asia. This shows a very human-like spiritual awareness. Also, they and their contemporaries left behind artifacts like musical instruments, tools, cosmetics, jewelry, and purses,[1] demonstrating human-like intelligence and creativity.

Second, in-depth analyses of ancient DNA extracted from Neanderthal bones show an overall similarity to modern human DNA. Certain modern human populations even contain Neanderthal DNA sequences.[2]

Third, Neanderthal bone structure differences should not overshadow their basically human form. They had prominent eyebrow ridges and sloped foreheads, and their upper arm bones tended to be shorter in proportion to their lower arm bones than those of most modern people. But one can find the same features in living humans. Neanderthals didn't look that different after all.

Fourth, modern-looking ancients intermarried with Neanderthal people. Some Neanderthal burial sites include individuals that looked just like the folks across the street. Other sites reveal individuals with in-between features.[3] And since Noah's Flood formed the rock layers with the caves that Neanderthals later used to bury their dead, we can assume that these ancient peoples descended from Noah. These four features (burials, DNA, skeletons, and in-betweens) show that Neanderthals were certainly human.

Both modern-looking (left) and Neanderthal (right) human skull shapes starkly contrast all ape forms.

So how did Neanderthal features, only rarely found in today's population, concentrate into one group that went extinct? A clue can be found in modern humans.

Europeans and Asians have different body ratios. Europeans have shorter torsos with longer arms, while Asians have longer torsos with shorter arms. Most likely, each of these people groups descended from one or a group of ancestors with these physical traits.[4] Those ancestral fathers must have moved apart, just as Genesis 11 says happened to the 70 families at the Tower of Babel.[5] Each family probably carried its unique language and skeletal features.

Similarly, Neanderthals could have descended from one of these 70 families. If so, then Neanderthals went extinct like many ancient nations, but not before they shared some genes and traits with other groups. No wonder they looked so similar to you and me.

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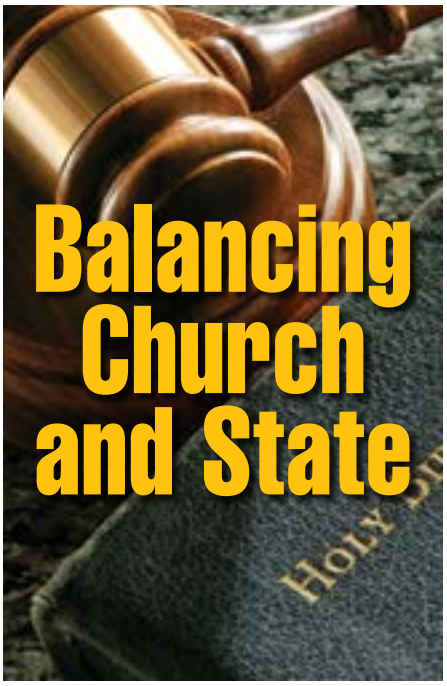
Balancing Church and State



When an American astronaut quotes Psalm 24 and is faulted for violating the so-called separation of church and state, it's time to learn about balance.[1] Just as mountain goats need a body designed for balance, we also need deliberate balance in the political arena, where Christians are routinely told to shut up to avoid offending non-Christians.

The balance of individuals' civil liberties—such as religious freedom and free speech rights—and the stability of a mountain goat on steep slopes are both examples of high-stakes balancing acts. Consider the agility of the sure-footed mountain goat.

> Their hooves are structured to [optimize] balance and grip; the outer hoof is strongly reinforced and the bottom is lined with rubbery material, making the whole structure rather like a good hiking boot.[2]

The high-altitude dexterity of the mountain goat is so phenomenal that it routinely spends time on precipitous terrain steeper than a 40° or even 60° angle.[3] God purposefully designed mountain goats for balance because living among alpine rocks is a high-risk lifestyle.

The same is true for religious liberty in American society. Legitimate needs of church and state are deliberately balanced with the personal rights of individuals. Securing fundamental religious freedoms is no lackadaisical endeavor and is not easily obtained or maintained.[4]

The First Amendment is purposefully designed for balance.

> Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof.[5]

It is to this legal text that the "separation of church and state" concept is retroactively attached, often with backdated interpretations that clash with the First Amendment's original intent. However, as a matter of honesty and valid interpretation, the real meaning of any message must be matched to the composer's intent. Thus, the only legitimate understanding of the First Amendment is the one that matches the meaning assigned by its human source.[5-7] As a text drafted by statesmen in the late 1700s (principally by James Madison), the authorial intent balanced a rejection of government-established church organizations (such as the official Church of England) with an affirmation of peaceful expression of individual religious beliefs and moral values. In other words, the First Amendment acknowledged that Christians owned the right to *freely* express their religious viewpoints at the personal level, yet Congress shall not officially endorse or establish any specific ecclesiastical organizations, such as Baptists, Presbyterians, or Anglicans. This balancing of freedom and order—free exercise of religion without any federal sponsorship of a particular religious denomination or hierarchy—fits the overall *checks-and-balances* equilibrium designed in 1791.[6]

> The real object of the First Amendment was not to countenance, much less to advance, Mohammedanism, or Judaism, or infidelity, by prostrating Christianity; but to exclude all rivalry among Christian sects, and to prevent any national establishment which should give to a [religious] hierarchy the exclusive patronage of the national government.[8]

This political balancing act was planned and intended by America's founding fathers. Yet now the phrase "separation of church and state" is used to force-fit an off-balanced understanding of the First Amendment. How? The constitutional jurisprudence of America became "evolutionized" during the late 1800s, upsetting the proper balance between religious liberty and governmental interference.[5-8]

How evolutionary thinking infected American law will be reviewed in an upcoming article. Meanwhile, *don't believe it* when someone tells you the First Amendment prohibits an individual from reading his Bible—on Earth or in space—or from sharing that personal fact via Facebook. That someone has obviously lost his balance.

References

1. On April 3, 2016, U.S. astronaut Col. Jeff Williams posted on Facebook, "We finally have a quiet Sunday and I'm reading, 'The Earth is the LORD's and all that fills it' in Psalm 24 and viewing this sight [Earth as seen from the International Space Station]. No matter how long you're here, the grandeur strikes and the wonder never fades." An individual retorted, "Jeff Williams could you please leave your personal religious views out of your public posts. You are a government employee. In America we have a separation of church and state. Don't use your publicly funded position to promote personal views….Please keep it private and keep posting these wonderful scientific pictures without the religious OPINIONS."
2. Kricher, J. C. 1998. *A Field Guide to Rocky Mountain and Southwest Forests.* Boston: Houghton Mifflin, 235-236.
3. Constantz, G. 2014. *Ice, Fire, and Nutcrackers: Rocky Mountain Ecology.* Salt Lake City, UT: University of Utah Press, 224-226.
4. Most nations prohibit the free exercise of religious liberty, either by establishing one religion to the prejudice of others or by persecuting theistic religions.
5. U.S. Constitution, First Amendment (Free Exercise and Establishment clauses), ratified 1791. The balancing of civil government powers, ordained by God's delegation, with jurisdictional limits to facilitate religious freedom, accords with relevant Scriptures, e.g., Matthew 22:21; Romans 13:1-4; Daniel 2:21 and 4:25—and with Israel's separation of religious offices (tribe of Levi) from the monarchy (tribe of Judah).
6. The entire Bill of Rights (i.e., Amendments 1-10) limited federal government powers. Ironically, most of the Constitution's later amendments expanded those powers. Eidsmoe, J. 1995. *Institute on the Constitution: A Study on Christianity and the Law of the Land.* Marlborough, NH: Plymouth Rock Foundation, 71-73. See also Eidsmoe, J. 1987. *Christianity and the Constitution: The Faith of Our Founding Fathers.* Grand Rapids, MI: Baker Books, 77-178. Ironically, Thomas Jefferson (author of the phrase "separation of church and state") was in France during the Constitution's and Bill of Rights' drafting and approval process, so his opinion of the First Amendment's intent is interpretatively irrelevant.
7. The First Amendment's meaning is contextually blended to the axiological fabric of the Declaration of Independence (referring to our Creator, Nature's God, the Supreme Judge of the world, and Divine Providence) and to the Christian worldview evidenced by the U.S. Constitution's Article VII, which refers to "the year of our Lord."
8. Eidsmoe, *Institute on the Constitution*, 76, quoting Justice Joseph Story. 1833. *Commentaries on the Constitution of the United States*, vol. 2. Boston: Hilliard, Gray & Co., 593.

