Have Scientific Tools Detected Adam and Eve within Us?

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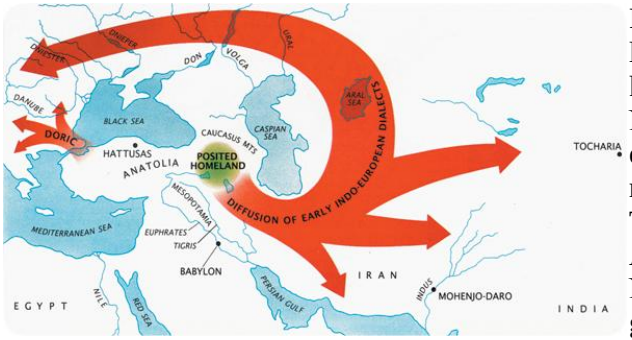
Cells of every living thing (plants, animals, and humans) contain tiny strands of coded information called DNA.[1] DNA directs the cell, telling it what to produce and when. Therefore, much of your appearance and personality is determined by the DNA you inherited from your parents.

In human cells, the nucleus contains 99.5% of the DNA. Half of it came from the individual's mother and half from the father. Because both halves are shuffled together, it is difficult to identify which parent contributed any tiny segment, so half of this DNA changes with each generation. However, outside the nucleus of each cell are thousands of little energy-producing components called mitochondria, each containing a circular strand of DNA. Mitochondrial DNA (mtDNA) comes only from the mother. Where did she get hers? From her mother—and so on. Unless there is a rare mutation, mtDNA does not change from generation to generation.

DNA is written with an alphabet of four letters: A, G, T, and C. One copy of a person's mtDNA is 16,559 letters long. Sometimes a mutation changes one of the mtDNA letters that a mother passes on to her child. These rare and somewhat random changes allow geneticists to identify families. For example, if your grandmother experienced an early mutation in her mtDNA, her children and any daughters' children would carry the same changed mtDNA. It would differ, in general, from that in the rest of the world's population.[2]

In 1987, a team at the University of California at Berkeley published a ground-breaking study comparing the mtDNA of 147 people from five of the world's geographic locations.[3] The study concluded that all 147 had the same female ancestor. She is now called "mitochondrial Eve."

Where did mitochondrial Eve live? Initial research concluded she probably lived in Africa. Later, after much debate, researchers realized that Asia and Europe were also possible origins for mitochondrial Eve.[4]



From a biblical perspective, do we know where Eve lived? Because the flood was so destructive, no one knows where the Garden of Eden was.[5] However, Noah's three daughters-in-law, who lived only a dozen or so generations after Eve, probably began raising their families near Mount Ararat in eastern Turkey—very near the common boundary of Asia, Africa, and Europe. (Each of us can claim one of Noah's daughters-in-law as our ever-so-great grandmother.) So, it is not surprising that Asia, Africa, and Europe are candidate homes for mitochondrial Eve.

Figure 225: Language Divergence. Languages are related, as are genes. One of thousands of examples is the word for "from, of." It exists in French (de), Italian (di), Spanish (de), Portuguese (de), and Romanian (de). So, these languages, now spoken generally in southwestern Europe, are twigs on a tree branch called the Romance languages.(Romance refers to Rome.) This branch joins a larger branch that includes all languages derived primarily from Latin. They merge with other large branches (such as the Germanic branch that includes English) into a family called the Indo-European languages. When these and other languages are traced back in time, they appear to converge near Mount Ararat, a likely landing site of Noah's Ark. [See pages 47–48.] Linguists admit that they do not understand the origin of languages, only how languages spread.[7]

Also, when similar words, sounds, and grammar of the world's most widely spoken languages are traced back in time, they also seem to originate near Ararat.[6] Another convergence near eastern Turkey is found when one traces agriculture back in time.[8]

When did mitochondrial Eve live? To answer this, one must know how frequently mutations occur in mtDNA. Initial estimates were based on the following faulty reasoning: "Humans diverged from chimpanzees about 6 million years ago. Because the mtDNA in humans and chimpanzees differ in 1,000 places, one mutation occurs about every 12,000 years." Another incorrect approach began by assuming Australia was first populated 40,000 years ago. The average number of mitochondrial mutations among Australian aborigines divided by 40,000 years gave another extremely slow mutation rate for mtDNA. These estimated rates, based on evolution, led to the mistaken belief that mitochondrial Eve lived 100,000–200,000 years ago.[9] This surprised evolutionists who believe that the first human female lived 6 million years ago.

