

GENETICS AND GATHERING THE HOUSE OF ISRAEL

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Questions from My Past

My patriarchal blessing indicates that I am a literal descendant of Ephraim and heir to specific blessings and promises. But what does this statement mean? How could someone like me, whose genealogy, 23andMe, and AncestryDNA results all show 100 percent European, be a literal descendant of someone who lived thousands of years ago in the Middle East? And how does this relate to the doctrine of the gathering of Israel?

Growing up I heard many statements about the “lost tribes,” the mysterious story of the disappearance of the ten northern tribes of Israel after the kingdom was sacked by the Assyrians around 720 BCE. Over time, legends developed that one day they would be rediscovered and rejoin the Jews.¹ My Sunday School and seminary teachers seemed to suggest that there would be some isolated ethnic group that missionaries would discover, and they told anecdotes about different cultures, highlighting similarities to Hebrew culture and symbolism. Some millennialist Christians have even identified groups they claim to be lost Israel. Although such claims are unlikely, this kind of teaching gave me the impression that the lost tribes would be identified as groups—someone would proclaim, “This is clearly the lost tribe of Issachar (or Zebulon, or Gad). Check another one off the list.” To my naïve

1. Andrew Tobolowsky, *The Myth of the Twelve Tribes of Israel: New Identities Across Time and Space* (Cambridge, UK: Cambridge University Press, 2022).

understanding, a meaningful gathering would require clear historical, scriptural, or other evidence that specific tribes had been identified.

I began to ponder the doctrine of the gathering of Israel when I realized that the “lost tribe” stories I’d heard reflected the fact that many traditions are common to all humanity. It seemed to me that one can find parallels between almost any two cultures by chance. Furthermore, missionaries now teach in much of the world, and knowledge of different cultures has grown dramatically, but any credible “found tribe” story has yet to materialize. Although I regularly hear secondhand stories of individuals in far-off countries being identified through their patriarchal blessings as members of a lost tribe, no group of people that has joined the Church of Jesus Christ of Latter-day Saints has been officially recognized as a lost tribe.

Recent teachings about the gathering of Israel from Church leaders have focused less on identifying connections with Israel and more on the acceptance of the gospel by those who are the heirs to Abraham’s promises.² The principle of adoption has also been proposed as a way for all to receive the blessings of Abraham.³

2. Russell M. Nelson, “The Gathering of Scattered Israel,” Oct. 2006, <https://www.churchofjesuschrist.org/study/general-conference/2006/10/the-gathering-of-scattered-israel?lang=eng>; Quentin L. Cook, “Lamentations of Jeremiah: Beware of Bondage,” Oct. 2013, <https://www.churchofjesuschrist.org/study/general-conference/2013/10/lamentations-of-jeremiah-beware-of-bondage?lang=eng>; Russell M. Nelson and Wendy W. Nelson, “Hope of Israel,” talk given at Worldwide Youth Devotional, Conference Center, Salt Lake City, Utah, June 3, 2018, <https://www.churchofjesuschrist.org/study/broadcasts/worldwide-devotional-for-young-adults/2018/06/hope-of-israel?lang=eng>; Russell M. Nelson, “Let God Prevail,” Oct. 2020, <https://www.churchofjesuschrist.org/study/general-conference/2020/10/46nelson?lang=eng>.

3. Russell M. Nelson, “Covenants,” Oct. 2011, <https://www.churchofjesuschrist.org/study/general-conference/2011/10/covenants?lang=eng>; Boyd K. Packer, “The Stake Patriarch,” Oct. 2002, <https://www.churchofjesuschrist.org/study/general-conference/2002/10/the-stake-patriarch?lang=eng>.

Even as leaders have emphasized covenant connections and de-emphasized the rediscovery of the ten tribes, the lost tribes doctrine has remained part of Church curriculum. It can be found in lesson materials on the Old Testament, Book of Mormon, and Doctrine and Covenants; enshrined as an article of faith; and discussed regularly, mostly prominently by President Russell M. Nelson.⁴ More personally, as noted above, my patriarchal blessing says that I am a literal descendant of Ephraim. I wondered how to make sense of such a claim.

Seeking Better Scientific Understanding

In my professional work as a molecular pathologist, I have the privilege of looking at human DNA sequences and investigating the medical

4. "Prophecies of a Latter-day Gathering," *Old Testament Student Manual* (Salt Lake City: Church of Jesus Christ of Latter-day Saints, 2003), available at <https://www.churchofjesuschrist.org/study/manual/old-testament-student-manual-kings-malachi/chapter-25?lang=eng>, accessed July 23, 2022; "Then I Will Gather Them In," *Book of Mormon: Gospel Doctrine Teacher's Manual* (Salt Lake City: Church of Jesus Christ of Latter-day Saints, 1999), available at <https://www.churchofjesuschrist.org/study/manual/book-of-mormon-gospel-doctrine-teachers-manual/lesson-40?lang=eng>, accessed July 23, 2022; "Lesson 12: 'The Gathering of My People,'" *Doctrine and Covenants and Church History: Gospel Doctrine Teacher's Manual* (Salt Lake City: Church of Jesus Christ of Latter-day Saints, 1999), 63–68, available at <https://www.churchofjesuschrist.org/manual/doctrine-and-covenants-and-church-history-gospel-doctrine-teachers-manual/lesson-12-the-gathering-of-my-people?lang=eng>, accessed July 23, 2022; "Chapter 53: Doctrine and Covenants 133," *Doctrine and Covenants Student Manual* (Salt Lake City: Church of Jesus Christ of Latter-day Saints, 2017), available at <https://www.churchofjesuschrist.org/study/manual/doctrine-and-covenants-student-manual-2017/chapter-53-doctrine-and-covenants-133?lang=eng>, accessed July 23, 2022. Nelson, "The Gathering of Scattered Israel;" Russell M. Nelson and Wendy W. Nelson, "Hope of Israel." Nelson talks about both adoption and rediscovery. These are not mutually exclusive. See also Russell M. Nelson, "The Everlasting Covenant," *Liahona*, Oct. 2022, <https://www.churchofjesuschrist.org/study/liahona/2022/10/04-the-everlasting-covenant?lang=eng>.