Dr. Johnson is Associate Professor of Apologetics and Chief Academic Officer at the Institute for Creation Research.

Created for Earth, Living in Space

TRUETT BILLUPS

Image credit: NASA.

Col. Jeff Williams manages a physics experiment (Expedition 21).

The human body is unique among the living creatures of Earth. It gives us unparalleled abilities to think and invent, and also allows us to perform amazing athletic feats—like climbing Mount Everest or swimming the English Channel. In everything it does, the human body demonstrates God's handiwork of perfectly crafting us for Earth's environment.

Space changes things. On the International Space Station (ISS), ICR friend and NASA astronaut Col. Jeff Williams experiences radical alterations of his body's functions due to the microgravity of low-Earth orbit. The different living environment offers various ways to study the human body and simultaneously helps NASA prepare for its ultimate goal—sending mankind to Mars.

Soon after Col. Williams arrived on the ISS, his body underwent four major changes. First, without gravity's compression, his spine elongated and made him about an inch taller. Second, his heart got slightly smaller. It no longer pushes against gravity and shrinks because of the reduced amount of work the body does. Third, his bones and muscles started deteriorating because he doesn't have to use them to walk or stand. Fourth, the pressurized environment caused his liquid-filled eyeballs to slightly deform.

Image credit: NASA.

Z-2 prototype unveiled in 2015.

Col. Williams can't do anything about the first two changes, but he can do something about the others. To combat muscle and bone loss, he exercises for two hours every morning using specialized equipment. He can run by attaching stretchy bands to his waist and the floor to keep his feet on a treadmill. Since normal dumbbells simply float around, he uses a hydro-pressured lift for his arm and leg muscles.

To combat distorted vision, Col. Williams wears glasses. Every astronaut's vision changes slightly, but thankfully the ISS provides a wide range of vision-corrective lenses. He tries on a lot of different pairs until he finds one that works.

The lack of gravity not only changes Col. Williams' body but also his lifestyle. For sleeping quarters, he gets a telephone-booth-size room with a laptop and a sleeping bag, both attached to the wall. At "night" (simulated by closing all the windows on the station), he shuts the door and zips up in the sleeping bag.

Eating, of course, is much different than on Earth. Col. Williams eats some things normally, like fruit, but most space food comes in plastic packages that require adding water. You might think this sounds nasty but actually the food is quite tasty! Nutritionists make sure Col. Williams and his fellow astronauts stay healthy and consume as many normal things as possible, such as chicken, beef, seafood, brownies, orange juice, tea, and even coffee!

NASA scientists use the unique environment of the ISS to study the human body in preparation for the long journey to Mars. They are also hard at work developing a new spacesuit. Called the Z-2, this suit will offer many new advantages for interplanetary travel. The primary advantage will be a pressurized environment that more closely mimics that of Earth. This will remove the need for a two-hour "pre-breathe" process before spacewalks.[1] Also, the suits will attach to the outside of whatever vehicle is in use, eliminating the need for an airlock. With the Z-2, astronauts could respond quickly to emergencies and be spacewalking in minutes.

Space exploration offers many windows into God's creation. We capture breathtaking images of far-away galaxies with high-power telescopes, visit the moon, send probes to other planets, and constantly think of ways to go farther than ever before. Along the journey, we learn more about the beautiful handiwork we call the human body, giving us plenty of reasons to glorify God as our awesome Creator.

Reference

1. Currently, astronauts need to breathe pure oxygen before going on a spacewalk to get rid of nitrogen, which might cause gas bubbles during their time outside the spacecraft. Like deep-sea divers, astronauts can get "the bends."

Mr. Billups is an editor at the Institute for Creation Research.

Image credit: NASA.

Astronaut Frank De Winne on the ISS treadmill (Expedition 21).