A greater surprise, even disbelief, occurred in 1997, when it was announced that mutations in mtDNA occur 20 times faster than had been estimated. Without assuming humans and chimpanzees had a common ancestor 6 million years ago or that Australia was populated 40,000 years ago, mutation rates can now be determined directly by comparing the mtDNA of many mother-child pairs. Using the new, more accurate rate, ***mitochondrial Eve lived only about 6,500 years*** ago.[10]

Is there a "genetic Adam"? At conception, each man received from his father a segment of DNA which lies on the Y chromosome; this makes him a male. Where did your father receive his segment? From his father. If we all descended from one man, all males should have the same Y chromosome segment—except for rare mutations.

A 1995 study of a worldwide sample of 38 men showed no changes in this segment of the Y chromosome that is always inherited from fathers. Had humans evolved and all men descended from one male who lived 500,000 years ago, each should carry about 19 mutations. Had he lived 150,000 years ago, 5.5 mutations would be expected.[11] Because no changes were found, our common father probably lived only thousands of years ago. While Adam was father of all, our most recent common male ancestor was Noah.

In 2010, a comprehensive comparison was made between the DNA on the male Y chromosome of humans and chimpanzees. The differences were more than 30 percent! [12]

For completeness, we must consider another possibility. Even if we all descended from the same female, other women may have been living at the same time. Their chains of continuous female descendants may have ended; their mtDNA died out. This happens with family names. If Mary and John XYZ have no sons, their unusual last name dies out. Also, many other men may have lived at the same time as our "genetic Adam," but had no continuous chain of male descendants down to today. How likely is it that other men lived a few thousand years ago but left no continuous male descendants, and other women lived 6,000 years ago but left no continuous female descendants, and we end up today with a world population of 7 billion people? Extremely remote![13]

Yes, new discoveries show that we carry traces of Adam and Eve in our cells. Furthermore, our common "parents" are probably removed from us by only 200–300 generations. All humans have a common and recent bond—a family bond. We are all cousins.

References and Notes

1. Red blood cells in humans (and mammals) are an exception. After a red blood cell matures, it loses its nucleus (and, of course, the DNA in its nucleus).

2. This simplified explanation is complicated by heteroplasmy, a form of inheritance for mtDNA. Heteroplasmy introduces slight statistical uncertainty in normal inheritance patterns.

3. Rebecca L. Cann et al., “Mitochondrial DNA and Human Evolution,” Nature, Vol. 325, 1 January 1987, pp. 31–36.

4. Marcia Barinaga, “‘African Eve’ Backers Beat a Retreat,” Science, Vol. 255, 7 February 1992, pp. 686–687.

u Alan R. Templeton et al., “Human Origins and Analysis of Mitochondrial DNA Sequences,” Science, Vol. 255, 7 February 1992, pp. 737–739.

u “African Eve Gets Lost in the ‘Trees’,” Science News, Vol. 141, 22 February 1992, p. 123.

5. Some believe that the Garden of Eden was near today’s Tigris and Euphrates Rivers, because Genesis 2:14 says rivers having those names flowed out of Eden. However, the flood’s destructiveness probably buried the Garden of Eden and preflood rivers under thousands of feet of sediment. (Indeed, today’s Tigris and Euphrates Rivers flow over thick sedimentary layers deposited during the flood. Those layers contain some of the world’s richest oil fields.) Continental movement and changes in continent thicknesses and topography would also have altered Eden’s location and the flow of rivers. [For details, see pages 111–145.]

It seems more likely that the survivors of the flood gave the two powerful rivers near Mount Ararat (today’s Tigris and Euphrates Rivers) the same names as rivers those survivors knew before the flood. (Settlers in a new land often name geographical features after familiar landmarks in their “old world.” Noah and his descendants probably did not know where they were, so they may have attached preflood names to postflood geography.) This would also explain why the other rivers mentioned in Genesis 2 are not known today and why the preflood rivers described in Genesis 2:10–14 had the following characteristics that differ from today’s rivers:

The river flowing out of Eden divided into four rivers. Today, rivers rarely divide; they merge. Two of the Genesis rivers (Pishon and Gihon) flowed around a land, something that doesn’t happen today.

To understand why preflood rivers had these strange characteristics and the source of each river’s water, see pages 446–448.

6. “Our work indicates that the protolanguage originated more than 6,000 years ago in eastern Anatolia [eastern Turkey] ...” Thomas V. Gamkrelidze and V. V. Ivanov, “The Early History of Indo-European Languages,” Scientific American, Vol. 262, March 1990, p. 110.

u Remco Bouckaert et al., “Mapping the Origins and Expansion of the Indo-European Language Family,” Science, Vol. 337, 24 August 2012, pp. 957–960.

7. Several generations after the flood, languages multiplied at Babel (Genesis 11:1–9). The name Babel gives us our word “to babble,” meaning “to utter meaningless sounds.” Most scholars place Babel’s location somewhere between today’s Tigris and Euphrates Rivers, near the site of ancient Babylon and Mount Ararat.

