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Neanderthal Rates of Growth and Development as Assessed by Tooth Enamel

by Jack Cuozzo, D.D.S., M.S.

In paleoanthropology, teeth are turning out to be an important diagnostic feature for distinguishing modern humans from various species of non-human primates. Tooth crowns are on top of the list of preserved skeletal parts because of the hardness of the enamel layer that is more durable than bone.

Teeth are records

Of course, under very acidic conditions even tooth enamel disintegrates, as every dentist knows. However, under basic conditions, such as those found in limestone caves, unworn and moderately worn teeth can retain certain periodic markings that display the rate at which they were formed. These are found as a series of outer enamel rings that are continuous with inner enamel lines. The former are called *perikymata*, while the latter are the dark *lines of Retzius*. By counting these periodic striations on the outer surfaces or inner lines, if the crown is fractured, an estimate can be made concerning the formation time of the tooth in question. However, one major assumption overshadows these calculations. A supposition must be made concerning the time period necessary to form one perikymata or tooth ring. Once that figure is determined, then tooth formation times can be calculated. Following tooth formation analysis, even greater extrapolations can be made concerning the overall development and lifespan of the human or non-human species in question.

Figure 1.
The lower left lateral and canine of adult Skhul V, Mt. Carmel, Israel. Peabody Museum, Harvard University

Since modern humans are known for their slow pace of tooth formation in contrast to modern apes, much weight has been placed on studies of teeth to determine the place of a primate species in the history of evolution. But is biological history uniform? What if single ring formation periods have been variable over time? Were apes and humans always on the same biological developmental schedules as they are today? Do Charles Lyell's geological assumptions apply to biological development? Is the

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Discovery of Design

by Don B. DeYoung, Ph.D

The word *biomimicry* frequently appears in the current technical literature. The term refers to the use of ideas from nature to develop new products and to solve problems. Increasingly, inventors, engineers, and scientists are turning to plants, animals, and objects for technical insights. Janine Benyus' 1997 book entitled *Biomimicry: Innovation Inspired by Nature* has been a best seller, although it is saturated with ultra-environmentalism.

The typical explanation for biomimicry success is that nature has had untold millions of years to experiment and to optimize physical details by mutations and natural selection. In truth, of course, design in nature reveals the fingerprint of the Creator. The following paragraphs give examples of practical ideas found in nature. I selected these from a nearly endless list of such examples.

Sea animals

The cuttlefish, which lives in temperate oceans and grows to a length of three feet, holds the distinction of being the fastest color-changing animal. Beneath the cuttlefish skin are many small elastic sacks, called *chromaloptores*, which are filled with color pigments. Attached muscles expand and contract these sacks, changing the cuttlefish's appearance in less than a second. Deeper under its skin are white cell patches, called *leucophors*, which act like mirrors. When the cuttlefish swims beneath green seaweed it instantly appears to turn green.

The cuttlefish's camouflage ability has not gone unnoticed by the U.S. military.

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present rate of development the key to past rates? These questions bear heavily on any discussion of growth and development in humans and apes.

Dental development and overall maturation

Dean, Leakey, et al. (2001) state, "A modern human-like sequence of dental development, as a proxy for the pace of life history, is regarded as one of the diagnostic hallmarks of our own genus *Homo.* Brain size, age at first reproduction, lifespan and other life-history traits correlate tightly with dental development."

I agree completely that dental and jaw development is correlated tightly with the ages of sexual and bony maturation. This is the basis of my original x-ray research with Neanderthal skulls and has been documented in detail in *Buried Alive* (Cuozzo, 1998a). In that book, and in a presentation at the Fourth International Conference on Creationism (Cuozzo, 1998b), I concluded that Neanderthals matured more slowly and lived to longer ages than we do today. I would include them in a larger category of ancient or archaic *Homo sapiens* that were genetically superior to modern *Homo sapiens,* and that were earlier descendants of Adam and Eve, who lived before most of the degenerative changes were amassed in modern humans. That they were genetically separate from the apes is obvious.

But, it is apparent that the evolutionists will never understand the non-uniformity of *Homo* biological-physiological development, as described in the Bible, in terms of decreasing longevity. This is primarily due to their insistence on uniformity of dental, skeletal and soft tissue development from the beginning of the existence of the genus *Homo*. Interestingly, modern dental research has confirmed non-uniformity of dental development in the recent history of modern man (Smith, 1991). Finally, if early *Homo* didn't have a genetically and biologically superior body, and lived hundreds of years, then we had better start looking for cardiac pacemakers in the fossil record.

Ancestors or not?

In recent times there has been an attempt to push Neanderthals off the line of human ancestors which, I think, is related to their obvious longevity traits. Two major theories have emerged from several variants. The multiregional model championed by Alan Thorne and Milford Wolpoff has clashed with the common origin, out-of-Africa model promoted by Chris Stringer and Clive Gamble. The latter theorizes that humans have not evolved numerous times around the globe from local archaic *Homo* populations, and that there was no Neanderthal phase of human evolution (Stringer and Gamble, 1993). It also postulates that Neanderthals became extinct and ultimately a dead end sometime after modern humans emerged out of Africa.

