Chapter Eleven

The DNA Issue

In the past there have been books, papers, news statements, and internet sites claiming that DNA findings refute the historicity of the Book of Mormon, attempting to deny its claim as an actual historical record. Recent research has been conducted regarding Native American DNA studies that potentially relate to and may support the claims of the Book of Mormon.

This section specifically addresses many questions surrounding the current research regarding DNA and Native American populations. These few chapters that discuss DNA and the Book of Mormon, although not comprehensive in scope, will give the reader a coherent understanding of the nature of the subject and the research that addresses its relationship to the Book of Mormon. For a more detailed and comprehensive account of this research and the issues surrounding DNA and the Book of Mormon, we refer you to *Rediscovering the Book of Mormon Remnant through DNA* by Rod Meldrum.

Those possessing a testimony of the restoration of the gospel of Jesus Christ through the Prophet Joseph Smith realize that it is not possible that the Book of Mormon could be spiritually true and historically false, any more than the Bible could be.

Since the Book of Mormon is a historical record, there should be evidences that support its historical claim. This DNA section is only one of the many areas of exploration and research that is beginning to unfold and reveal the scientific evidences that support the Book of Mormon as a historical text.

However, since the Book of Mormon is an abridgment of a historical record and was meant to contain writings of a more spiritual nature, there may always be questions that pertain to the physical proofs of authenticity. Elder Dallin H. Oaks, in a speech before the organization formerly known as the Foundation for Ancient Research and Mormon Studies (FARMS, now The Neil A. Maxwell Institute for Religious Scholarship), confirms the fact that secular or scientific evidence cannot *prove* the Book of Mormon either false or true. Elder Oaks states:

> In fact, it is our position that secular evidence can neither prove nor disprove the authenticity of the Book of Mormon. Its authenticity depends, as it says, on a witness of the Holy Spirit...God invites us to reason with Him, but I find it significant that the reasoning to which God invites us is tied to spiritual realities and maturity rather than to scholarly findings or credentials. Three times in modern revelation the Lord has spoken of reasoning with his people (D&C 45:10, 15; 50:10-12; 61:13; also see Isaiah 1:18.)...In these remarks I will seek to use rational argument, but I will not rely on any proofs. I will approach the question of the historicity of the Book of Mormon from the standpoint of faith and revelation. I maintain that the issue of the historicity of the Book of Mormon is basically a difference between those who rely exclusively on scholarship and those who rely on a combination of scholarship, faith, and revelation. *Those who rely exclusively on scholarship reject revelation* and fulfill Nephi's prophecy that in the last days men "shall teach with their learning, and deny the Holy Ghost, which giveth utterance" (2 Nephi 28:4).[79]

The Book of Mormon is written as a spiritual text and not as a geographic or scientific textbook. The real truths contained in this sacred text are the spiritual truths that cause one to "talk of Christ" and to "think of Christ" and to "rejoice in Christ." The gospel is taught throughout the book as it restores and clarifies those "plain and precious truths" that were once part of the Bible. The secular

and physical information of which so many seek for proof was in large measure edited out by inspired men of God as they prepared its pages for a spiritual revival in the last days and not for scientific advancement. It is a spiritual "marvelous work and wonder" and was not meant to be a scientific work. The scriptures are always the best commentary on the scriptures.

mtDNA

Mitochondrial DNA (mtDNA) is passed maternally from mothers to their children and is not recombined every generation as is nuclear DNA, making it more diagnostic for human population studies. In turn, those mothers received their mtDNA copies from their mothers. In this way, the mitochondrial DNA path has traveled through generations along the direct maternal line. Mitochondrial DNA is often used to determine origins of a particular person, family, tribe, and even race.

The mtDNA lineage can be distinguished by specific markers found through sequencing of the mtDNA. The results can be divided into different groups, lineages, and geographic regions of origin and are assigned a letter of the alphabet (and subsets of letters and numbers) for identification that is used to make matrilineal genetic connections.

These groupings are commonly called haplogroups and they indicate relations among and between groups and the interrelationships with other haplogroups. Everyone is a member of a primary haplogroup branch that springs from a larger "supergroup" tree. There are three key "supergroups" from which all modern humans descend: European, Asian, and African. These supergroups will be discussed with their relation to the three sons of Noah.

