

Who is Mitochondrial Eve?

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I became interested in DNA whilst researching the account of Creation in the Book of Genesis after coming to understand that Genesis 1:26-27 referred to Hominin Man who appeared on Earth about 500,000 years before Adam and Eve, but still registered in DNA samplings as remnant links in today's population despite the Noah's Flood event out of which only eight souls survived in the whole world. I was seeking to understand how modern Science was able to detect this ancient DNA when the throttle point at the devastation brought by Noah's Flood should have broken the lineage chains. I was of the notion that Noah, his wife, sons and daughters-in-law were of the pure blood line from Adam and Eve, ie carried the Seed of Eve, and therefore the ancient Hominin chains should have been extinguished. Along the way of trying to understand all of this I came across the term – Mitochondial Eve which in my naivety I thought that it must have something to do with Adam and Eve.

Well that's what kicked off this article and proved to be a very worthwhile research subject. So let's understand the basics.

DNA is the acronym for Deoxyribonucleic Acid and I guess you can understand from this why simply DNA is used. DNA is a cellular material that carries genetic information about the building blocks of the life it is found in. It is present in nearly all living organisms and is mainly made up of chromosomes, thus it carries the genetic code that determines all the characteristics of the living creature in which it dwells.

DNA is the hereditarial material in humans and nearly every one of the 37.2 trillion cells in a person's body has the same DNA. Most DNA is located in the cell nucleus (where it is called nuclear DNA), but a small amount of DNA can also be found in the mitochondria (where it is called mitochondrial DNA or mtDNA) and relates specifically to the female gender.

The discovery of this science has revolutionised our entire knowledge of genetics and genealogy and its usefulness has spread into the commercial arena where organisations devoted to genealogy tracing have undertaken worldwide projects to better understand the roots of our civilisations.

Geneticists tell us that through their DNA discoveries that they can see back through a vast number of generations, even to be able to identify evidence of the first procreating couple, and along the way they can subdivide the chains of lineage into families and groupings that are consistent with cultural and predominant places of global habitation.

This technology is by no means fully understood by researchers at this present time and there are words of caution about what we can and cannot deduce from it as it currently stands. But there is consensus that it is a strong “indicator” as to civilisation’s roots and it is this specific theme that is of interest in this article.

For a convicted and committed Christian in the world today there is continual pressure applied to our beliefs about God’s creation by a non-believing scientific community which, unfortunately, is also having a negative impact on the general societal view about belief in the Bible and indeed in God. However from my recent studies undertaken into the authenticity of the Book of Genesis, I have been able to reconcile the Genesis script with Science’s discoveries into man’s genetic journey from the very beginnings of Hominin man (Note: man was NOT a mutant genetic variant of apes) to modern man today¹.

That Study highlighted that Genesis 1:26-27 is a reference to Hominin man that appeared on Earth circa 500,000 BC², and similarly dates that part of God’s creation process referred to as the sixth revelation period. This was man – not ape, whom God put on Earth as male and female to populate the Earth. We now know that this man did not have a “living soul” and at the end of the 500,000 years was still trapped in his primitivism as a hunter-gatherer with a hand-to-mouth sustenance regime.

Turn the clock forward to the end of that period, or as we better know it, circa 4,000 BC, we encounter Adam and Eve who are accounted in Genesis 2:7. And as we work our way through history commencing with the ancient song-line prose and poetry from the time of Adam and Eve we see that within a very short period of their advent, that the Metal Minerals Age followed by the Bronze Age and Iron Age came to mankind. That development of mankind only occurred because Adam was put into the world when there was already present a population of Hominin Man, and it is Adam and Eve’s “new” DNA that ultimately contributed to the general gene pool of mankind and hence wrenched Hominin Man out of his stagnated primitivism.

We should not think that this was all that strange. If we turn the clock forward a further 4,000 years we see that God further advanced his Redemption Plan with the advent of Jesus our Lord whom in similar circumstances came into an already established population that was also in need of a quantum leap. I refer of course to bringing the Spirit of God to humankind.

¹ Recommended reading from www.faithchasers.net : Creation Re-visited through Ancient Song Lines.

² Science does not have a consensus on this date citing a variation of +/- 200,000 years

So biblically speaking, we have what we might call the first man and female on the Earth appearing at circa 500,000 BC, and whilst we can pretty well take the Genesis verse as read that there were one of each gender, we may need to leave a little wriggle room for “just in case” there may have been more than one original couple. However, lets for the sake of this discussion say there was, and for identification purposes let us call this female, Africa Belle.