The former (multiregional) model has been criticized as biologically racist because not all regions of the world would have kept the same evolutionary pace. So, multiregionalism has become quite unpopular and has lost ground to the out-of-Africa model. Regardless of which theory is held by paleoanthropologists, neither side would ever concede that *Archaic Homo* was actually genetically superior to modern *Homo sapiens.* Both schools of thought would place them on a lower level of evolutionary development, a lower level of complexity. This is in total antithesis to the Biblical absolutes of early perfection in Genesis 1 and a subsequent degeneration as described in Paul's letter to the Romans, 8:20-22.

The practice of placing Neanderthals into a separate species secures their marginal role in human history and removes them from any serious consideration as the old men and women of the Bible. Therefore, numerous studies over the last 90 years have been aimed at this goal. It started with Boule with his hunched-over skeletal reconstruction of La Chapelle-aux-Saints (Boule, 1911-1913). Although Cave and Strauss (1957) later corrected that mistaken position, the central theme persists in the book, *Extinct Humans* (Tattersall and Schwartz, 2000). Referring to Neanderthals, with a new spin, the authors state,

> "…these extinct humans are incomparably the best-known of the competitor species that *Homo sapiens* saw off on its way to becoming the only hominid on Earth…"

Notice that they call them "humans" on one hand, and then on the other, a "competitor species." This is the dichotomy that exists in evolutionary science that does not exist in the book of Genesis. Is it a wonder why Christians are as confused as the public-at-large about the two or more species of humans (including *Homo erectus*) that supposedly roamed the earth?

My own discoveries in the Musée de l'Homme in Paris in 1979, described in *Buried Alive* (Cuozzo, 1998a), exposed a similar attempt to create a different species out of Neanderthal remains by positioning the lower jaws more forward than their true anatomical positions. Furthermore, I witnessed the actual removal of a Neanderthal chin from La Quina V for additional ape-like emphasis (apes do not have prominent chins; see Cuozzo, 1998, note 1).

In addition, I discovered in 1991 that there had been forward manipulation of both jaws of the Neanderthal teenager Le Moustier 1 in an East Berlin museum display and official museum slide. In the slide, the lower and upper jaws were positioned 30 millimeters beyond their normal position in relation to the skull base. In the laboratory, by means of cephalometric x-rays, I was able to properly relate them in anatomically correct positions.

With this background in mind, consider why you should weigh every attempt to assign the Neanderthals to a separate species with a fair amount of skepticism, especially since my study of their skeletal remains supports the Biblical knowledge concerning the later maturation and longevity of ancient people.

"Surprisingly rapid growth in Neanderthals"

This is the title of the latest scientific attempt

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to remove Neanderthals from our ancestor list, and move them even closer to the apes, on the basis of tooth development (Ramirez Rozzi and Bermudez de Castro, 2004). Remember, apes grow and mature approximately twice as fast as humans; therefore, any indication that a group of humans in the past grew and matured faster than we, would place them closer to apes than to modern humans. Any indication that a group of people in the past grew and matured slower than we do would place them closer to Adam and Eve, or Noah, and therefore would support a Biblical interpretation of the fossil record.

As a generalization, and I realize that generalizations have limitations, I believe that the main emphasis of paleoanthropologists in relation to Neanderthals hasn't changed much since Boule's reconstruction of La Chapelle in 1911-13. Though they would deny this vehemently (because many supposed human ancestor forms[1] have been discovered, between the Neanderthals and the apes, that are closer to the ape-human split, and are more ape-like than Neanderthals) their overall goals never seem to change. Of course, today's methods are more sophisticated, utilizing the latest scientific techniques.

I have compiled a list of twenty-two points of dispute with this recent *Nature* article (Ramirez Rozzi and Bermudezde Castro, 2004) that emphasized rapid Neanderthal development. Because space in this newsletter precludes an in-depth analysis and critique of this research, I will summarize my major points here and direct you to my website[2] for complete coverage with more illustrations.

Some points of contention

1 The authors present perikymata or enamel-ring-counting data on permanent anterior teeth from 146 *H. neanderthalensis,* 100 *H. sapiens*, 106 *H. Heidelbergensis*, and 8 *H. antecessor* specimens. They state: "But wear concerns principally or exclusively the occlusal plane; that is to say that even in worn teeth, the counting of perikymata can easily be done in the rest of the crown." The phrase "easily done" is an exaggeration. An incisor or canine that is worn down to half or a quarter of its original height is also worn on its other surfaces as well. (See Figure 1)

2 Stringer and Gamble (1993, pp. 76-77) write: "The Neanderthals must have had special uses for their front teeth, for these are very large and often ***heavily worn*** compared with those of their probable ancestors. The large size of their front teeth is particularly notable considering that the rest of their dentition was relatively reduced in size (although still larger than the modern average). It is thought these ***teeth may have been used as a vice*** to hold objects other than just food items." (emphasis mine)

3 These same authors also write, "In an early sample (Atapuerca) and several later Neanderthals from Europe, Iraq and Israel, unidirectional scratches have been observed, which suggest that something held in the teeth was being cut with stone tools." It is noteworthy here to mention that 114 of the anterior teeth the authors used in this study originated from Atapuerca, without saying a word about these unidirectional scratches (Stringer and Gamble, 1993).