A more scholarly explanation of mitochondrial DNA is given in the journal *Evolutionary Anthropology* as:

> The human mitochondrion is an extra nuclear organelle having DNA that exists as a circular molecule 16,569 base

> pairs in length, in which all nucleotide positions and coding loci are known. Because this DNA is uniquely maternally inherited and, unlike nuclear DNA, does not recombine, all changes in mtDNA sequence are the result of accumulated mutations inherited from mother to daughter. In addition, mtDNA mutates an order of magnitude faster than does nuclear DNA, with the control region mutating at an even greater rate, making it particularly useful for analyses at shallow time depths. Finally, mtDNA exists in high copy number in haploid condition. Consequently, it is easily assayed in the laboratory and can be recovered from prehistoric biological material in sufficient quantities for amplification and analysis using the polymerase chain reaction.[80]

The key question is what lineage to look for when it comes to the genetic ancestry of Lehi and Ishmael in the Book of Mormon. Without sequencing the DNA of Lehi, Ishmael, and their wives, one might ask: How could their genetic makeup ever be discovered?

Will the Real "Remnant" Ever Be Discovered?

In the publication entitled *The Book of Mormon and DNA Research,* editor Daniel C. Peterson quotes Hugh Nibley as he begins the Introduction to the book. The statement by Nibley discusses the critics of the scriptural text by saying, "The normal way of dealing with the Book of Mormon 'scientifically' has been first to attribute to the Book of Mormon something it did not say, and then to refute the claim by scientific statements that have not been proven."[81] This, no doubt, is true when dealing with the false claims against and about the Book of Mormon. *The Book of Mormon and DNA Research* was compiled from several older previously published articles to address the claims of anti-Mormons in respect to the lack of genetic evidence for the Book of Mormon in Mesoamerica. It is our observation that while these kind of writings appear to be written in defense of the Church and the Book of Mormon, they appear at times to be more about defending a particular geographic setting than the Book of Mormon itself. The whole premise of the Peterson compilation is founded on something the Book of Mormon does not claim, but rather has been declared thus by consensus of scholarly opinion.

Looking at the questions of DNA and the Book of Mormon, Nibley's quote takes on new significance, meaning the way LDS scholars have been "dealing with the Book of Mormon 'scientifically' has been first to attribute to the Book of Mormon something it did not say" (that Meso- or South America was the setting) and then defend "the claim by scientific statements that have not been proven."

The key issue and conclusion that the book edited by Peterson addresses, is that there can be no known remnant—that DNA can provide no evidence either for or against the book's claims. Almost 300 pages and countless hours of writing and research expended to, in effect, neutralize the role of DNA as a possible contributor to the historicity of the Book of Mormon. The book focuses an inordinate amount of energy on maintaining a secure hold and belief in the more popular Mesoamerican theories, in the face of a complete lack of DNA evidence to support the claims of that geographic model.

The notion that there can be no remnant is to take something the Book of Mormon clearly states and then refute the scriptural text with scientific arguments that support the "theory de jour" rather than supporting or acknowledging the direct statements from the Book of Mormon. This dogged defense of Mesoamerica as the only viable setting for the Book of Mormon is remarkable in that as it suggests that the scriptures cannot be taken literally and that the "remnant" mentioned in the Book of Mormon cannot really ever have an identifiable genetic lineage.

The Prophet Joseph Smith stated that "the scriptures say what they mean, and mean what they say,"[82] implying that a literal interpretation should prevail. The question of who, if anybody can or cannot be considered a "remnant" of Lehi, Ishmael, Zoram and their wives, is key in the defense of the Book of Mormon, but means nothing to a theoretical setting not justified in that scripture. Even the anti-Mormons know what Joseph Smith said about Book of Mormon geography. The anti-Mormons also know where the European and Middle Eastern mtDNA has been found in the Western Hemisphere. They also know that many Mormon scholars

seem to reject both the statements of Joseph Smith and the DNA evidence found in North America that may indeed support the Book of Mormon history in their zeal to uphold a non-North American geographic theory.