There has been quite a robust discussion about the population numbers of early man in the world, and more specifically in the era of Cro-magnon, Neanderthal and Denisovan Man. It is this last specie that is currently being debated because of its very recent discovery. However, with respect to what the quantum of the population was when Adam and Eve advented upon Earth there is absolutely no consensus at all. Some proffer billions, others hundreds of millions.

I have read a number of articles relating to this, some pro massive numbers and others who are a little circumspect in light of other information that has come available. For instance, the climate was totally different to what we have today. We know from the Genesis account that in those ancient days there had been no weather patterns on the planet in the period for at least 500,000 years and it was cloaked by a thick and heavy mist. The climate was temperate and evidence suggests that there were no polar zones, and most certainly the water levels were far lower than they are today. Climatologists tell us that the Sahara Desert was lush greenery indicating that the extremes of today did not exist then.

Food Scientists, or perhaps better called agronomists, have been able to sample remnant seeds from archaeological sites and found that food plants that grew 20,000 to 50,000 years ago were not as abundant as we might think. For instance they tell us that there is no evidence of crops being cultivated and the reasons are that the climate was not conducive to raising cropping plants, ie wheat and barley in broad acre plantings. The archaeologists have not found evidence of large communities which is very consistent with what we are told that Hominin Man was, and remained so, to be hunter gatherers with a hand-to-mouth regime for sustaining themselves. And I can accept that this was just another indicator that Hominin Man, even up to 6,000 years ago, did not have the brain capacity to know how to till the ground, or how to develop sophisticated tool making nor how to harness beasts of the field as a labour saving and productivity strategy.

The other indicator for assessing what the population of the planet was at the time of Adam and Eve is that if there were billions, archaeologists would most definitely have found thousands more burial sites, more evidence of land occupation and on a personal whim we would have seen that man, driven by his occupational volume, to take on advancement through discovery pushed by the

needs of genetic survival. It didn't happen. And these are the easy ones. There are other marginal reasons to support this also. The Ice Age that occurred circa 12,000 BC would have had a significant impact on the populations at whatever level they were at that time.

So where does this leave us? We could dither with numbers trying to factor in how many generations would occur in a thousand years and the mortality rates of new borns. We could take a look at what was occurring after Adam and Eve appeared – according to Adams ancient song-lines in the period before the global flood: but even so these are all non-defining pieces of information. One could legitimately suggest that early (Hominin) man did not procreate very frequently at all. We could suggest that knowing the life cycle of reptiles, ie the older they are the larger they grow, that animals (and early humans) may have lived for hundreds of years. So their numbers may have been tuned to their population rates where offspring were an added burden on the hunter-gatherer food supply and so mankind had a physiological legacy of procreation for replacement purposes only. Not just a silly idea.

My assessment is that populations of Hominin Man were very low when God put Adam on Earth, and my opinion is that when spread worldwide the numbers would have been less than even one million. Now enter Adam and Eve and their children, Cain, Able and Seth. As we know Cain slew Able and that left just the two brothers to start families. There is record of Adam and Eve having further children³, and from Genesis 4:17 we note that Cain took a wife but this has been the subject of debate – even at the highest levels of our Christian leadership – as to where Cain's wife came from, ie was she one of Seth's daughters or a female from indigenous Hominin Man. Well of course we can say with certainty that this female would have had a Hominin lineage⁴, and I think that Adam put this piece of information into his song-lines to indicate just this point. From this time on, the inter-cultural relationships would have been pretty common and the genetically modified DNA of Adam and Eve would have swept quickly throughout the general population's gene pool.

As an aside, and I realise we are slightly going off our specific subject, it was part of God's Redemption Plan for mankind that there would be a pure blood line (or DNA chain) that would be maintained from Adam and Eve down the generations to when Jesus our Lord was born of Miriam (Mary). Hence Adam

³ Genesis 5:4 The sons and daughters in this verse pertain to Adam, not Seth. This is underlined through Seth having children of his own (Genesis 5:7) otherwise the meaning of Gen.5:4 would force the continuity of the Royal "blood-line" to continue through the only legitimate female at that point in time - who was Eve. Hence Genesis 5:4 must refer to Adams children.