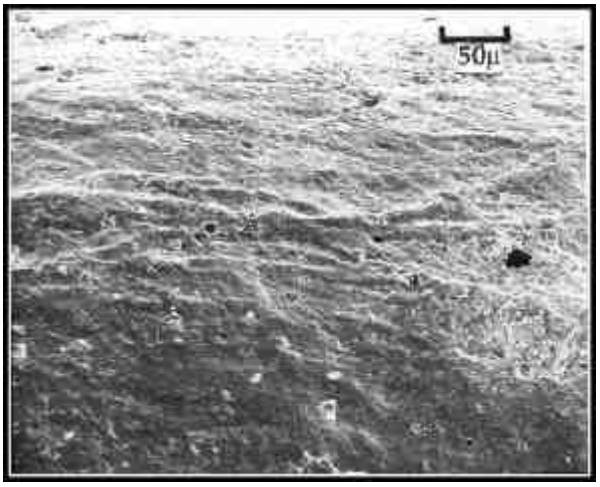

Figure 2.
SEM photo of upper central incisor, Mt. Carmel, Israel, Tabun level B. Peabody Museum, Harvard University.

4 Figure 2 shows the labial tooth surface of the most unworn permanent upper central incisor that could be found in the Harvard Peabody Collection from Mt. Carmel. The labial surface of the tooth replica was examined by scanning electron microscopy (SEM).[3] It displays a rather heterogeneous surface that made it quite difficult to discern between adjacent perikymata. This is more typical of what you find in the fossil record, rather than pristine unworn surfaces (see Cuozzo, 1998; note 1, p. 82).

5 I include with this critique my photograph (Figure 3) of the permanent anterior teeth of La Ferrassie I, one of the Neanderthals listed by Ramirez Rozzi and Bermudez de Castro (2004). It is registered in their list of Neanderthals as contributing four anterior teeth to this study. I'd like to know which of these teeth were the four used by the authors to count perikymata on the enamel, since there is almost no enamel left on any of these crowns.

6 The authors publish no photomicrographs of any of the teeth in the study. Until they do, much of this material will remain shrouded in mystery.

7 It is necessary to challenge another statement in this report, concerning the regularity of mean numbers of perikymata in anterior teeth of *Homo sapiens* vs. *Homo neanderthalensis.* They state, "Low perikymata counts indicate that mean crown formation times were shorter in *H. heidelbergensis* and *H. antecessor* than in Upper Paleolithic-Mesolithic *H. sapiens,* but Neanderthal anterior teeth are characterized by the shortest crown formation times of all these groups."

Quoting from my book *Buried Alive* (Cuozzo, 1998; p. 82):

> "One more opposing viewpoint should be aired here. This was written to *Nature* magazine in November of 1990 by Alan Mann and his colleagues at the University of Pennsylvania, Department of Anthropology, University Museum.[4] Mann and his colleagues did another study on 12 incisors of modern man from 3000 B.C. to A.D. 800 and came up with different numbers. They found that the perikymata counts ranged from 75 to 157 (s.d. of 1-12 for individual teeth). The mean was 116. This represents a difference of 82 perikymata in their investigation."

The best calculations I can make from the Romirez Rozzi and Bermudez de Castro chart of the upper central incisor is that in deciles[5] 6 through 9, the crucial ones, they say (the emphasis is on the *H. sapiens* deciles that are packed more closely together), there are approximately 79 perikymata as compared to the approximately 56 total for those deciles in *H. neanderthalensis.* This represents a difference of approximately 23 perikymata.[6] Deciles 1-5, they admit,

are fairly equal and, in decile 10, we both agree there is more difficulty obtaining an accurate count due to the problems of breakage of enamel at the edge of the tooth crown where it meets the root. We can even allow them ten more perkymata in decile 10, making a difference of approximately 33.

Now compare this to the Mann study that found differences of 82 perikymata in 12 incisors of only one species, modern *H. sapiens*. How can the authors assign a different species to Neanderthals based solely on perikymata differences of approximately 33, when human variability in the Mann study was 82 perikymata? Were the new study differences between modern humans and Neanderthals greater than 82 in the crucial deciles?

8 Then there is the huge question concerning assumptions. The first and most important assumption is stated clearly by the authors: "A 9-day interval between adjacent perikymata was assumed." If we assume that ancient children matured at the same rates (7-10 day periods for perikymata) as do modern children, or even faster because of an ape heritage, then we have included a uniformitarian assumption in the equation which is suspect. However, if ancient children began the decline called the *secular trend towards earlier maturation* that is recognized in modern science, then the authors are wrong.

