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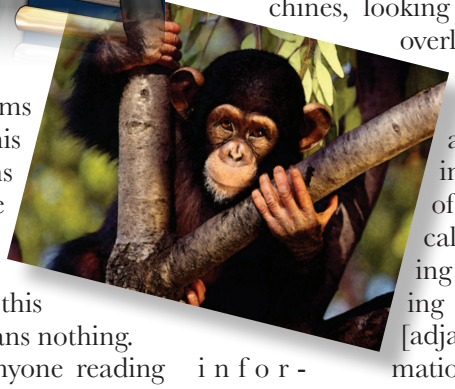
DNA by the Numbers

by Margaret Helder

An avid fan of spy stories, I have read many which involve an apparently harmless document (like a friendly letter). But the document actually conveys dangerous information if one is provided with the appropriate convention for decoding it.

That situation reminds me about the case of two creatures, one a human and the other a chimpanzee. Some scientists declare that the genetic material of these two organisms is 98% the same and this proves that the humans are descended from the chimpanzee. A closer look at the situation, however, reveals that this declaration actually means nothing.



The first question anyone reading about human and chimp relationships should ask is, what do those numbers mean? These numbers are computer estimated similarities in the content of DNA. That molecule consists of four choices (like letters) which provide the genetic information bearing part of a chemical chain. The choices are called A, T, C and G. We could potentially arrange these letters in many different patterns in a row (sequence) such as CATCATGAT or TTTACGGAC or whatever we choose. There are actually about 3 billion letters in the entire collection of human genetic information (genome) and even more in the chimpanzee genome.

By means of machines and chemical strategies, the order of the letters along the human genome has been quite well documented. Then in 2005, a description of the chimpanzee genome was published. This is said to be 98% similar to the human genome. In comparison, the rat's genome is said to be 88% similar to the human genome, and chickens are estimated to be 60% similar. There are however many reasons why these values mean very little.

What scientists did was to chop up the chimp DNA into millions of small fragments about 500 to 1200 letters in length. The order of letters on each piece was then documented. But how did they put the whole thing back together again? For a start, computers compare fragments from several machines, looking for pieces with overlapping order. The computer then connects adjacent parts into larger pieces of information called "sequencing contigs" meaning continguous [adjacent] pieces of information. Rather than continue this expensive process indefinitely however, the scientists also used the human genome as a template or standard pattern to arrange and connect fragments. This is like using the picture of a puzzle to figure out which pieces should go where.

The result of this process is that the chimp genome might inadvertently have been made to appear

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Do you want to think more clearly?

Jason Lisle, Ph.D., graduated in astronomy from the University of Colorado. After years of experience in teaching and conducting research in solar astrophysics, he wrote *Taking Back Astronomy: the Heavens Declare Creation* (2006) which was aimed at junior high to adult readers. Now he has written *The Ultimate Proof of Creation: resolving the origins debate* (2009). Unlike the previous book, this one does not discuss much science at all. Rather he sets out to help everyone discuss more effectively what the ultimate foundation of our position, the creation model, really is. Do you want to think more clearly and even declare more effectively what the important issues are? Then this interesting book is certainly for you!

Dr. Lisle begins by declaring that the only rational basis for knowing anything is the understanding that God created everything including matter, all natural processes and abstract phenomena like morality, mathematics and the ability to learn. In this context he maintains that there are two categories of individuals: those who approach the world in a rea-

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Do you want to think more clearly?

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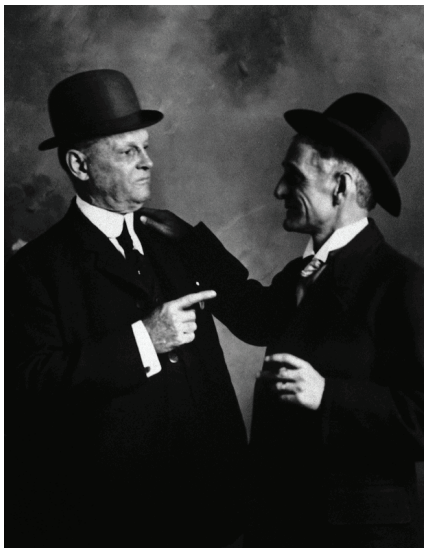
sonable way (rational) since they look to God as the ultimate foundation of everything, and those who base everything on an unknown and unknowable impersonal source (which is an irrational approach or contrary to reason).