⁴ If Cain had taken one of Seth's daughters to wife then she would have also carried royal seed within her. But in view of Cain being outcast for his murderous act upon his brother, his lineage could not have been allowed to taint that Royal Seed chain.

of 4,000 BC is referred to as the First Adam and Jesus is referred to as The Last Adam. For the entire period from 4,000 BC to when Messiah was born the pure DNA chain of the Seed of Eve was protected from being defiled by Hominin Man and his descendants for this very specific purpose. It is therefore my contention that God had always purposed in his Redemption Plan that there would be two Adams. And I say this because of the contemporary thought that Jesus only came because sin entered the world. Not so! Sin was an additional hurdle that mankind now has to jump to be redeemed back to God. I do not see sin as being part of God's original Redemption Plan but rather I see a contingency built into Messiah's purpose in addition to him heralding in the inward bearing of the Spirit of God.

Following on from Adam and Eve's entrance into the world we are told by the ancient song-lines that a large group of angels out of heaven, led by the Bright and Shining Star, Lucifer, rebelled against God and were cast to the earth, or correctly, the terrestrial zone of mankind. In short order it is then revealed that these fallen angels corrupted the DNA chains of mankind by intermingling with the females of man⁵.

This was a disturbing twist in Earthly events and I again do not think that it was part of the original Redemption Plan. These fallen angels are of dubious DNA, and by this I refer to the Chapter Six passage where mutations occurred within the progeny, and it is very poignant to observe God's reaction to this occurrence. Clearly this eventuality was not going to be permitted to stand.

May I add here that what in reality we are seeing back at that time is an attack on the pure DNA chain of Eve's seed for the purpose to corrupt it and spoil the Redemption Plan for mankind. Lucifer would have been very cognisant of the details of the Plan from the judgment that was pronounced upon him for corrupting Eve in the Garden of Eden⁶. And so in Genesis 6:6-7 we see God's reaction to this corruption of his human and animal creation and we are told that God determined to excise all of the corrupted DNA from the face of the earth. You will have noted that God included all land dwelling and air breathing animals as well, and without being specific, it is obvious that the DNA of the animal kingdom was also corrupted.

This was the event that triggered the global flood. God identified Noah as being faithful, and from this we can determine that Noah and his wife's DNA chains were of the pure DNA lineage from Eve. But there is a twist.

⁵ Genesis 6:4-5

⁶ Genesis 3:1-6 and 3:14

Noah and his wife had three children, Ham, Japheth and Shem, and these young men had each had taken wives. When the global flood occurred it was only these eight souls who were saved out of all the humankind population, and in relation to the animals, only those that were mustered by God to have not had their DNA corrupted were saved also.

There is a twist appearing here after scientists looked at modern man's DNA and found linkages back to Hominin Man. We know from the biblical account that a DNA chain from the pure line of Eve's seed also survived, hence Jesus was born sinless, and therefore of the three daughters-in-law of Noah at least one had the pure DNA from Eve's seed and at least one was from Hominin Man's lineage.

Following the flood the populations of the earth-dwelling animals commenced with only those that were remnant out of the ark. God had also dealt a blow to the fallen angels and to Lucifer which rendered them incapable of further interference within the physicality of our terrestrial dimension.

Moving the time clock forward again we come to the event at Babylon. Up to this time the whole of the population since Adam and Eve's advent spoke one language and for simplicity I refer to this as the oral paleo-Hebrew. (Some would scoff at this) We know from Science that Hominin Man was devoid of articulate speech and certainly did not have the capacity to have writing skills – let alone articulated written communications. So the first articulate language spoken on planet Earth was Adam and we can follow this through to say that his language was the original Hebrew and it was in this language that Adam made up the oral song-line prose and poetry that were carried down by rote learnings through generation after generation wherein they contain the collective information of the successive contributing elders of which we currently have in the Book of Genesis. It was some two millennia later that Moses and his scribes were able to introduce the written modality of the language to the tribes of Israel and it is no coincidence that the first Book, or compendium, of the Hebrew nation was Genesis (Heb. Bereshit) containing all of the oral prose and poetry from the time of Adam.