9 To support their conclusion that Neanderthals have "the shortest period of dental growth," they relied on fewer perikymata counts in the crucial areas of the tooth crowns; but they also stated that "the most widely spaced perikymata of all are seen in Neanderthals." Again, no photomicrographs or light-reflection photos are displayed.

Figure 4 is a relatively unworn mandibular left lateral incisor of Le Moustier 1. The light of the camera flash exposed the perikymata packing pattern. As you see the light reflecting off the perikymata lengthwise down the distal edge of the crown, notice that up high on the crown there are larger spaces between the white ridges. But, as you go further down on the crown towards the root, the spaces between the perikymata get smaller. Finally, they appear to merge together near the cervical margin. This appears to be a tight packing pattern near the cervical margin. This is exactly what the authors say is not present in Neanderthal incisors. They say they are more evenly spaced and not as tightly packed together as modern humans near the cervical margin.

Figure 5 displays a partially-formed, modern-human, unerupted lower canine from my own collection of teeth. This is not a cast. The light reflections are the perikymata and they become more tightly packed as they descend from the crown tip to the wider portion of this developing crown. This pattern, and the Neanderthal pattern cited above, are virtually identical.

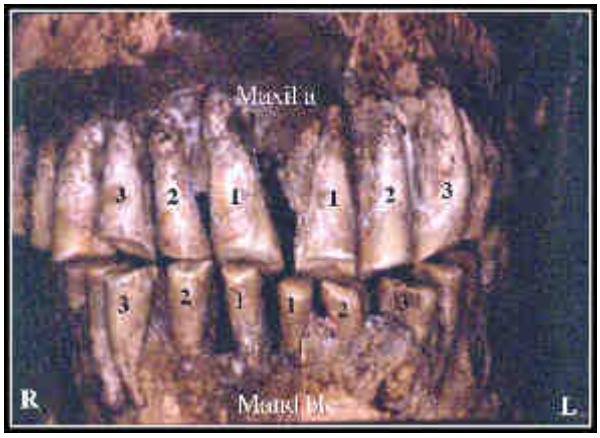

Figure 3.
Anterior view of La Ferrassie I with teeth in occlusion.
Musée de l'Homme, Paris, France.

Figure 4.
Lower left lateral incisor of Le Moustier I.
Museum für Vor-und Frühgeschichte, Berlin, Germany.

Figure 5.
Lower, partially-developed, unerupted, human canine crown.

10 In conclusion, it seems evident that Ramirez Rozzi and Bermudez de Castro have failed to produce any credible evidence for a more rapid rate of development in Neanderthal teeth.

Notes

1 For example: *Australopithecus africanus and afarensis, Orrorin tugenensis, Kenyanthropus platyops*, etc.

2 See: www.jackcuozzo.com

3 Carefully following the Dean and Bromage protocol, in cooperation with Steven Koepp, Ph.D., Montclair State University.

4 See: Mann, A., J. Monge, and M. Lampl. 1990. Dental caution. *Nature* 348:202.

5 A decile is one-tenth of the labial (cheek) surface of the tooth. The biting edge is the number 1 decile, while number 10 is at the upper or cervical margin.

6 Since they provided no numbers, only charts, this is my best estimate; however, I feel these are not far from their real numbers.

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— CM —

Discovery of Design

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A color-changing gel has been prepared, based on cuttlefish chemistry. The chemical is being tested in clothing and on equipment. Current camouflage research also extends to the advanced abilities of butterflies and moths (Holloway, 2000).

The lobster has a unique eye. Most creatures, including people, focus light by *refracting* or bending light rays through an outer cornea and inner lens. In contrast, the lobster eye works by *reflection* of light from tiny, flat, mirror-like surfaces. Its eye consists of thousands of square tubes arranged on the outer surface. Light enters these openings and reflects off the shiny inner surfaces. Precise alignment of the mirrors then focuses the light rays together on the retinal receptors.

The lobster's eye design has been copied in x-ray telescopes. X-rays are a very energetic form of radiation emitted by stars. Ordinary concave mirrors are not suitable for focusing x-rays since the radiation penetrates the glass unless it hits at a small glancing angle. A small angle is exactly what happens for the "lobster lens." This geometry is found in NASA's Chandra orbiting x-ray observatory, launched in 1999 (Chown, 1996).

Plants

The name *lotus flower* refers to a variety of plants which grow in water. One lotus distinction is the ability of their large leaves to shed water and dust. Even in muddy water the lotus plant remains completely clean. The secret of this "lotus effect" was discovered by German scientists in the 1990s. Lotus leaves are covered with tiny bumps, .005-.01 millimeters high, along with a waxy film. Water droplets, because of their surface tension or "stickiness," touch the leaf surface only at the high points. Because of this small contact area, the drops quickly roll off the leaf. Along the way, the water droplets pick up dirt like snowballs and remove it from the leaf. As a result, the lotus leaf surface stays dry and clean even during a heavy shower.