Dr. Lisle then provides a very readable introduction to logic so that one can easily perceive why evolution based arguments are without a reasonable foundation and therefore are false. For example, one should look for arbitrary arguments (based on mere opinion), and unstated philosophical biases such as the insistence that the work of God will never be evident in nature. Don't worry, this advice sounds complicated but the author makes it interesting and understandable. Also one should look for inconsistency on the part of an opponent such that there is one standard for his position and another for yours.

Dr. L. then illustrates a wide variety of false arguments (fallacies) such as providing only two alternatives to a defender of an opposing position while excluding another possibility which actually might be the true solution. Another fallacy is circular reasoning which is most often wrong, but not always. Another fallacy is the appeal to majority opinion or expert opinion which could actually be wrong. And another common fallacy is to attack the character of the opponent in a way unconnected to the issue at hand but so as to foster disrespect for this person and arguments. These are just a few of the false arguments which Dr. L. covers.

The author's purpose in showing the reader how to recognize false debating strategies is to provide each person with the ability to demonstrate the merits of the Christian worldview and how any other worldview is sadly lacking. In his opinion, issues of science impact this discussion only minimally so the individual does not need to be heavily trained in this discipline. It is also his position that one should generally discuss details of science only with people who share the same worldview -- but there are others who would include a wider audience in their discussions.

Lastly the book provides the reader with opportunities to practice these newly acquired skills of logical analysis. Quite a number of real messages from the public to the AiG website are printed. The reader is encouraged to conduct his/her own analysis. Then Dr. L provides his own analysis of the arguments and a possible response to the individual. There is no doubt that one can learn a lot from this stimulating exercise!

Jason Lisle. 2009. *The Ultimate Proof of Creation: resolving the origins debate.* Master Books. pp. 254.

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Demonstrates Authority and Accuracy

by Margaret Helder

John Whitcomb and Henry Morris' 1961 classic *The Genesis Flood* was, of course, a wonderful work. Countless people, among them many scientists, have been positively influenced by its message. In the ensuing half century however, a lot of new information and many new arguments against "the flood" have appeared. The time has long since come for an update of the 1961 work. So it was that geologist Andrew Snelling has written a massive work *Earth's Catastrophic Past.* This is wonderful news for everyone who has an interest in the Scriptures. Although at first the work looks very technical, various sections will appeal to different reading audiences. It really is a case of one size fits all!

We have all heard many of the arguments against the universal character of the flood of Noah: what about the "older" Babylonian flood myth, the Gilgamesh Epic? How did Noah get all those animals on the ark? How did he manage the clean up and feeding duties? Does "all" really mean "all"? What about aboriginal populations who lived on distant continents undisturbed by any flood? What about marsupials in Australia? What about radiometric dating? The negative queries go on and on. It was to provide informed answers for everyone and to encourage young students to become qualified in the relevant disciplines, that Dr. Snelling wrote his book.

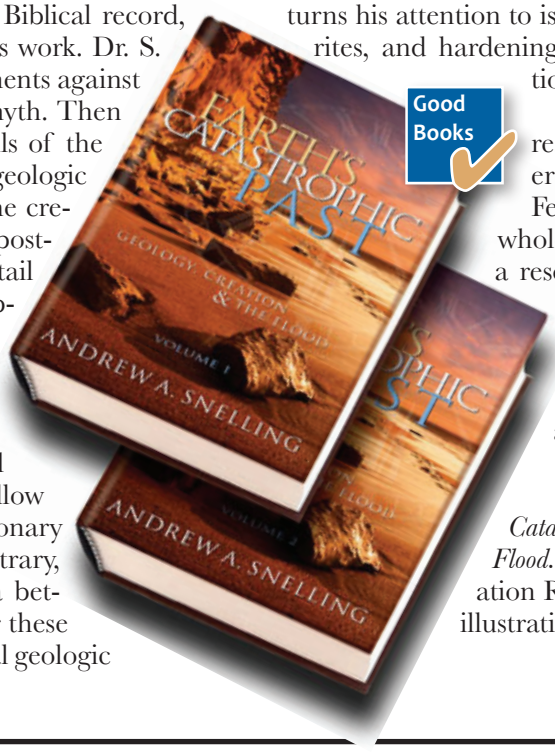
The author devotes Volume One to general introductions to the Scriptures and to geology. It is his contention that science and philosophy cannot raise doubts concerning God's word. In this context he provides eight Biblical arguments which cannot be discredited. Nevertheless many people do argue against the Biblical record, so he continues with the rest of this work. Dr. S. next discusses non-geological arguments against the flood, such as the Babylonian myth. Then he discusses objections to the details of the flood account. Next he divides geologic history into major events such as the creation, pre-flood period, flood and post-flood periods. Finally he looks in detail at the Hebrew text of Genesis chapters 1-11.