HENRY M. MORRIS IV

EVIDENCE OF GOD'S BLESSING

The Lord has been good to the Institute for Creation Research. Over the last four and a half decades, God graciously increased the scope and influence of our ministry to truly global proportions. We experienced great joys along the way, as well as seasons of difficulty and serious need. But through it all, God's guiding hand marvelously provided for our needs as we stood firm in the defense of His truth (Philippians 4:19).

From a business standpoint, this is remarkable for a research organization whose primary product is information. So, why is ICR still growing and thriving well into its third generation? Apart from God's direct blessing, I believe the answer is best seen in the comments from fellow believers whose lives have been impacted by our work. The testimonies that follow are characteristic of the many encouraging notes we receive each week.

Resources

» "I receive your *That's a Fact* updates via email and always pass them on to others. What a powerful series of short and entertaining videos! We appreciate ICR so much!"

» "ICR's *Days of Praise* devotionals are both inspiring and instructional, and I delight in forwarding your emails to some on my list."

» "Words cannot express how much *Acts & Facts* has meant to our spiritual growth."

» "Your material has been invaluable in my teaching and preaching ministry."

Encouragement

» "The ICR ministry has increased my faith more than any other work."

» "As a biological scientist, I had an overwhelming conflict with evolutionary 'law' as taught in our universities. ICR has resolved this conflict, praise God."

» "God owns the cattle on a thousand hills, and He owns science as well. I thank God for ICR, showing a skeptical world that His perfect Word is true."

» "Thank you for all your labor—it is not lost. Keep your hand on the plow and your eye on the finish line. The future generation is right behind you!"

Financial support

» "We are sending this money to go towards your new Discovery Center. We are so excited and support you whole-heartedly!"

» "It has been a joy to support ICR virtually since its inception. You have been a great blessing to us, and we look forward to every month's mailing."

» "ICR made such a big difference in our lives since we attended a seminar in the '80s. How thankful we are for the ministry of ICR! We give to you as often as we can."

» "Other than the Church, I know of no other ministry on Earth that is more worthy of support. It is an absolute joy to labor alongside you. God bless ICR!"

Salvation

» "I came to Christ and matured in my faith because of ICR's material—what a powerful witnessing tool! I've been an ICR follower and supporter ever since."

» "*The Genesis Flood* was instrumental in leading me to Christ."

» "I was a hard-core skeptic until I heard ICR. One year later I was born again!"

» And one of my all-time favorites: "I was a trained evolutionist, and I went to hear Dr. Morris fall on his face. He didn't—instead, I fell to my knees."

These testimonies represent only a tiny sample of those we've received over the years and demonstrate, much more effectively than I ever could, the evidence of God's great blessing on our ministry. I hope these will encourage our supporters (and inspire new ones!) to continue their faithful prayer and financial support of ICR to reach future generations with the truth of our Creator, the Lord Jesus Christ.

Mr. Morris is Director of Donor Relations at the Institute for Creation Research.

LETTERS TO THE EDITOR

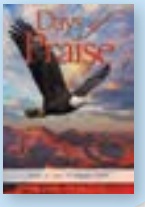
Thank you for your article titled "A Mother's Influence" (May 2016 *Acts & Facts*). I am making copies to share with my daughter, my daughter-in-law, and some close single friends! I love this!…I have a long, complicated story, and I look back now and am so happy the way the Lord worked out my mom situation! I am so blessed to have things work out in such an abnormal way that I had nowhere to go but to our Creator!

— *E. S.*

I just stumbled on your February 2016 edition of *Acts & Facts* in the weirdest of places to find this kind of mag—a pub! I was attracted to it by the title of my favorite gospel song, "Days of Elijah." I flipped through it and could not but read every column in it from "The Days of Elijah" on page 5, "*Homo naledi*" on page 15, to the million-dollar question if there were dinosaurs on Noah's Ark. This is obviously one of the best magazines I have read as a Christian who studied industrial chemistry! I wish to have a copy mailed directly to me every month. Thank you and well done!

— *E. E., Nigeria*

Editor's note: ICR only accepts postal-mail subscriptions from the United States and Canada, but people in other countries are welcome to sign up at ICR.org/subscriptions for an email subscription to the monthly *Acts & Facts* and the daily *Days of Praise*.



