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TASC

TASC's mission is to rebuild and strengthen the foundation of the Christian faith by increasing awareness of the scientific evidence supporting the literal Biblical account of creation and refuting evolution.

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EVIDENCES FOR A RECENT CREATION: PART 2

By David Plaisted, Ph.D.

Part I mentioned helium retention in zircons and young carbon 14 dates as evidences for a recent creation and for an acceleration of decay rates in the past. Such an increase in decay rates should have more of an effect on ages computed from isotopes with long half-lives than elements with short half-lives.

Also, alpha decay and beta decay use different processes. Therefore they may not be affected the same amount by an increase in the decay rate. So discordances between alpha and beta decay ages are an evidence of disturbed decay. To sum up, the following are the evidences one would expect from accelerated decay in the past: Carbon 14 ages should be much younger than other isotopic ages like K-Ar, U-Pb, *et cetera*. Alpha and beta ages should differ. And ages computed from elements with long half-lives should be more affected than ages computed from elements with short half-lives.

In fact, these evidences are reported by Austin *et al.*[1] This paper considers ages computed from "isochrons." An isochron is a method for computing the amount of daughter product Y that was initially present in a system. This is computed by taking several samples from the same area and measuring the amount of parent and daughter substance in each sample. Another isotope of Y, not produced by radioactive decay, is also measured. It is reasonable to assume that initially, all isotopes of Y were distributed in a similar manner in the samples. Thus one can estimate how much Y was present initially in each sample, at least up to a constant factor. Knowing the amount of daughter product that was initially present, one can compute the age of the samples. It is also possible using isochrons to detect whether the system has been disturbed since its origin. This means that isochrons are self-checking. There are two kinds of isochrons, *whole rock* isochrons and *mineral* isochrons. Whole rock isochrons use samples that are obtained by combining many different minerals in each sample. Mineral isochrons use a different mineral for each sample. Whole rock isochrons can give wrong ages due to mixings. However, this is not a problem for mineral isochrons. Therefore mineral isochrons, though they are somewhat more expensive, are more reliable. Especially the agreement of a whole rock isochron and a mineral isochron gives excellent evidence that the date obtained is good and that the system has not been disturbed since it formed. Most isotopic dates are *model ages* computed simply by measuring the amount of parent and daughter substance in a sample, and only a small fraction of isotopic dates are obtained using isochrons. Even when isochrons are performed, only a small portion of them are mineral isochrons. Therefore, only a small fraction of isotopic dates have such reliability factors built in; the remainder are subject to various errors.

However, even when extra reliability factors are built into dating methods, the dates generally still do not agree with one another. Austin *et al.*[1] give an example where two different systems (that is, ages measured by two different decay processes) both have internal evidence for consistency in that whole rock and mineral isochrons agree for each system, but the dates obtained for the two systems disagree. This means that one computes two ages, A1 and A2 for the formation. Both A1 and A2 have excellent evidence for their correctness, based on the agreement of a whole rock isochron and a mineral isochron for A1, and likewise for A2. But the ages A1 and A2 disagree! The only reasonable explanation is that there was a change in the decay rate, and the decay measured for age A1 was increased by a different amount than the decay measured for the age A2. Furthermore, these data are consistent with alpha decay having been accelerated more than beta decay, and with the longer the present half-life the greater being the acceleration factor. Thus there is excellent evidence that decay rates were increased in the past. In fact, according to Austin,[2] such disagreements between "good" dates

[1] Austin, S.A., Snelling, A.A., Hoesch, W.A. (2003) Radioisotopes in the Diabase Sill (Upper Precambrian) at Bass Rapids, Grand Canyon, Arizona: An Application and Test of the Isochron Dating Method. International Conference on Creationism, Geneva College, Beaver Falls, PA, August 4-9.

[2] Austin, S.A. (2000) Mineral Isochron Method Applied as a Test of the Assumptions of Radiometric Dating. *Radioisotopes and the Age of the Earth: A Young-Earth Creationist Research Initiative*, Institute for Creation Research and Creation Research Society, Santee, CA, 95-121

(dates computed using whole rock or mineral isochrons) are very common in the literature. Thus there is abundant evidence for a change in the decay rates.