Dr. S., in the latter part of Volume One, turns his attention to geology. He declares that while the geological column is a physical reality, we must nevertheless not allow ourselves to be confused by evolutionary interpretations thereof. On the contrary, he says "our challenge is to seek a better and more robust explanation for these observational data within the biblical geologic model for earth history based on the scriptural details of creation and the Flood." (p. 354) Lastly he provides a general introduction to plate tectonics. However the really significant discussion is on catastrophic plate tectonics in Volume Two, pp. 683-707.

In Volume Two, Dr. Snelling devotes his attention to specific scientific details which impact the issue of the universality of the flood. In the first section, he considers the overwhelming testimony of field and laboratory studies which demonstrate that the conventional interpretation is incorrect. In this section he discusses chalk beds, limestones, sandstones, shale, and fossil grave yards among other issues.

In the second section he discusses a Biblical model of earth history. In his opinion, the top of creation week's energetically laid down sediments (resulting from day 3 tectonic events) might be at the top of the "Mesoproterozoic rock sequence" (see p. 310 for diagram) (p. 645). He then discusses pre-flood issues followed by a model for the onset and progress of the flood (catastrophic plate tectonics). This answers the questions where the water came from and where it went afterwards. He discusses new definitions of where the pre-flood/flood boundary may be, the order of the strata (layers of sediment), the flood/post flood boundary and post-flood geology including an ice age. Obviously recent geological discoveries fit nicely into the flood model!

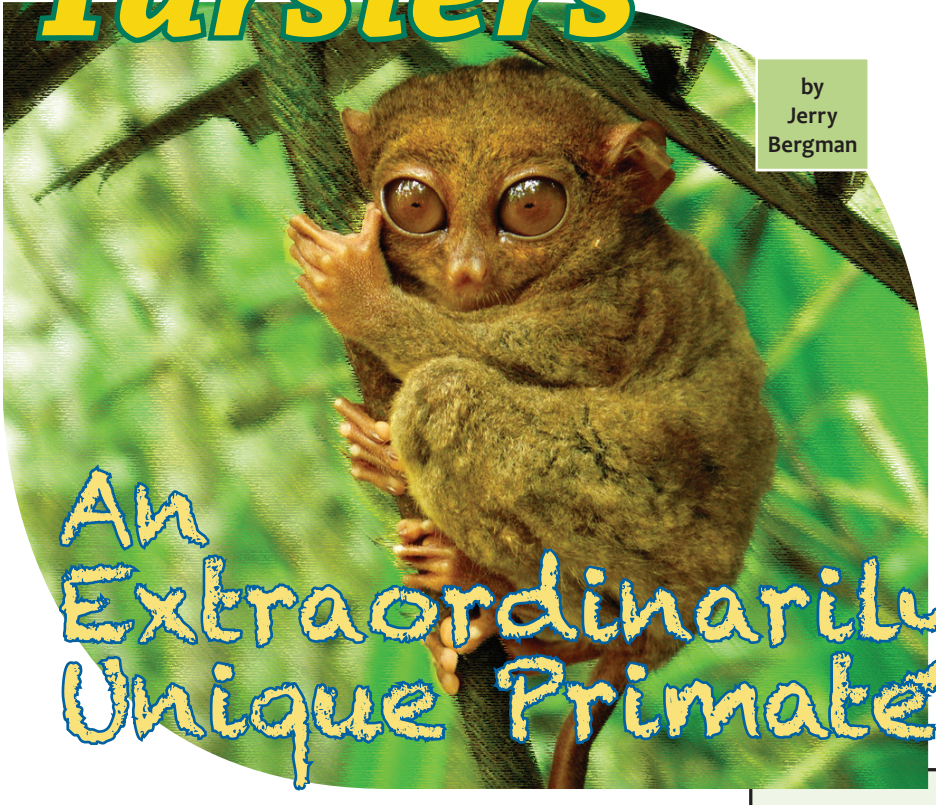
In the next section, Dr. S discusses what radiometric dating does, and does not, tell us. Then he discusses support for Biblical geology from diverse areas such as earth's magnetic field and helium sources and amounts. Lastly he turns his attention to issues like varves, coral reefs, evaporites, and hardening of sediments into rock (lithification).