I can't tell you what these *Days of Praise* devotionals mean to me! Each day I have my moment of contact with the Holy Spirit that ministers to my inner man. What an awesome God we serve!

— *A. B.*

H3 Blog

I truly enjoy listening to your *Heroes and Villains* podcast [on HenryMorris3.com]. It's such a blessing. I'm learning tremendously. Your ministry has been so rewarding to my growth in apologetics, sharing the gospel, and expanding in the knowledge of the Lord. My husband and I witness at the malls weekly. We use a lot of your resources to share with others. ICR has been a huge impact in my life. Encouraged to share with others the truth of your ministry for the rest of my life. God has truly given you a platform, Dr. Henry.

—*S. G.*

ICR Facebook Comments About Creation Ministry and Discovery Center

I believe the #1 reason our boys didn't lose their faith upon reaching maturity is because my wife and I taught them how ridiculous evolutionary claims are and the reasonableness of the creation. They stood up to their science teacher in high school and swayed many of the other students as well.

— *S. C.*

Biblical creation ministries have helped me greatly in holding on to Christ through the turmoil of postmodern education—ministries like ICR, CMI, and AIG. Thanks to all of these I was frustrated with the rampant evolutionary teachings everywhere, but especially in the dinosaur books I read as a little kid.

— *C. J.*

Churches don't emphasize the creation evidence enough. It's up to ICR, its allies in other ministries, and our families to teach our children about the evidence.

—*Y. K.*

I recently returned from a nine-month military deployment, and your *Acts & Facts* and *Days of Praise* publications were greatly appreciated while I was away….I am excited about the new museum and look forward to visiting it when it is complete. Thank you for your firm stance on the authority of the Word and for your devotion to the Lord Jesus Christ, may He continue to bless and expand your ministry, keep up the great work.

— *J. A.*

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Note: Unfortunately, ICR is not able to respond to all correspondence.

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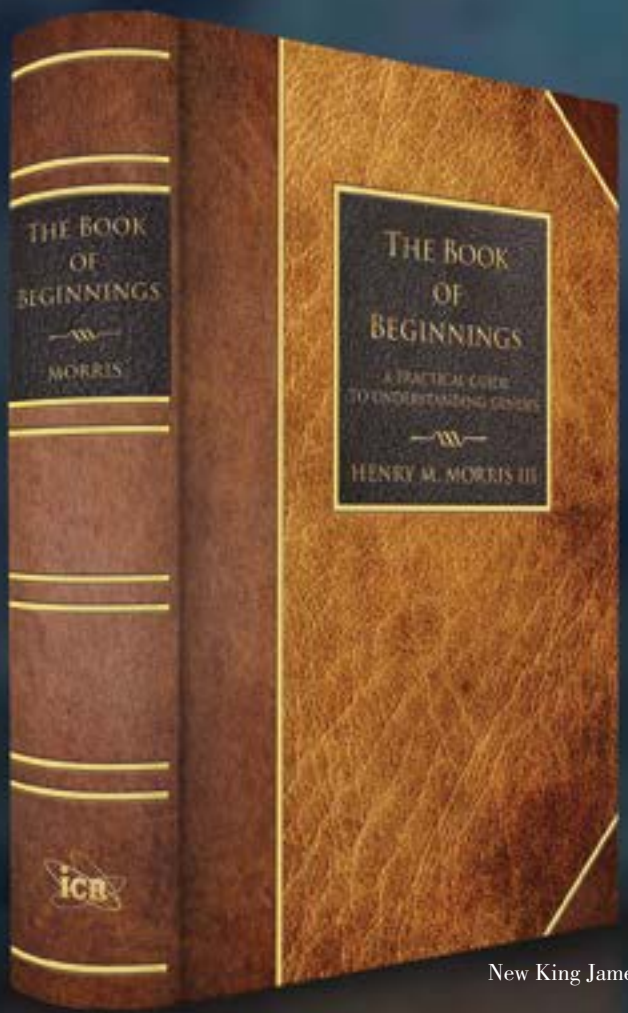

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