However getting back to Babylon, all the population spoke one language, but once again we see the rise of people seeking power and glory, and under the influence of Nimrod the population was being corrupted against the deity of God. To counter this particular extreme event God divided the population up and changed their language into several forms and thus this heralded the great dispersal across the planet. More recent research estimated that the language groups were more-or-less divided along family lines, with the greater family of Ham seeking out the lands of Africa, those of the family of Japheth taking up

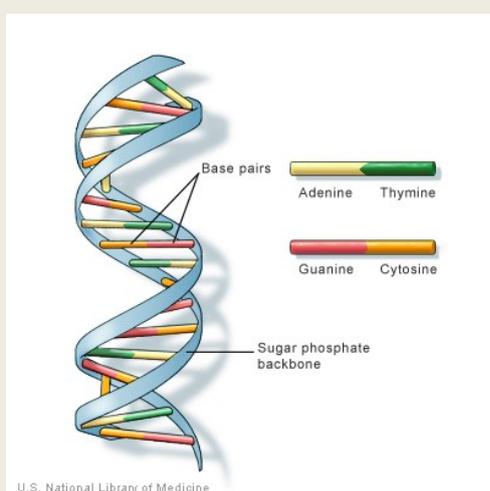
Europe and the remnant, being the family of Shem remaining in the area of Arabia and the Persian Gulf, including the Fertile Crescent. It has been established that the greater family of Shem carried the pure DNA chain of Eve's seed and this as we have mentioned carried right down to Miriam (Mary).

What is interesting is that all of these events would have had an impact on the evidence that geneticists are discovering through their DNA research. However there is an impediment. If the researchers are not aware of these events, or alternatively choose to disregard them, their findings will always be skewed. So far, the general view of genetic researchers is a mixture brought about by this being a new science, and secondly in like fashion when commencing a jig-saw puzzle it is initially laid out in pieces and there is no clear picture – so we get reports that are disjointed in some respects but in time will be understood better as the context of the whole “picture” becomes apparent.

Okay, now we have established through our biblical anthropogeny what the major events were that occurred in the period from Hominin Man to Modern Man and we can move forward to look at some technical aspects of what DNA comprises.

The information in DNA is stored as a code made up of four chemical bases: adenine (A), guanine (G), cytosine (C), and thymine (T). Human DNA consists of about 3 billion bases, and more than 99 percent of those bases are identical in all people. The order, or sequence, of these bases determines the information available for building and maintaining an organism, similar to the way in which letters of the alphabet appear in a certain order to form words and sentences.

DNA Bases pair up with each other, ie: A with T and C with G, to form units called Base Pairs. Each base is also attached to a sugar molecule and a phosphate molecule. Together, a base, sugar, and phosphate are called a nucleotide. Nucleotides are arranged in two long strands that form a spiral



called a double helix. The structure of the double helix is somewhat like a ladder, with the base pairs forming the ladder's rungs and the sugar and phosphate molecules forming the vertical sidepieces of the ladder.

DNA is a double helix formed by base pairs attached to a sugar-phosphate backbone.

Graphics Credit: U.S. National Library of Medicine

A gene is a segment of DNA that is passed down from parents to children and confers a trait to the offspring. Genes are organized and packaged in units called “chromosomes.” Humans have 23 pairs of chromosomes. One set of chromosomes for each pair comes from a person’s mother, and the other set of chromosomes comes from the father.

DNA can be compared by analysing the “language” of the A-G-C-T of the person or animal.

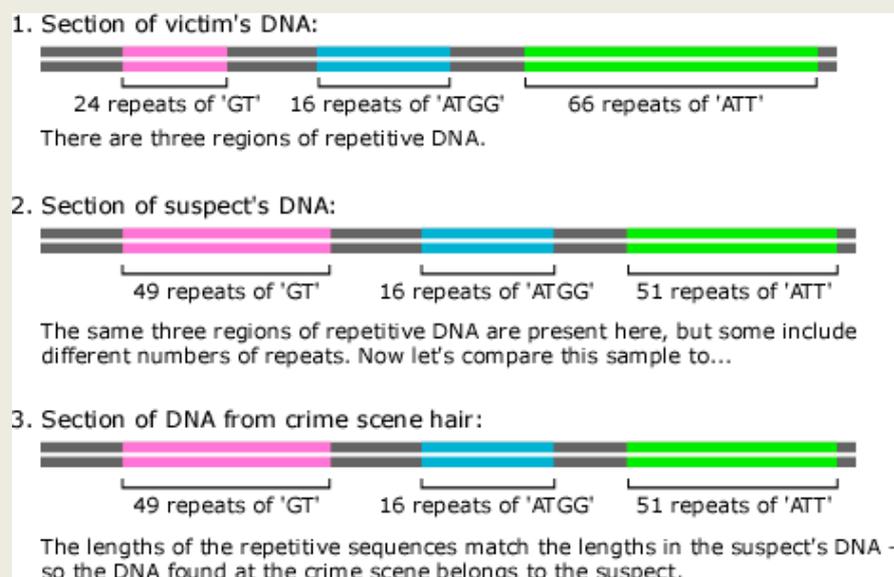
Example 1: A section of DNA Language in lineal form of a Human and a Chimpanzee