This work is a richly documented resource on the flood and it covers an astonishing array of issues. Few readers, of course, will read the whole thing at once. Most will use it as a resource for information on their favourite topics. Fair enough! The rest of the work is available when they need it. But for those with the time, the whole book provides a fascinating read!

Andrew Snelling. 2009. *Earth's Catastrophic Past: Geology, Creation & the Flood.* Two Volumes. Institute for Creation Research. Dallas. pp. 1102. (colour illustrations)

Tarsiers



An Extraordinarily Unique Primate

by Jerry Bergman

Tarsiers are chipmunk sized nocturnal primates known for their enormous night adapted eyes and koala-like body appearance. Their face, which resembles that of an owl, is the epitome of innocence. Tarsiers are covered with very soft, beautiful, velvety fur, which is generally buff, beige, or ochre in color. The head and body together range from 10 to 15 cm in length, followed by a 20 to 25 cm long slender tail.

Their name comes from their very long hind limbs and extremely elongated tarsal feet bones. These bones give them an exceptionally powerful leverage when jumping—as much as eighteen feet in a single leap! (Sleeper, Barbara.1997. *Primates* p. 95) Their powerful legs allow them to jump around in trees more like an arboreal frog than like a primate.(Eimerl, S and I. DeVore, 1966. *The Primates* p. 23) On the ground they can walk on all fours or jump on two legs, but they usually leap like frogs for distances as far as two meters. (Grzimek,B. 1972. *Grzimek's Animal Life Encyclopedia* vol 10 p. 308) Their fingers are so elongated that the third finger is about the same length as their upper arm.

Tarsiers resemble lower primates in both behavior and morphology, yet genetic evidence places them closer to monkeys and other higher primates. Called the world's smallest monkey, they are not monkeys and their classification is very problematic. As one primatologist concluded, "Without a doubt, *Tarsius* is an extraordinarily unique mammal" (Schwartz, J. 2003. "How close are the similarities between *Tarsius* and other primates?" ch. 3 p. 88 in Wright, Patricia *et al. Tarsiers: Past, Present and Future*). Some of the many major traits that make them "extraordinarily unique" include:

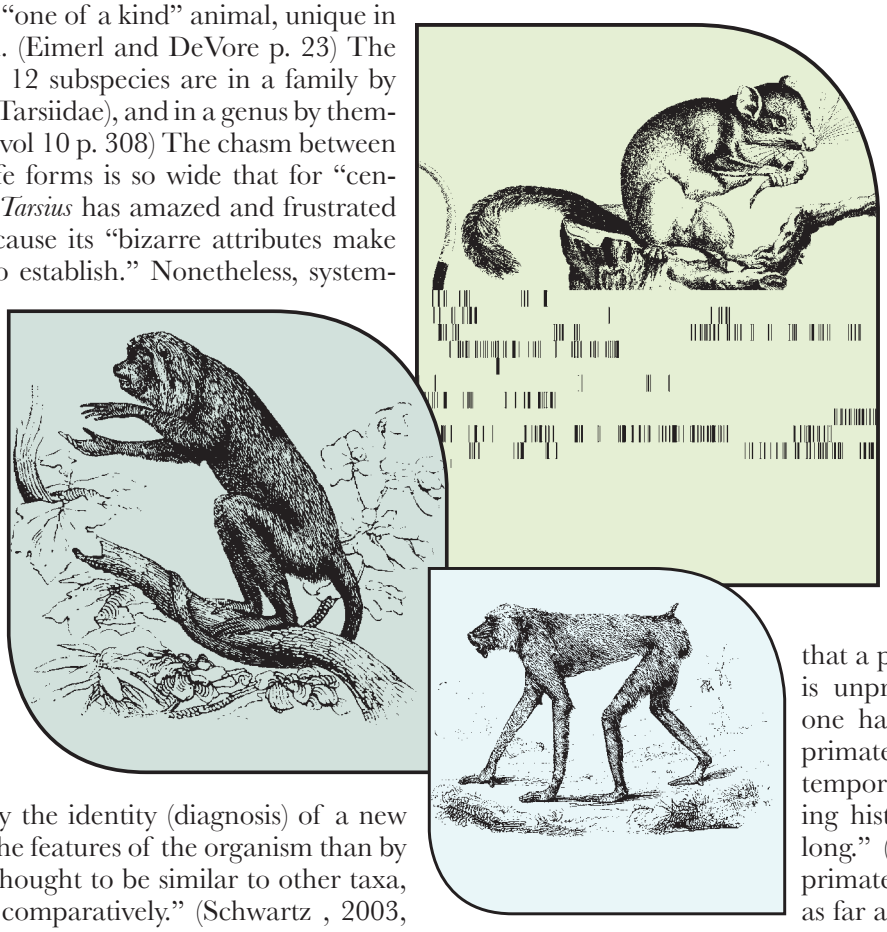
1. Each eyeball is as large as their entire brain, about 16 mm in diameter. Their immense eye sockets are protected by bony flanges extending away from the skull.
2. They have neck vertebrae designed to allow the head to rotate more than 180 degrees to compensate for their lack of eyeball mobility.
3. They have hyper-elongated heel bones and foot bones; and two-thirds of their distal tibia and fibula are fused. Their fingers and toes are tipped with a soft pad (Grzimek vol. 10 p. 308).
4. Their grooming claws are on the second and third digit of the *hind* foot;
5. Like humans they have comparatively forward placement of the hole where the spinal chord enters the skull.
6. Their locomotor behavior almost universally involves vertical postures (upright as humans walk) instead of the