The German chemical company BASF has duplicated the lotus surface with a self-cleaning spray which repels water, dust, and grime. It is ideal for rough surfaces such as furniture, clothing, leather shoes, and masonry. The lotus effect has also led to self-cleaning paint that is washed clean whenever it rains.

Several hundred plant species are able to generate "body heat," somewhat similar to the warm-blooded mammals. Plant examples include magnolias, Dutchman's pipes, water lilies, philodendrons, and skunk cabbage. This latter plant has the ability to bloom inside a snowbank and produce a miniature ice cave. I have observed them growing along the back edge of my property which is a wetland. The skunk cabbage stalk can reach a temperature 30°C higher than the cold surrounding air. One purpose of the plant's heat generation is the emission of strong odors which attract pollinating insects.

A potential application of the skunk cabbage is a temperature thermostat for furnaces and air conditioners. The typical, mechanical, thermostat design, which hasn't changed in 60 years, is based on bimetallic temperature expansion. In contrast, the skunk cabbage uses chemical compounds, not yet fully synthesized, to regulate its temperature. This system is sensitive, adjustable, and solid-state in its operation. Japanese scientists have succeeded in regulating an electric heater using a feedback mechanism as suggested by the skunk cabbage. This lowly plant, with its questionable fragrance, has become a technology teacher (Milius, 2003).

People

Fingerprints have long provided a unique personal identification. Prints have more than 35 measurable characteristics which can appear in almost limitless combinations. However, there is one other personal feature with far greater potential for unique recognition. This is the iris of the human eye, the blue-green-brown eye component which controls the amount of entering light. Look closely in a mirror and your iris will show a large number of star-like points. An iris has at least 266 identifiable characteristics, perhaps the most data-rich physical structure on the surface of our bodies. And while fingerprints can be hidden or altered by scarring, the iris cannot be tampered with. It is estimated that there is only one chance in 10^{78} that two people's irises will exactly match. Scanning of the iris may soon be commonplace for secure identification purposes (Stone, 1998).

The skin of an infant at birth is typically covered with a layer of paste-like material called vernix. This coating helps a newborn in several ways. Vernix is 80 percent water, which moisturizes the new exposed skin. It contains high levels of vitamin E, which help the skin deal with possible stress from chemicals and ultraviolet light. Vernix also provides a barrier to infection both before and during childbirth. Other roles of vernix are not yet known, but surely include skin development. Researchers are attempting to duplicate the chemical composition of vernix. A synthetic form would be useful in treating skin problems for people of all ages. Vernix has been called "nature's perfect skin cream" (Westphal, 2004).

Physical Science

The graphite and diamond forms of carbon have been known from antiquity. In 1985, however, a new carbon variety was discovered. It has the shape of a sub-microscopic hollow sphere with 60 carbon atoms on the surface. The delicate surface lattice structure somewhat resembles a soccer ball. These spherical carbon molecules are called fullerenes or "buckyballs." This latter name is in honor of architect Buckminster Fuller (1895-1983), who popularized geodesic domes in his building designs.

One potential application is that the buckyballs can function as bearings in nanotechnology motors and pumps. Meanwhile they are currently finding use as lubricant additives, electrical insulators, and surface coatings. It has also been found that the buckyball sphere can shield other molecules placed within them, somewhat like a bird in a cage. This has the medical potential for timed release of drug dosages.

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Radio Interview with Dr. Kevin Anderson

Part 2

Editor's note: The following, part two of an interview conducted by Jan Mickelson, was broadcast in November, 2003, on radio station WHO (1040 am) in Des Moines, IA. Part one appeared in the previous issue. The transcript has been edited for space and content.

J - With us today is Dr. Kevin Anderson, a molecular biologist and director of the Van Andel Creation Research Center, who is here to basically say, "Darwin was wrong; Darwin was a hustler. The whole evolutionary theory is junk science and a scam." And as you were telling me off the air just a second ago, we no longer have a real educational system.

K - No, we don't educate, particularly in the areas of science. We simply indoctrinate; and students are not taught to think, not taught critical thinking. They're not taught to evaluate what they are being told. When I was being interviewed by Sam Donaldson a couple of weeks ago, he was saying, "Well, if we do it the way you're talking about, won't that be confusing to the students? Won't that introduce controversy?" Like there's *not* controversy in the schools already? You know, I should have said . . .

J - . . . like — what would happen? Would a food fight break out in the lunch room?

K - I should have said, "They wouldn't be any more confused than they are already, and they wouldn't be any more confused than you are, Sam!" But any way, it sounds silly to me to think that the best way to teach this material is to simply list "A, B, C, D" —memorize it, you get it on the test, and you're done! You haven't taught anything, and certainly all you've done is indoctrinate them by just telling them, over and over again. You're not allowing them to think, nor allowing them creative thinking. John Dewey said that for education to work, we *need* to get rid of independent thinking.