	10	20	30	40	50
Human	AAAGAAGACC	ACGGAGGCC	TGCTGGAGCT	GAAGGCCGTG	CTGGAGGCC
Chimpanzee	AAAGAAGACC	ACGGAGGCC	TGCTGGAGCT	GAAGGCCA	ATGCTGGAGGCC
	60	70	80	90	100
Human	ACCTGAGGT	GGTGTCCCAC	TACCTGGTGG	GGGTACGCTT	CACCTG-GAG
Chimpanzee	ACCCGAGGT	GGTGTCCCAC	TACCTGGTGG	GGCTACGCTT	CACCTG-GAG
	110	120	130	140	
Human	GATGACATCC	TACTGAGCCC	CTGCTTCCAG	TGGGACAGCCG	
Chimpanzee	GATGACATCC	TACTGAGCCC	CTGCTTCCAG	CGGGACAGCCG	

Note: adenine (A), guanine (G), cytosine (C), and thymine (T).

The differences in the physical form of the human to the chimpanzee reflect directly from the fundamental language as indicated.

Example 2: Is how a simplified comparison of DNA is compared and analysed from a crime scene.



The language can be expressed in alpha form or in a lineal stain pattern where for visual purposes the matches are somewhat simplified. Where comparisons are made between parents and children or siblings, the matches are very similar and therefore facilitate scientists being able to isolate a relative from an array of unrelated persons. This DNA relationship therefore also facilitates sampling of DNA from parents, children, uncles and cousins for identification purposes.

What we do find interesting is that the science confirms the human DNA has chain linkages going back to Hominin Man. Therefore the biblical record holds true. Secondly there is no evidence to suggest that any of the corrupted DNA from the fallen angels has survived; therefore indicating that the biblical account is also true on this point that God excised all of these non-permitted DNA chains and linkages when he chose Noah and his wife and the three sons with their wives.

What researchers should also find is the throttle point (or bottle neck) that occurred through the extinguishing of the Earth's population but for eight souls, and they should be able to delineate the DNA of the three greater families of Ham, Japheth and Shem post the Babylonian dispersal.

What the researchers will not find is the pure DNA chain of the seed of Eve, as this terminated with Miriam (Mary) subsequent to Jesus' birth.

So now let us address the key theme of the article. Who is Mitochondrial Eve? We will discuss only the female mitochondrial DNA because once we understand the basics of this, the same will be applicable for the Y-DNA of males.

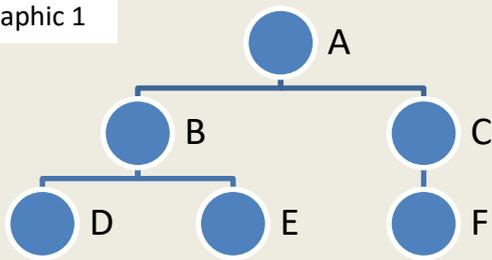
So, let me be unambiguously clear about this. "Mitochondrial Eve" is not a single person but it is a title given to the oldest female at the end of a line of the most ancient continuous DNA chain on any given day. Therefore the person whom currently has this title will lose it when there are no longer any continuous links back to her. This is not Eve, the wife and help-meet of Adam. At some historical point it was Africa Belle, but the linkages back to her have long since been terminated. So we can ask the question, "Who is the current Mitochondrial Eve, and why did they call her Eve?"

Science does know who coined this title but does not know why the reference to Eve was used knowing that it would create much confusion within the general societal view. For some unknown reason the name has stuck and it has become a legacy for going forward because of its "almost" false claim to be associated

with the biblical Eve. I personally would set about to change the title to something like “Mitochondrial Matriarch” but that is just an aside.