more typical quadripedal locomotion of most other primates.

7. They have conical incisors; and only one pair of lower incisors;
8. Tarsiers feed exclusively on living animals, a behavioral trait shared by no other known primate. (Simons, E..2003. "The Fossil Record of Tarsier Evolution" ch. 14 p. 9 in Wright, *et al.*)
9. They have very close family relationships—they sleep together by day and hunt together at night. (Sleeper, p. 95)

Another feature that makes *Tarsius* a unique primate is that they are the only totally carnivorous and insectivorous primate. They consume almost any small animal or insect, including snakes, bats, birds, frogs, fish, crabs, shrimp, and even neurotoxic species. (Schwartz, 2003, p. 51)

Tarsiers are indeed a "one of a kind" animal, unique in the entire animal world. (Eimerl and DeVore p. 23) The three living species and 12 subspecies are in a family by themselves, the tarsiers (Tarsiidae), and in a genus by themselves, *Tarsius.* (Grzimek vol 10 p. 308) The chasm between tarsiers and all other life forms is so wide that for "centuries, the tiny primate *Tarsius* has amazed and frustrated those who study it" because its "bizarre attributes make its phylogeny difficult to establish." Nonetheless, systematists have developed tentative "tarsier phylogenies based on interpretations of data constrained by assumed phylogenies or reconstructed transformation series. Consequently, retrieving specific details of *Tarsius* anatomy and considering them in light of alternative interpretations is difficult. This situation is an unfortunate legacy of taxonomic practice, whereby the identity (diagnosis) of a new taxon is defined less by the features of the organism than by the ways in which it is thought to be similar to other taxa, which are also defined comparatively." (Schwartz , 2003, p. 50)



The enormous contrast between tarsiers and all other life forms has stymied evolutionists, and the fossil record has paralyzed them in their quest to find the origins of this little primate.

Tarsiers have the longest continuous fossil record of any primate genus known, but the fossil record does not support macro-evolution. Rather it reveals that they have changed very little, except in size, during the time that evolutionists postulate they have been on the earth, over 45 million years. After a careful evaluation of the similarities between tarsius and other primates, Schwartz concluded that its potential evolutionary relationship, even its status in primate evolution, does not lend itself to *any* plausible evolutionary scenario (2003, p. 88).

Considered "living fossils" due to their misjudged primitiveness, they were for years called "a living fossil record [that had] no fossil record." (Jablonski, Nina. "The Evolution of the Tarsier Niche" 2003. ch. 2 p. 35 in Wright *et al*) Intensive research has now uncovered a large number of fossils back to the Eocene, and the "fragmentary remains of fossil tarsiids recovered from deposits of middle Eocene age onward from Egypt, China, and Thailand indicate that the tarsier's 'living fossil' moniker is well deserved. The morphology of these fragments is remarkably modern, or perhaps better said, the body plan of modern tarsiers is remarkably ancient and conservative." (Jablonski p. 35)

In other words, no fossil evidence exists for tarsiid evolution and no evidence exists in antiquity for any of their distinctive, or possibly shared, supposed evolutionarily derived features. (Simons, 2003, p. 14) The earliest tarsier fossils are identical, or very close to identical, to modern tarsiers, and thus the first tarsiers were clearly tarsiers.