Isotopic dates on earth obtained by different methods are typically discordant (in disagreement), but this is not true of the meteorites. There are certain meteorites that consistently give dates of about 4.5 billion years by many different methods. Therefore a different process must have been at work in these meteorites than on earth. Perhaps the 4.5 billion year age of these meteorites is a result of an old universe, or perhaps it is a result of changes in the physical constants very early in the creation, causing all decay processes to run faster by the same amount. Another factor is that the same processes leading to discordant dates on earth should have led to discordant dates on the meteorites, but this did not occur. One possible explanation for this is that radiation hitting the earth largely missed the meteorites, or else they were shielded from it in some way. Another possibility is that the radiation had its source in the sun. Objects farther from the sun would have received less radiation; an object ten times farther away than the earth would only have received one percent of the radiation. This would have resulted in a much smaller speedup in the decay rate and much smaller discordances in the ages obtained by different methods. A variation of isochrons called isochrones are used to measure the ages of stars. The ages obtained are typically in the billions of years. Perhaps these ages are also the result of an old universe or a change in the decay rates very early in the creation.

There is also evidence for a speedup in mutation rates in the past, based on genetic diversity. The genetic diversity of a species measures the probability that two randomly chosen individuals will disagree in a given base pair of their DNA. If a species is large, the genetic diversity will continue to increase over time, as mutations occur and different individuals in the species become more and more different in their DNA. Thus, assuming a large species, one can give an upper bound on the age of the species knowing the genetic diversity and the mutation rate. This either gives an upper bound on the time since the species originated, or else measures the time since the species population was very small. This method was applied to the human race, using mitochondrial DNA. Mitochondria are the "energy factories" of the cell and convert ADP to ATP, which is used by the cell to generate energy. Mitochondria have their own DNA and divide independently of the cell; each cell typically has many mitochondria. Also, mitochondria typically pass exclusively from mothers to their children, although there may be exceptions. By measuring the rate of mutation of mitochondrial DNA and computing the genetic diversity of the human race, one obtains an age of somewhat over 6000 years since the common maternal ancestor of the human race (mitochondrial Eve).[3] Biologists attempt to explain this young age by assuming that the rate of mutation of mitochondrial DNA was much slower in the past for some unexplained reason.

It is not only the human race whose age, measured this way, is young, but many other species as well, including wolves, coyotes, dogs, ducks, birds, *E. coli*, and Drosophila (fruit flies). Most of these ages are based on the assumption that mitochondria in other organisms mutate at about the same rate as they do in humans. Biologists are puzzled by this low genetic diversity in many organisms. This is spectacular evidence for a recent creation, but it has largely been ignored by creationists.

It is also possible to compute ages based on nuclear DNA diversity. Most of the DNA of an organism is in the nucleus, and this nuclear DNA mutates slower than mitochondrial DNA. The nuclear DNA diversity due to single nucleotide polymorphisms (SNPs) is given by Sachidanandam *et al.* [4] and is about 7.51×10^{-4}; for the Y chromosome the diversity is about 1.5×10^{-4}. Ages computed from the Y chromosome diversity (which would have been zero at the creation) tend to be somewhat larger than those computed from mitochondrial DNA diversity, and based on a Y chromosome mutation rate of 6×10^{-8} per generation of 20 years, are about 25,000 years. (There is reason to believe that the Y chromosome mutates about twice as fast as the other chromosomes.[5] The overall human mutation rate is estimated at about 3×10^{-8} per base pair per generation and may be higher.) Even this 25,000 year estimate is not too far from the Biblical time frame and supports the creationary view. However, this calculation is based on a mutation rate that is itself partially derived from evolutionary assumptions. As with radioactive decay, this longer age for nuclear DNA is evidence for a speedup in the mutation rate in the past. Because nuclear DNA mutates much slower, any increase in the mutation rate would have a much larger effect on ages computed from nuclear DNA diversity than on ages computed from mitochondrial DNA diversity.