The graphic below demonstrates how this dynamic title slides down the generations. Remember that the mitochondrial line follows the female gender only, ie mother, daughter(s), grand-daughter(s) etc. So therefore when a genealogical chain ceases, it occurs when that female has not produced any daughter(s). This is not to say she did not have sons, but in mitochondrial speak sons don't count.

Graphic 1



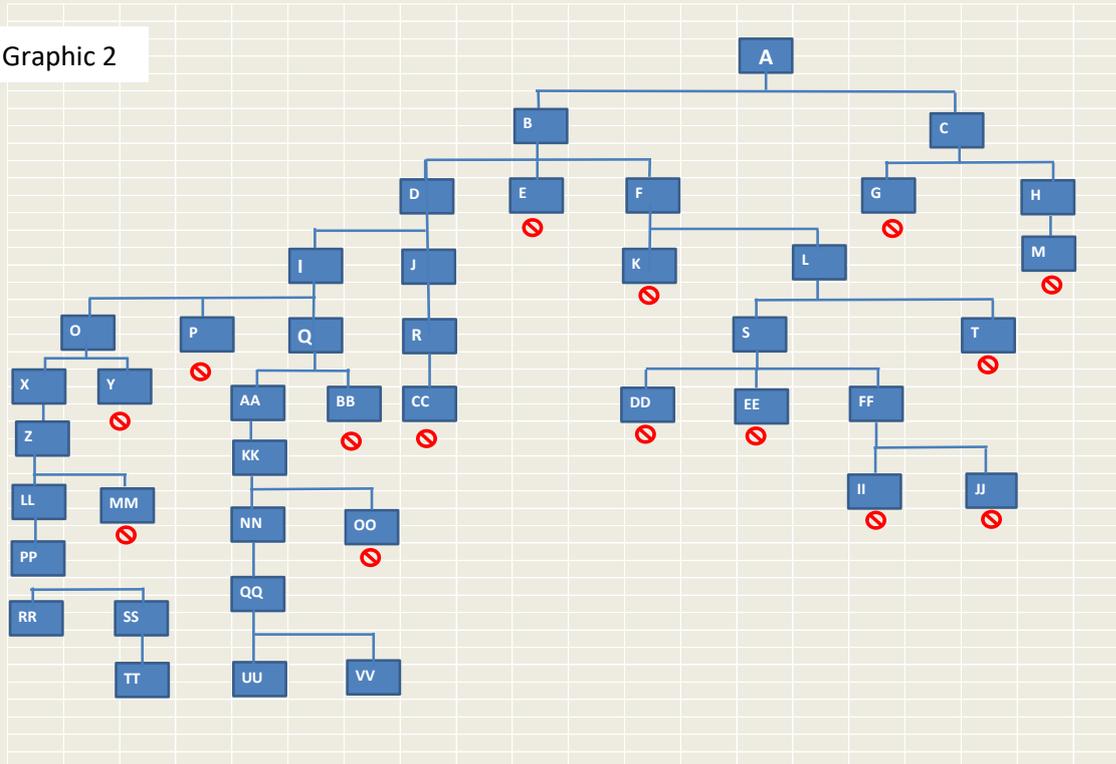
In this first instance, say “A” is Africa Belle, the very first female human on the planet to conceive and bear two daughters “B” and “C”. Of these two daughters “B” also bears two daughters “D” and “E”, and “C” meanwhile has one daughter “F”. Now whilst all of these female children remain alive, Africa Belle will remain the oldest female at the end of a line of the most ancient continuous DNA chain and she will hold the title of Mitochondrial Eve (or for our discussion ME).

If grand-daughter “F” fails to conceive a daughter, that chain, encompassing “A”, “C” and “F” terminates and Africa Belle loses the title of being ME. The title then moves down the generations until a new “next” oldest female at the end of a line of the most ancient continuous DNA chain is determined, and in this case the title is bestowed onto “B”. In a similar pattern, if “E” does not conceive any daughters then the title moves down to “D”.