8. Colin Renfrew, “The Origins of Indo-European Languages,” Scientific American, Vol. 261, October 1989, p. 114.

u “The wild ancestors of the seven ‘founder crops’ harvested by the world’s first farmers have all been traced to the region of southeastern Turkey and northern Syria.” Michael Balter, “Search for the Indo-Europeans,” Science, Vol. 303, 27 February 2004, p. 1324. [See also Simcha Lev-Yadun et al., “The Cradle of Agriculture,” Science, Vol. 288, 2 June 2000, pp. 1602–1603.]

9. This widespread (and, I believe, incorrect) belief that mitochondrial Eve lived 100,000–200,000 years ago should be contrasted with a completely different but highly mathematical analysis. [See Douglas L. T. Rohde et al., "Modelling the Recent Common Ancestry of All Living Humans," Nature, Vol. 431, 30 September 2004, pp. 562–566.]

These authors believe that our most recent common male and female ancestor lived only a few thousand years ago, but the authors recognize that the many assumptions in their model—especially migration rates and realistic mating patterns—could alter that number by a few thousand years.

Therefore, it seems very unlikely that the mitochondrial Eve could have lived 100,000–200,000 years ago. A similar conclusion can be reached for the genetic Adam.

10. "Regardless of the cause, evolutionists are most concerned about the effect of a faster mutation rate. For example, researchers have calculated [previously] that 'mitochondrial Eve'—the woman whose mtDNA was ancestral to that in all living people—lived 100,000 to 200,000 years ago in Africa. Using the new clock, she would be a mere 6000 years old." Ann Gibbons, "Calibrating the Mitochondrial Clock," Science, Vol. 279, 2 January 1998, p. 29.

u "If molecular evolution is really neutral at these sites [occurs at a constant rate at all sites], such a high mutation rate would indicate that Eve lived about 6500 years ago—a figure clearly incompatible with current theories on human origins." Laurence Loewe and Siegfried Scherer, "Mitochondrial Eve: The Plot Thickens," Trends in Ecology & Evolution, Vol. 12, 11 November 1997, p. 422.

u "Thus, our observation of the substitution rate, 2.5/site/Myr [million years], is roughly 20-fold higher than would be predicted from phylogenetic analyses [evolution studies]. Using our empirical rate to calibrate the mtDNA molecular clock would result in an average age of the mtDNA MRCA [most recent common ancestor] of only ~6,500 y.a. [years ago], clearly incompatible with the known age of modern humans." Thomas J. Parsons et al., "A High Observed Substitution Rate in the Human Mitochondrial DNA Control Region," Nature Genetics, Vol. 15 April 1997, p. 365.

Evolutionists who understand this new discovery are shocked. They are now trying to explain why measured mutation rates of mtDNA are so fast, but their inferred mutation rates (based on fossil dating and the evolution of man from apelike creatures) are so slow. Perhaps, they say, mutations occur rapidly at only a few points on the mtDNA molecule, but later correct themselves. Therefore, many mutations are counted, but the net change is small. This "hot spot" hypothesis, is basically a "special pleading"—something imagined to solve a problem. Tests have shown the "hot spot" hypothesis to be invalid.

Thus, the "hot spot" hypothesis, in the absence of additional elements, does not seem a sufficient explanation for the high observed substitution rate. Parsons et al., p. 365.

11. Robert L. Dorit et al., "Absence of Polymorphism at the ZFY Locus on the Human Y Chromosome," Science, Vol. 268, 26 May 1995, pp. 1183–1185.

u A similar study found that this same DNA segment differed considerably in three types of apes: a chimpanzee, two orangutans, and three gorillas. For the three gorillas it was identical, as it was for the two orangutans. [See Wes Burrows and Oliver A. Ryder, "Y-Chromosome Variation in Great Apes," Nature, Vol. 385, 9 January 1997, pp. 125–126.]

Statisticians recognize that when variations exist between groups but not within groups, it implies that the groups are distinct, unrelated populations. In other words, gorillas, orangutans, and chimpanzees probably did not evolve from some common ancestor. Of course, this DNA segment in humans was unrelated to an even greater degree.

12. “More than 30% of the DNA differs between the two species.” Constance Holden, “Surprise in the Y,” Science, Vol. 327, 22 January 2010, p. 397.

13. Today, the world’s population is 7 billion people. Even if many women lived 6,000 years ago, on average, each female must have had many children. Whenever the average number of children per female exceeds two, the chance of only one of these many females having continuous female descendants today becomes highly improbable. A similar unlikely event must also happen for males. Having both improbable events happen concurrently is ridiculously improbable.