The Remnant Question

Matthew Roper claims in his article "Swimming in the Gene Pool"[83] that there may be no way of knowing what the genetic makeup was of Lehi and those who went with him to the Promised Land. Roper gives an extraordinary explanation as to why no genetic evidence of an Israelite migration might ever be found in Mesoamerica. He states in his article that "it becomes clear that Israel was never a genetically homogeneous entity. Further, examination of the nature of ancient Israel raises similar questions about the genetic heritage of the 'people of Lehi' as described in the Book of Mormon."[84] As this article progresses, the limit of thought or discussion cannot seem to extend beyond the time of Abraham. Roper informs the reader that there is no information on the mtDNA of Abraham,[85] thus leaving all in a quandary. This may, however, not be the case.

There exists in Old Testament studies and particularly in Genesis a concept called the "Matrilineal Patriarchy." This is not the venue to address this subject or concept in-depth; therefore, it is sufficient to say that it was the responsibility of the matriarch to determine who the patriarch will be. Only the matriarch knows who the father of her children are, and which of her offspring is her firstborn. Therefore, only she knows for certainty which of her sons will or should receive the patriarchal responsibilities. This responsibility of patriarchal choice belongs to the matriarch and not the patriarch for the reason above. This is seen in the case of Jacob, as his mother prepares and presents her choice and the father performs the priesthood ordinance. This is also seen in the scriptural context with Eve, Sarah the wife of Abraham, Rebekah in her choice of Jacob (Genesis 27), Tamar and Judah, even Mary the mother of Christ, and others.

Following the choice of Jacob by Rebekah in Genesis 27 (hence the "Matrilineal Patriarchy"), she is concerned about the mtDNA [the matrilineal line] of her grandchildren as she confides in her husband: "And Rebekah said to Isaac, I am weary of my life because of the daughters of Heth: if Jacob take a wife of the daughters of Heth, such as these *which are* of the daughters of the land, what good shall my life do me?" (Genesis 27:46). Isaac addresses this concern in the next chapter as he "...called Jacob, and blessed him, and charged him, and said unto him, Thou shalt not take a wife of the daughters of Canaan" (Genesis 28:1).

Even Abraham sent his servant to look for a wife for his son Isaac among those who were genetically acceptable and through whom the priesthood could be passed based on the mtDNA. It can be seen in the Book of Abraham that it was because of the wife of Ham (the mtDNA) that the priesthood curse was passed through the flood. Abraham reveals that even though "this king of Egypt was a descendant from the loins of Ham," he was "a partaker of the blood of the Canaanites *by birth*" (Abraham 1:21). Even though Pharaoh was a descendant of Ham, it was because of his mother (the mtDNA) that the priesthood was restricted.

Abraham continues to teach that "Pharaoh, the eldest son of Egyptus, the daughter of Ham" was of "that lineage by which he could not have the right of Priesthood" (Abraham 1:25, 27). It was not because of the fathers, or patriarchal lineage of Ham, that the priesthood was restricted but because of the mother, as he [Pharaoh] was a partaker of the blood of the Canaanites "*by birth*" and "From this descent sprang all the Egyptians, and thus the blood of the Canaanites was preserved in the land" (Abraham 1:22). In ancient Egypt the right to be the Pharaoh was legitimized by the marriage of the matrilineal bloodline. This is seen in the New Testament statement that Moses "when he was come to years, refused to be called the son of Pharaoh's daughter" (Hebrews 11:24), thus rejecting the right for the throne of Egypt.

It could be said that it is not only the lineage of the patriarch that is important but also that of the matriarch and mother as her

ancestors play an integral part of the paternal lines of authority. Those who stop searching for genetic connections at Lehi or even Abraham do themselves a disservice by claiming that the mtDNA is lost and no genetic remnant of Israel or Jacob can be found. It is not at Abraham that one should stop but take the hint given by Abraham himself—that the sons of Noah and their wives should be the origin of the genetic markers looked for.