A more complex model might look like this:

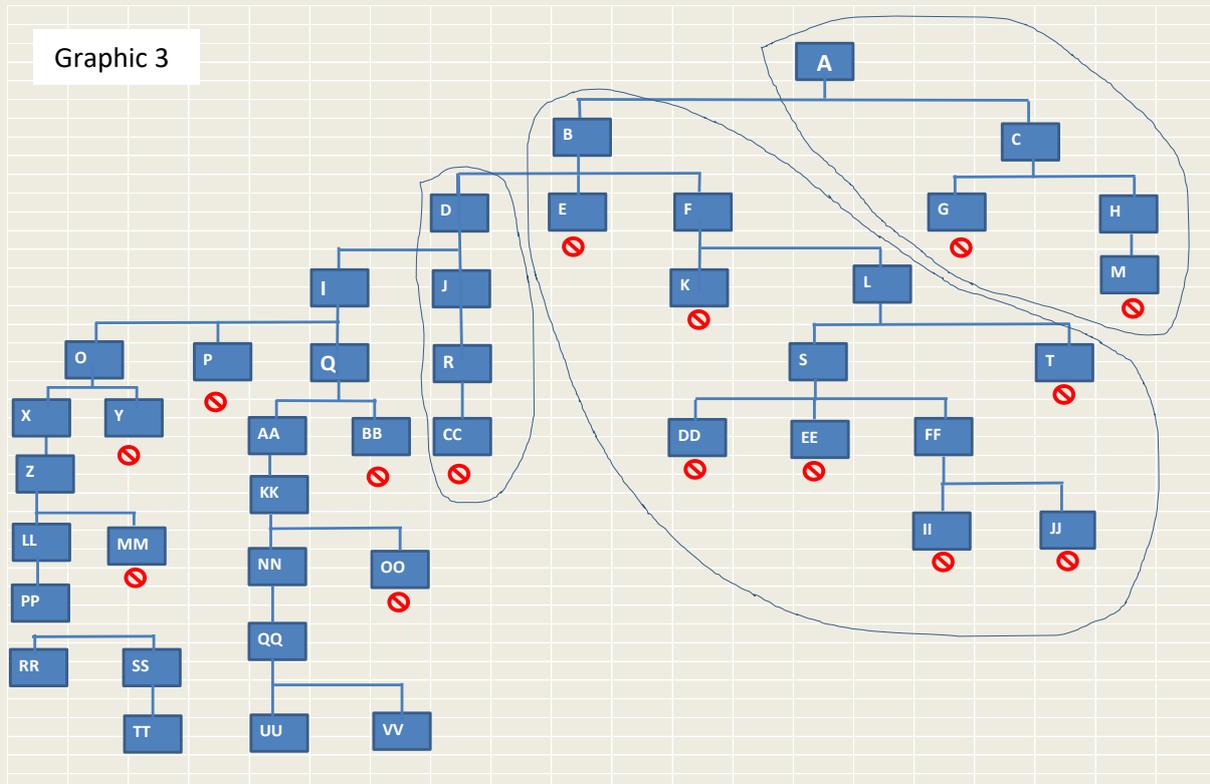
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Graphic 2



From Graphics 2 and 3 we can see that “A” was the ME, but lost the title to “B” who in turn lost the title to “I” noting that “D” already had a broken chain by the time “II” and “JJ” terminated the mitochondrial line.

Graphic 3



It also comes to mind that, obviously, the ME will be long deceased when we speak in modern day terms. In 2013 an estimate was made that ME at this time was on the planet between 120,000 and 156,000 BC, but science is telling us

that there is substantial uncertainty with these numbers because of the very limited cohort of humans from whom DNA samples have been analysed with respect to the total global population size. You will recall that mankind appeared on Earth at circa 500,000 BC so the movement of ME down the generations is quite remarkable, but the over-rider that is on these research analyses is that just one “new” sample could send the whole estimate into a retro chaos by re-establishing a new “still living” link in a discarded older chain.

It is also worthy to mention that this type of science cannot be used to determine population numbers. Whilst we may note Mitochondrial Eve is ancient, and the same can be said for the male Y-DNA chain linkages, these charts exclude the terminated chains that still existed concurrently in step on a chronological basis. The DNA projects undertaken by geneticists and commercial organisations bear little useful information for determining census details and neither do they contribute to the metrics of population groupings in past ages .

There is a final word of caution from Geneticist Adam Rutherford who reported that geographical origin tests, as we have seen rising to popularity in recent times, don’t necessarily show geographical origins of the past. **They only show with whom a DNA donor has in common with current groups of individuals today⁷.**

Well there you have it. A very simplified explanation of DNA Science and how it fits in with biblical anthropogeny along with the explanation for the title of Mitochondrial Eve and Y-Adam.

Geoff Rooke
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⁷ Rutherford, Adam (24 May 2015) Guardian.