J - Well, he's pretty much done that!

K – Exactly — because he wanted simply to indoctrinate! We complain about the education in this country — maybe there is a relationship!

J - That's why people are bailing out of it.

K - That's why people are bailing out of it right and left.

J - Let's go right back to our phone lines here—and we're talking with Dr. Kevin Anderson. You're welcome to agree; you're welcome to disagree. This is Rob — good morning, sir.

Rob - You say that mutations occur by removing information — like, removing short genes to create a taller horse, right?

K - Yes, now Jan is the one who used the term "information." I did not use the word, "information," but I will go along with the context of what you are saying.

Rob - Okay, I agree with you; follow my logic to see.

K - Okay.

Rob - If a single cell from a man can create an entire person, theoretically, would there be enough information in a single cell on earth to explain all the creatures by simply removing some sort of information to allow a more complex creature to come out of it?

K - No! If I understand your question, that is, any given single cell on the earth would only contain the information that is designated within that cell. So if the cell comes from a human being, for example, it does not have the information to make gills or scales. So, right, removal certainly isn't going to get you anything new, no matter what you start with. It doesn't matter if you start with a conglomerate of different cells, removal of genes, or removal of portions of genes isn't going to get you a brand new system when you're done — no!

Rob - If God started with *very* complex cells that we can't see and can't imagine, and it was simply a process of removal of certain genes to create what people call evolution — would *that* be possible?

K - I'd tend to call that more "de-evolution," I guess. But if you're talking about some kind of super cell that contains all the genetic material that is in existence, and removal of genes allowing it to develop into humans and horses and oak trees and cows — first, I don't know the biological mechanism by which that would; and secondly, that kind of . . .

Rob - . . . God!

J - Why would God need to do that?

K - That would be a whole philosophical argument — yes, why He would need to do that? But what you're saying, then, is that this cell, this first single cell, was actually much more sophisticated and complicated than anything existing today.

Rob - Absolutely!

K - That makes a nice philosophical area to get into, but I wouldn't begin to know any scientific basis for such a thing.

J - Didn't Carl Sagan, himself, admit, in essence, that you can't really explain how life evolved on this planet if we had to become "seeded" by another life from outside of earth — that statistically, it is impossible for life to have evolved on this planet? So, therefore, it only could have occurred by an external source?

K - I don't recall Carl Sagen arguing that. I know Fred Hoyle argued that we were seeded from some outside asteroids or comet tails, or something else.

J - I think that there was a Sagan quote from the 1970's that basically asserted something similar.

K - I'm not aware — but, yes, that could well be. And part of that kind of reasoning is just to sidestep some of these initial problems with chemical evolution. They don't really — but it's an attempt to.

J - Yeah, we can't really figure out the mechanism of how it could have evolved here on earth, so it had to have happened somewhere. So if it happened somewhere else, they could have left something behind here.

K - Then we're free for more imagination if we take it off the earth and put it somewhere else. Then the sky's the limit, with the conditions and the situations and the environmental aspects that we can say produce this. So it's all now just imagination; it's not science.

J - What's your best argument?

K - My best argument? Well, my best, personal argument, of course, is the genetics

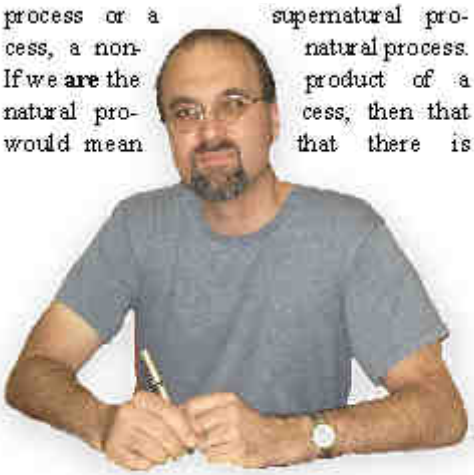
— in that there is no genetics for evolution. The mutations, that are cited by evolutionists as mechanisms to allow evolution, do no such thing! They are taking away; they are removing the transport proteins and the binding sites and the regulatory systems. So they cannot possibly be driving common descent with modification, because they are doing the exact opposite!

J - What should be taught in schools? I agree with you that our government education system is a joke; but it's still damaging a lot of people. And since we're paying the bills, that is, parents are paying the bills, I think the people who pay the bills ought to have some influence over what is being taught to their kids. I know that's a naïve notion, that the customer should decide what they're buying, but what is ***fair*** to be taught? Do you want religion to be taught in public school, or do you want science to be taught?

K - Religion is already being taught in public schools. It's being taught all over the place! The only thing that is no longer promoted in public schools is Christianity. You can go into the public schools with any wild idea, and it is accepted, even embraced. Of course, evolution is the biggest religion of all that is taught in public schools.

J - But, that's *science*!