Simons notes that a primate fossil this old is unprecedented and "no one has ever considered a primate genus as having a temporal extension [meaning history] even a fifth as long." (2003, pp. 15-16) A primate living fossil this old, as far as can be determined from the fossil remains, has seriously challenged evolutionary orthodoxy.

Tarsiers "share a suit of derived features not seen in other primates" or any other mammal, and thus have challenged all attempts to construct a plausible evolutionary history. (Simons, 2003, p. 9) Their primitive status has now been debunked and they are recognized as very advanced primates. Consequently, this, the least diverse of all primates with the most distinctive collection of all primates, resists even tentative evolutionary explanations. The fact that the first tarsier in the fossil record is a tarsier supports the creation worldview.

DNA by the Numbers

by Margaret Helder

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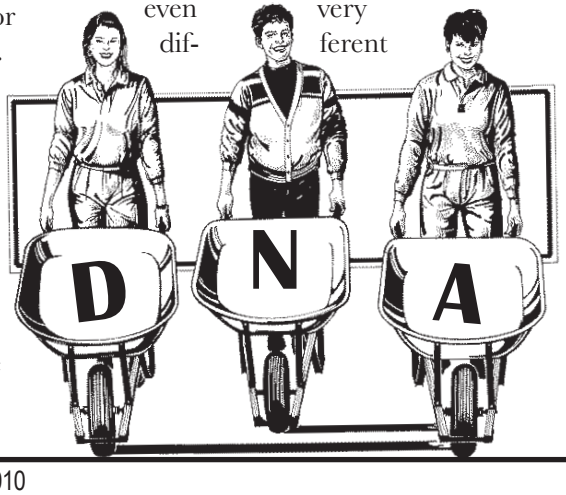
more similar to the human genome than it actually is. Indeed the only two sequences which have been comprehensively mapped in both chimpanzee and human are two tiny chromosomes: chromosome #21 and the male gender determining Y chromosome (*Nature* January 28/10 p. 537). While the chimp and human chromosome # 21 are indeed very similar, comparison of the Y chromosome has provided a big surprise. The male-specific region of the Y chromosome (MSY) in these two species reveals that "they differ radically in sequence structure and gene content." (p. 537). The chimpanzee MSY exhibits 19 massive palindromes, compared to only 8 in humans. A palindrome is a sequence of letters which reads the same in both directions such as "Madam, I'm Adam." Comparison of the two sequences shows great differences in information content and arrangement of the information. Apparently scientists did not expect and cannot account for these marked differences (p. 538).

Scientists had approached the comparison of genetic code in various organisms such as human and chimps, with high hopes that the identified differences would explain the contrasting characteristics of these organisms and how they got that way. Unfortunately these hopes have proved entirely unfounded. Indeed these people had assumed that it would be possible, through comparison of DNA from various organisms, to track the process of increasing differences from a common ancestor to more remote descendants. What actually happened however was: "When the genomes started coming out, a lot of people thought they could track the regulatory code just by comparing sequences … that would have been really nice, but unfortunately it doesn't work. You do find patterns, but they're not necessarily relevant." (*Nature* Nov. 8/07 p. 142)

Scientists still cannot explain what there is in the genome that provides for our special characteristics, or what makes us human. (*Nature* Sept. 1/05 p. 51, 83) They now know that variation in the ordering of the letters in the DNA is not enough to explain the differences between humans and chimps.