There are three primary lineages or supergroups of which all the world's population are genetic descendants. They are European, Asian, and African. These scripturally correspond to the three sons of Noah—Shem, Japheth, and Ham. Shem and his wife are the parents and ancestors of Abraham and his wife. Therefore Shem is the father of Jacob or Israel who is the father of Judah and of Joseph from whom Lehi descends. It is not to Abraham one should look for genetic markers it is to Shem and the haplogroups that are related to him. Josephus writes about Shem and his sons stating:

> Shem, the third son of Noah, had five sons, who inhabited the land that began at Euphrates, and reached to the Indian Ocean. They [the sons] were the founders of the lineages of the Persions (Elam), Assyrians (Ashur), Chaldeans (Arphaxad), Syrians (Aram), Lydians (Laud) according to Josephus. Sala was the son of Arphaxad; and his son was Heber, from whom they originally called the Jews Hebrews. Heber begat Joctan and Phaled... I will now treat of the Hebrews. The son of Phalg, whose father was Heber, was Ragau; whose son was Serug, to whom was born Nahor; his son was Terah, who was the father of Abram (Abraham), who accordingly was the tenth from Noah...[86]

This genealogy is also discussed in Genesis 11:10-26 and 1 Chronicles 1:24-34, which reveals the lineage from Ephraim and his brother Manasseh, the sons of Joseph, to Shem the son of Noah. From Shem come the European and Middle Eastern mtDNA markers and the Caucasian lineages after the flood. From Japheth the Asian lineages and haplogroups descend. And finally, from Ham and his wife many of the African nations descend.[87]

As there are three sons of Noah, there are three supergroups. It is to Shem we should be looking for the known genetic connections,

not to Abraham or his grandson Israel or even Lehi. Lehi is a descendant of Shem through Abraham, Isaac, Jacob and Joseph and it is to a European haplogroup related to Shem that one should hope to find a link to the Book of Mormon remnant. Practically nothing is known of Sariah's genetic heritage, however it can be implicitly understood that she would have been of the same lineage as Lehi because of Jewish marriage restrictions based on their religion covenant making. Her genetic link should be found within the mitochondrial DNA of the descendants of Shem and his wife. If "the scriptures say what they mean, and mean what they say" as the Prophet Joseph Smith stated[88], then there should be an identifiable remnant as prophesied in the pages of the Book of Mormon.

Native American Graves

Native American remains have been used to study not only their cultures but also the migrations and peopling of the Americas. Anthropology, archaeology, linguistics, and many other fields of study have used these remains for study and research in coming to a better understanding of these cultures. Often these studies resulted in ancestral remains of native peoples being exhumed, studied, then locked away in storage facilities for years.

A law was passed November 16, 1990 titled the Native American Graves Protection and Repatriation Act. It required the remains of Native American people to be returned to their rightful tribes and families. This law was seen as a significant step in returning these remains to their descendants. The process of returning these remains created some problems and confusion over which group held those rights when in several instances there were multiple tribal groups claiming a single set of remains.

Modern technology and scientific advancement made the problem of determining ownership of Native American remains a straight-forward endeavor. The decision was made to do genetic testing on the remains as well as the tribes claiming ownership. Over the next few years, many laboratories were employed to assist in this work. Genetic makeup and markers were discovered for

Native Americans in the Western Hemisphere. This work and the discovery of ancestral genetics proved to provide surprising insights into the peopling of the Americas and the original location of their origins and ancestors.

Native American DNA Studies

The technological advance of polymerase chain reactions in human genetic testing has resulted in remarkable progress in the ability to map genetic *signatures* of modern as well as prehistoric samples. Geneticists were determined to put this new technology to work on the challenges of matching native remains to the existing Native American peoples of today in compliance with the Native American Graves Protection and Repatriation Act (NAGPRA). This launched a massive project to categorize the DNA of all Native Americans into related haplogroups.