K - That's the guise they try to put behind it; but it's ultimately religion. It's ultimately a faith base. So, what we are saying should be taught is simply this — that you would sit down in the classroom and you would say, "Okay, if we're going to think about origins, we really have two possible solutions. We either are the product of a natural process or a supernatural process. If we **are** the product of a natural process, then that would mean that there is



Dr. Kevin Anderson

something within nature that generates and creates us, and that we should ... "

J - . . . and you should be able to demonstrate.

K - It should be scientifically reasonable, and we should be able to study and demonstrate it. It should still be there. Where did it go? If we're **not** a product of a natural process, then it has be something that's **not** natural — therefore it's supernatural.

J - Then that can't be *science* by definition.

K - . . . by **whose** definition?

J - Well, I don't know!

K - See, that's the thing. The evolutionists ...

J - It can't be — the naturalistic assumption of evolutionists is to define science as only things that are naturalistic.

K - Right! They have tried to railroad the education system, and also to railroad science, by creating their own definitions; and then, according to their own definitions, they exclude you. But by what definition is "supernatural" unscientific?

J - *Scientific* means you can demonstrate and you can observe.

K - Yes! Yet, we have claims that the universe is filled with 'dark matter' which we cannot either observe or measure. But, this is still considered "scientific." The key to any valid scientific concept is its ability to explain the data and to make predictions of what should be observed.

The creation model makes predictions. Even Stephen J. Gould admitted and he said, "We've got to quit fooling ourselves. The creation model does make predictions." What he was saying, though, was, "Let's just disprove the predictions" — which he

didn't do. But to say, "The creation model doesn't make predictions" — that's erroneous; that's misleading; that's not even being . . .

J - What does it mean "making predictions"?

K - In other words, the creation model predicts, for example, that you would find in the fossil record discontinuities, which is certainly what you find; because we are going to say that there is not this long, steady progression of evolution . . .

J - . . . there's no "tree of life"?

K - Correct! Many evolutionists are also now admitting there's no "tree of life."

J - Dr. Kevin Anderson is here. Now, we've got all this technology: we've cracked the genetic code; we can see into, we think, life at its most miniscule level. What if we're still primitive in our scientific understanding? What if there is a mechanism, and we're just groping around — *still* groping around in the dark trying to find one?

K - Well, let me give two answers to that. First, in many ways we *are* still primitive. In fact, the more we learn about the cell, the more we realize we don't understand. Its complexity is coming to the point of being absolutely mind-boggling. But that doesn't mean that we know so little that the mechanism should not be detectible. If you're looking at mutations as the driving mechanism, for example, we can detect that; we can follow that; we can observe mutations; we can know what's going on.

In fact, it's because of that, that I can now stand here and say that we do know what's going on in the systems that we have looked at, at that level. And because we know what's going on, it "ain't working"! It's not giving the evolutionists what they need. It's not like there's something secretly hidden insofar as there's a mutation that we're not detecting — we're detecting the mutations. Now, you can come up with the arguments of how the mutations may or may not be occurring. There are arguments now for what's called "directed mutation." That is a non-random mutation. But that in itself requires a program that's ***put in there***! And how do you explain how that program got in there to begin with?

J - This is Tom — good morning! You're talking with Dr. Anderson.

Tom - Okay. I have not heard him address the creationists' theory that the earth is only 6 to 8,000 years old. I've been indoctrinated in creationism all my life; but I'm also educated and therefore have doubts. I just want more information.

J - Good point! All right, so we've dealt only with the mechanism of evolution here this morning.

K - Correct.

J - Do you also address some of this stuff on your website, young earth versus old earth?

K - Yes, we do! The Creation Research Society is a young-earth society, which really makes us radical and "way out there" compared with what a lot of people want to tell you. Certainly, on the website, there will be articles that talk about that.

J - Can you come back and deal with that again? Because we can deal with *that* and *that exclusively*, because I figure that's sort of irrelevant if you can't get past how *any life exists*, let alone *how old it is.* All right, but I understand people who have that question; and we'll have you come back — or maybe you can just do this on the phone sometime?

K - Sure!

J - Dr. Kevin Anderson from the Creation Research Society. Thank you.

—CM—

Discovery of Design

...continued from page 5

Among the great variety of stars in space, pulsars are standouts. They are compact, dense stars with a very rapid spinning motion. Pulsars are also called neutron stars. They are characterized by intense beams of emitted radiation. As the pulsar spins, its radiation flashes outward through space like a searchlight. Many white dwarf stars show a similar behavior. Pulsar flash times vary from once every few seconds down to a few milliseconds. The latter figure means that some stars spin at an incredible rate of 500-1000 times per second. A particular flash frequency is very regular, varying by only one part in ten billion. This makes pulsar and white dwarf stars some of the most accurate time-keeping systems available, rivaling atomic clocks. One is reminded of a purpose of stars, as recorded in Genesis 1:14, to serve as time keepers (Roth and MacRobert, 2004).