For many years scientists anticipated that differences in genes would give clues about lines of evolutionary descent. The idea was that if both groups are descended from the same ancestor, then both groups initially started out with the same genome. However with increasing time, greater differences should appear between the two groups. Nevertheless as more genomes were studied, surprises began to appear. Apparently even dif- very ferent



organisms may exhibit similar genes. Thus one commentator pointed out: "Many of the genes that determine the animal body plan are virtually identical in both structure and function in creatures that, on the outside, have little in common." (*Nature* Nov. 20/08 p. 300) Similar genes then are not necessarily an indication of any kind of close relationship. Indeed similar pieces of information may do different things in different organisms. Thus "it is clear that all things are not equal: the function of any given gene cannot be defined outside its species specific context." (p. 303)

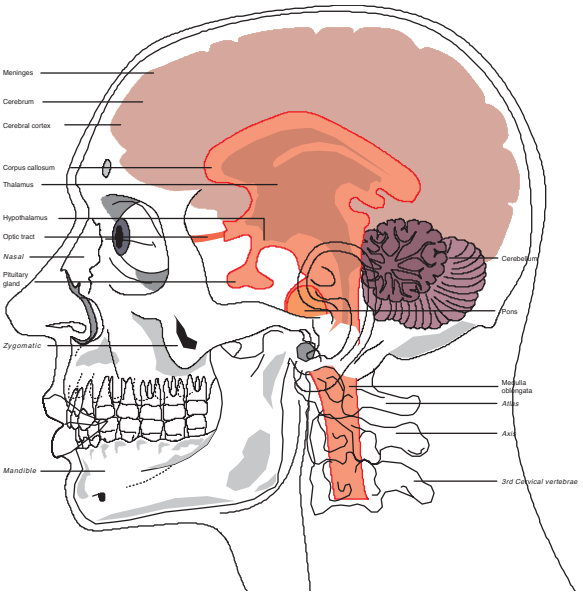
The main problem with using DNA to explain the characteristics of organisms however is that scientists now realize that we do not even know what a gene is. Genetic information was formerly imagined to consist of strings of genes, each one controlling one characteristic. There was also ample filler material, formerly called 'junk DNA' but now known to be important in control and regulation of genetic expression. The problem scientists have now discovered is that identical strings of DNA can in fact be read in totally different ways (like the spy's letter). One commentator pointed out the result of this situation: "As long as we remain unsure what a gene is, we are a long way from understanding genomic evolution." (*Nature* Feb. 14/08 p. 772).

The image scientists had developed of genetic information has now dissolved into "mind-boggling complexity." (*Nature* May 25/06 p. 399) Whereas formerly genes were considered to be pieces of information strung end to end like beads on a string, it now appears that there are no individual pieces of information. Rather, the cell copies a piece of information, snips out some parts and attaches the remaining pieces together in various orders and numbers

of pieces. Thus one stretch of DNA, depending upon which fragments are joined together and in what order, can yield endless different proteins, all from one piece of code. Moreover it appears that these transcripts often overlap with each other. There have been cases found of one protein coding transcript nestled within the non-protein coding discarded section of another transcript/gene and of one protein coding transcript formed by combining component parts that are located far distant from each other on the chromosome with several other 'genes' in between. (p. 399-400) Thus as the author of the article declares: "Discrete genes are starting to vanish. We have a continuum of transcripts." (p. 400) Obviously it is pointless to compare the genomes of organisms when these tell us so little about the organisms involved.

It is apparent then that scientists are not in a position to compare human and chimpanzee genomes Even if the genomes were identical, it would give no clues about relationships because of the alternative splicing of genetic information and multiple reading frames from the same piece of stored code. Moreover the actual form and function of creatures appears to come from higher levels of control about which we know very little. Thus assumptions that similar genomes suggest a close evolutionary relationship, are plainly without any kind of logical basis. All that scientists have discovered is how little we understand.

The study of various genomes



obviously has been a story of secular disappointment. What is called for here is humble appreciation of what God has told us concerning how He created all things. Then we interpret the data from nature in terms of what God has revealed in His Word.

A wonderful taste of evidences!

by Tina Bain

Wouldn't it be great if there were a small, easy to understand, nicely organized book about the global flood that could serve as a starting place for understanding this issue from a Biblical and scientific point of view? Well look no further... Answers in Genesis has produced just that; a handy little book called "A Pocket Guide to… The Global Flood".

Also available in this series are other titles such as "A Pocket Guide to… Noah's Ark" and "A Pocket Guide to… Charles Darwin: His Life and Impact". Each of these books contains brief and concise chapters written by a variety of experts who have also written whole books on the topics that they address here. Thus "A Pocket Guide to… The Global Flood" was written by four people: Ken Ham, Tim Lovett, Andrew Snelling and John Whitmore. A brief biography of each author is included and mention is given to other books they have written in their area of interest. As such, for further reading on any of these topics, it is easy to know where to look next. Also footnotes are included which will be helpful for further study.