Furthermore, if decay was faster in the past, it could have increased the mutation rate, because the level of radiation would have been higher, and radiation causes

[3] Gibbons, Ann (1998) Calibrating the Mitochondrial Clock. *Science* **279** (5347): 28-29

[4] Sachidanandam, R., Weissman, D., Schmidt, S.C., Kakol, J.M., Stein, L.D., Marth, G., Sherry, S., Mullikin, J.C., *et al.* (2001) International SNP Map Working Group. A map of human genome sequence variation containing 1.42 million single nucleotide polymorphisms. *Nature* **409:** 928-933

[5] Crow, J. (1997) The high spontaneous mutation rate: Is it a health risk? *PNAS* **94**: 8380-8386

mutations. There is evidence that small doses of radiation can lead to unexpectedly high mutation rates in humans quoting Stone: "researchers led by geneticist Yuri Dubrova of the University of Leicester, United Kingdom, describe a compelling connection between radioactive fallout and elevated mutation rates in families living downwind of the Semipalatinsk nuclear facility…The findings bolster a controversial 1996 report by Dubrova and a different group of colleagues that linked germ line mutations to fallout from the 1986 Chernobyl explosion. That study, published in *Nature*, described double the usual mutation rate in the children of men living in a region of Belarus heavily contaminated with cesium 137. In each subject they examined eight minisatellite DNA regions that are prone to mutations.…Compared to control families in a nonirradiated part of Kazakhstan, individuals exposed to fallout had a roughly 80% increase in mutation rate, and their children showed an average rise of 50%."[6]

So it all fits together: increased decay leads to higher levels of radiation and also increases mutation rates in humans! And there is some evidence that the rate of decay may vary. Slusher reports: "Anderson and Spangler maintain that their several observations of statistically significant deviations from the (random) expectation strongly suggests that an unreliability factor must be incorporated into age-dating calculations."[7] Such irregularities were observed for carbon 14, cobalt 60, and cesium 137. The source for this information is Anderson and Spangler.[8] Even Dalrymple recognizes such irregularities: "Under certain environmental conditions, the decay characteristics of ^{14}C, ^{60}Co, and ^{137}Ce, all of which decay by beta emission, do deviate slightly from the ideal random distribution predicted by current theory…, but changes in the decay constants have not been detected."[9] Dalrymple cites the references Anderson[10] and Anderson and Spangler.[11] Though he claims no changes in the decay constants have been detected, he admits to puzzling irregularities in decay.

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[6] Stone, R. (2002) DNA Mutations Linked to Soviet Bomb Tests. *Science* **295:** 946

[7] Slusher, H.S. (1981) Critique of Radiometric Dating. *Technical Monograph 2* (2nd ed.), Institute for Creation Research, Santee, CA, 46

[8] Anderson, J.L., Spangler, G.W. (1974) Radiometric Dating: Is the 'Decay Constant' Constant? *Pensee*, 31

[9] Dalrymple, G. Brent. (1984) How Old is the Earth?: A Reply to `Scientific' Creationism. *Proceedings of the 63rd Annual Meeting of the Pacific Division*, AAAS **1** (Part 3), American Association for the Advancement of Science 66-131.

[10] Anderson, J. L. (1972) Non-Poisson distributions observed during counting of certain carbon-14-labeled organic (sub) monolayers. *Phys Chem J* **76**: 3603-3612

[11] Anderson, J.L., Spangler, G.W., (1973) Serial statistics: Is radioactive decay random? *Phys Chem J* **77**: 3114-3121

Editor's note: Part 3 of Dr. Plaisted's three-part article will be featured in the December issue of the TASC newsletter.

COMING EVENTS

Thursday, November 10, 7:30 P.M., Providence Baptist Church, 6339 Glenwood Ave., Raleigh
Philip Johnson will present part 2 of "Why a Christian Cannot Accept Evolution." We will explore reasons why evolution and Christianity cannot be combined.

Thursday, December 8, 7:30 P.M., Providence Baptist Church, 6339 Glenwood Ave., Raleigh
Overview of Historical Evidence Concerning the Veracity of Genesis. Evidence of a creator may be found not only in science, but also in history and archaeology. This talk by Joe Spears will look at some of these evidences, ranging from the Shroud of Turin to ancient documents to discoveries in ancient Egypt.

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