Preliminary DNA studies performed on thousands of individual Native Americans from the Aleuts in Alaska through North, Central, and South America were completed over several years. Their DNA was sequenced, studied, and ultimately classified into one of four primary or *founding* genetic haplogroups. The four resulting groups that were discovered were designated as haplogroups A, B, C, and D and were considered to be the primary ancestral lineages that founded the populations of the Americas. Each one of these four haplogroups were determined to be Asian based, found in modern populations of Siberia and Asia today. Of these four haplogroups geneticist David Glenn Smith writes:

> While widespread, the geographic distribution of the four haplogroups is markedly nonrandom (Lorenz and Smith, 1996). For example, haplogroup A is extremely common among Eskimo/Aleut and Northern Athapaskan tribes, but extremely rare in non-Athapaskan speakers of the Southwest United States. Haplogroup B is extremely common in the American Southwest but absent, or rare, in the Arctic, Subarctic, and Northwest Coastal regions. Haplogroup D, while present throughout the New World, is the least common of the four haplogroups everywhere except in certain Western tribal Groups...[89]

These initial studies indicated that there were no African or European genetic DNA lineages, implying that the Native peoples of the Americas were of Asian descent exclusively. These findings supported the dominant theory of the peopling of the New World [the Americas] by an overland migration of Asian peoples across the Bering Strait during an ice age.

These findings were thought to challenge the historicity of the Book of Mormon on different fronts. Two problems arise with the discovery of these four haplogroups from Asia. First, the Book of Mormon does not describe an overland migration into the Americas from Asia, but a transoceanic voyage from the Mediterranean area. And second, Lehi's lineage stems from Shem, the son of Noah, and not Japheth, the assumed father of the Asiatic peoples.

The primary races of the earth—Asian (Oriental), African (Negroid) and European (Caucasian)—are easily distinguished from each other through specific DNA markers or *signatures* that delineate their ancestry. Through DNA sequencing, these three primary genetic groups, called supergroups, can be distinguished one from another due to the presence or lack of certain DNA markers which makes them identifiable for genetic study. This makes it possible to identify the genetic lineage(s) of most people.

The Book of Mormon tells us that the descendants of Lehi (including his wife Sariah, Ishmael and his wife, and Zoram) came out of the Mediterranean area and migrated to a "Promised Land" and multiplied to a great extent somewhere in the Americas (see Helaman 11:20, 3:8 and also 3 Nephi 1:17). Having descended from the lineage of Shem, Lehi and in all probability his entire group, would be classified by today's genetic terminology as European rather than Asian.

It is possible through genetic studies to identify Asian from European DNA types, and the initial DNA studies on Native Americans identified them as having come from Asian haplogroups rather than Middle Eastern or European. This information would

appear to contradict the Book of Mormon claims of Mediterranean (European) origins of Lehi and his migrations into the Americas.

The Book of Mormon history speaks of three migrations. An early Jaredite culture, assumed to be Semite in origin, and two known and declared linages that are European or Semitic—those of Mulek and Lehi. Since the Book of Mormon describes a Middle Eastern or European origin, rather than Asian, this posed a potential challenge to the historical authenticity of the book itself. Because of the result of the preliminary testing, a chain of events occurred that spawned the controversy involving DNA and the Book of Mormon.

The initial lack of European DNA caused some to conclude that no ancient European or Israelite migration had occurred anywhere in the Americas as recorded in the Book of Mormon. This information caused a small number of LDS and non-LDS scholars to write articles and even books that claimed that DNA studies refuted the historicity of the Book of Mormon, alleging it to be non-historical and declaring Joseph Smith to be a false prophet.

The lack of an Israelite or European haplogroup being found in Central or South America during this preliminary research excited many that were antagonistic toward the Church, which led to a number of articles and statements from members and non-members alike. A persuasive work was created by a Christian ministry who capitalized on the rumblings of a small number of LDS scholars and scientists who left the church over the lack of European DNA in Native Americans and especially in Central America by expressing their assumptions in a DVD documentary entitled "DNA vs. the Book of Mormon."

Some Christian denominations believed they now had conclusive evidence proving the Book of Mormon to be false. Thus, they claimed that DNA evidence proves The Church of Jesus Christ of Latter-day Saints to be based upon a false premise, that being the historicity of the Book of Mormon. Unfortunately, many individuals prematurely jumped to conclusions based on the preliminary DNA research. Love at first sight is often cured by a second look, and as

the genetic research continued and new conclusions began to unfold, their basic thesis began to unravel. The ongoing DNA research began to challenge the traditions and scholarly assumptions of the peopling of the Americas. This research revealed astonishing information that added potential new insights into the historicity of the Book of Mormon.