The first chapter of "A Pocket Guide to… The Global Flood" looks at the overall question "was there really a worldwide flood? It answers this question using scriptures from both the Old and New Testaments. The second chapter asks, if you look for evidence to support the truth that the Genesis Flood occurred, what will you find? The author briefly lays out six geologic evidences for the global flood that are explained in the following six chapters. The last few chapters look at catastrophic plate tectonics, the origin of oil, and the surprising (or not so surprising) existence of fragile shell fossils and how this is possible.

Photographs and diagrams are used throughout this booklet to help explain the written text. The writing is clear, easy to understand and enlightening. Definitely in this small book, the discussion is basic and uncomplicated. Nevertheless this book offers a wonderful taste of evidences for the Global Flood. The other pocket guides deal in similar fashion with their own topics. These booklets provide exceptional value for minimal cost!

A Pocket Guide to … *The Global Flood: A biblical and scientific look at the catastrophe that changed the earth.* Black and white. 95 pages.

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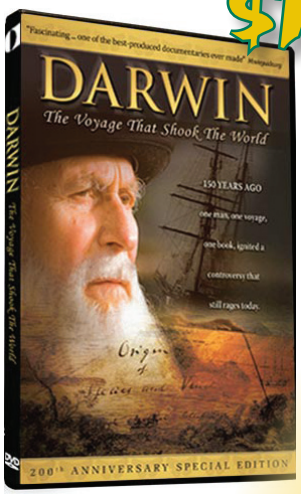

Andrew Snelling

Earth's Catastrophic Past

A must have resource for up to date information connected with the Flood of Noah. Scriptural interpretation, details of Hebrew text, plus a comprehensive collection of scientific information on fossils, age dating, moving continents and much more. Excellent for adults, schools, post secondary institutions and church libraries. *Cloth / 2 volumes / 1102 pages / full colour*

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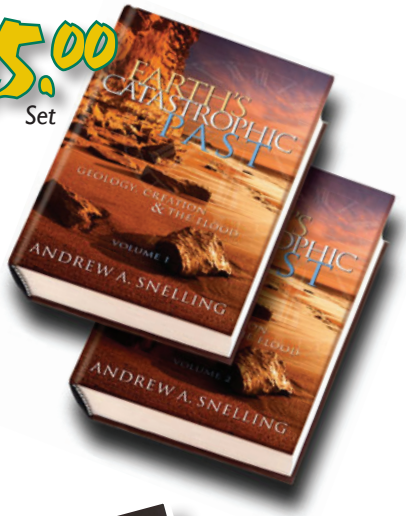

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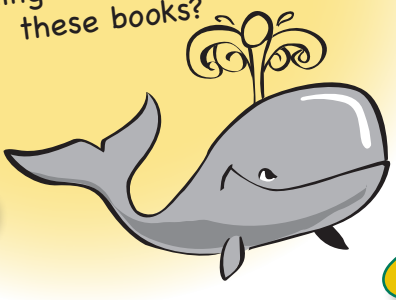

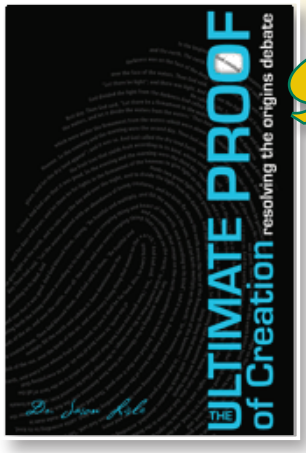

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Jason Lisle

The Ultimate Proof of Creation

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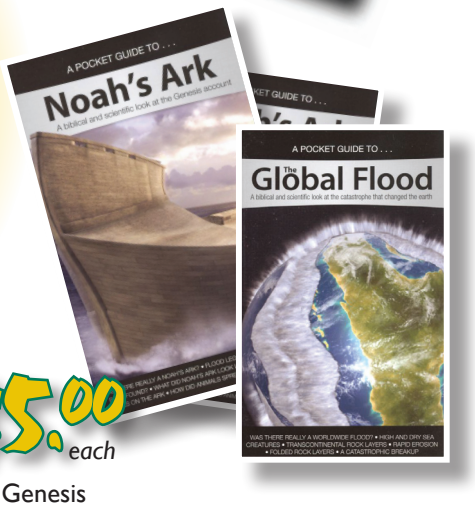

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