Conclusion

Biomimicry is the valuable discipline of learning practical lessons from nature. The Creator has embedded a host of useful ideas in both the living and non-living world. Each example shows us how to utilize the created earth resources and manage them in the best way.

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—CM—

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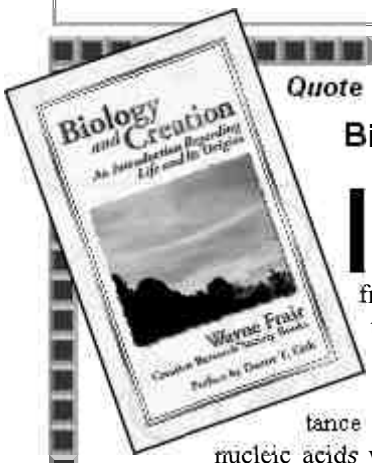

Quote from

Biology and Creation: An Introduction Regarding Life and Its Origins

It is interesting to observe how our understanding of life has shifted in just the last few years. It has moved from the "central dogma" of biology that DNA is the chemical molecular agent of heredity (genes) — *genomics* — to a realization of the importance of interactions of DNA and other nucleic acids with proteins — *proteomics*. Now moving toward center stage with DNA and proteins are carbohydrates (complex sugars) — *glycobiology*. For example, carbohydrates are vital in cytology and embryology. Recent research on "life" is revealing increasing levels of *complexity.*

Today the complexity of cells commonly is recognized as *intelligent design*, the creation of an almighty God, and part of natural revelation which points to God. This belief, however, is based upon inference, namely, conclusions supported by available evidence. I am not suggesting that the existence of God can be proved scientifically. Nobody can do this. Neither can anyone prove that God does not exist. These views are sustained by faith (which is belief based upon limited evidence). But of our two choices (theism and atheism), I think it is more logical to accept the position that not only does God exist but also that God has created life with its intricate complexity.

— Wayne Frair. 2002. p. 33.
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Creation Calendar

Note: Items in "Creation Calendar" are for information only; the listing of an event does not necessarily imply endorsement by the Creation Research Society.

December 4
Squaw Creek Game Refuge
Family Creation Safari, www.csama.org
CSA for Mid-America (Kansas City Area)
Contact: Tom Willis (816)618-3610, csahq@juno.com

2005

April 30 [**Deadline**]
Jr. / Sr. High Creation Writing Contest NEW!
Midwest Creation Fellowship
www.midwestcreationfellowship.org/html/essay2005.html
Contact: MCF, P.O. Box 952, Wheaton, IL (847)244-4373

June 2-4
Annual Meeting of Board of Directors
Creation Research Society
Bozeman, MT

June 15-17
A Grander View of Life NEW!
Baraminology Study Group, Moscow, ID
Abstracts due 28 February 2005
Registration discount prior to 30 April 2005
www.bryancore.org/bsg/grander05/
Contact: Todd Wood, info@bryancore.org

July 17-22
Creation Mega-Conference NEW!
Co-sponsored by Answers in Genesis, Liberty Univ., Creation Research Society, and others
www.creationmegaconference.com
Contact: (800)350-3232, ext. 445

What Are Creationists Thinking about ...?

As new scientific discoveries make the headlines, have you ever wondered how your fellow creationists are reacting? Have you ever thought of a "crazy" new idea about origins and wanted to bounce it off another creationist?

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For more information, send an e-mail message to Glen Wolfrom at contact@creationresearch.org.
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All by Design

The Perfect Bypass

by Jonathan C. O'Quinn, D.P.M., M.S.

Before birth, a developing baby's circulatory system is connected to its mother's. By connections with the mother's circulation through the placenta, the growing baby's organs receive the oxygen and nutrients they need for growth.

However, certain organ systems, like the brain, require more oxygen than others. Special structures in the fetal circulatory system partially re-route oxygen-rich blood to tissues needing the most oxygen. One such structure is the *foramen ovale*, an opening between the left and right sides of the heart. It is covered with a one-way valve, the *septum primum*, which allows blood to flow through the *foramen ovale* without leaking backwards.

Upon entering the left side of the heart, oxygen-rich blood is diverted mainly through blood vessels that travel to the head and upper limbs. As circulation patterns change after birth, this bypass closes, in order to prevent heart and lung damage. Other bypass structures also exist, and they degenerate after birth to allow for the new, adult pattern of circulation, and to become structural ligaments. Similar circulatory systems exist elsewhere in the animal kingdom.

Bypass structures within the fetal circulatory system provide extra oxygen to the tissues that need it most. Then, after birth, these structures mysteriously disappear. Or is it a mystery? How could this complicated circulatory system have developed in stages, as evolution teaches? Unless it was fully functional from day one, any evolving species needing this system would immediately become extinct, which points to the handiwork of an intelligent Designer, not to random chance.

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Dr. O'Quinn is a podiatrist with a Master's degree in physiology. This essay is one of a series he has written to illustrate the marvels of design that can be seen all around us.