implications of human population genetics. As I gathered data to gain insight into human inherited disease mechanisms, the implications of population genetics for the search for the lost tribes of Israel became more and more clear to me.

A “tribe” is a cultural entity associated with some common genetic or ancestral heritage. During and after the Assyrian captivity, when the tribes of Israel were “lost,” it was really their identity as descendants of Abraham, Isaac, and Jacob that was lost. This specific Israelite cultural heritage disappeared quickly, possibly within a few generations. Without cultural heritage, only ancestral and genetic heritage are left. I asked myself, “Is any ancestral or genetic remnant discoverable through modern science?”

As I sought answers, I found scientific literature on population modeling showing that ancestors from 2500 to 3000 years ago (from the time of the reign of King David to the captivity of the tribes) can have descendants that span large populations of entire continents today.⁵ Population geneticists have looked at migration patterns, inbreeding coefficients, and family size, and calculated that it is likely that the most recent common ancestor of the entire human race was alive approximately 2300 to 3000 years ago.⁶ The farther back in history you go from there, the more people become common ancestors, i.e., ancestors of everyone alive now.

There are two ways to understand the principle of historical common ancestors. One is to note that an individual’s ancestors double

5. Gideon S. Bradburd, Peter L. Ralph, and Graham M. Coop, “Disentangling the Effects of Geographic and Ecological Isolation on Genetic Differentiation,” *Evolution: International Journal of Organic Evolution* 67, no. 11 (Nov. 2013): 3258–73.

6. Douglas L. T. Rohde, Steve Olson, and Joseph T. Chang, “Modelling the Recent Common Ancestry of All Living Humans,” *Nature* 431, no. 7008 (Sept. 2004): 562–66; Joseph Lachance, “Inbreeding, Pedigree Size, and the Most Recent Common Ancestor of Humanity,” *Journal of Theoretical Biology* 261, no. 2 (Nov. 2009): 238–47.

each generation. However, having twice as many unique ancestors, each generation becomes impossible after a few dozen generations— 2^{30} is over one billion, more than the entire world population thirty generations, or about 750 years, ago. Common ancestors necessarily appear on multiple ancestral lines after a few hundred years. Every person alive today has many millions of ancestors that were on earth when the tribes of Israel formed, but estimates are that only fifty to 100 million people were alive at that time. The other way to think about this is to realize that the number of descendants of a reproductively successful ancestor will just keep growing. One or two individuals migrating to a new continent and having children will eventually cause that entire continent's population to be connected to all of the migrating individual's past ancestors.

It is not just possible but statistically very likely that billions of people alive today are descendants of ancestors from not just one but *many* of the tribes of Israel. This is particularly likely if the tribes were scattered, intermingled, and had many descendants—a definite historical possibility. So, when it comes to *ancestral* ties to scattered Israel, I expect that most individuals, if not *everyone* alive today, qualify as a literal descendant of the tribes of Israel. At the same time, we all have similar ties to many ancient civilizations.

Discovering the literature on population modeling, I realized that I should not be surprised at being declared a literal descendant of Ephraim—I am probably a descendant of many people who were alive three thousand years ago. If this is true, why should I be surprised that Ephraim was one of them? These ancestral ties are just a factor of time, population growth, population admixture, and most importantly a doubling of the number of possible ancestors every generation. Remote and faint ancestral ties to a specific person or group of people who were alive thousands of years ago could not be considered anything special because *everyone* alive today is extremely likely to have ancestors scattered across entire continents from many ethnic groups when you go that far back in human history.

Is it possible to discover a single common ancestor in DNA? The short answer is no—it is unlikely that any two individuals carry traceable genetic information from any specific common ancestor if they are more than about eleventh-degree relatives (fifth cousins).⁷ As years pass, making common ancestors farther and farther remote in time, the probability of identifiable shared genetic ancestry drops dramatically. The human genetic code contains three billion base pairs, which are separated into about a hundred new segments each generation. By the time you get five or six generations back, there will probably be ancestors from whom you have not inherited any DNA. It is likely that you do not have a single DNA base pair attributable to most of your direct ancestors ten or more generations back.

Proving that an individual has a special genetic link with a specific individual or group that lived thousands of years and over one hundred generations ago would be impossible without correlating genetics with a continuous cultural heritage (such as that which exists among modern Ashkenazi Jews). Therefore, even with the best genetics possible, we are unlikely to find any genetic confirmation of “lost” Israelite connections in any group living today.

Accepting Scientific Reality

As I studied these genetics principles, I came to the conclusion that the lost tribes of Israel are not just lost and scattered, but that anything that can be called a “tribe” is completely gone. They are clearly culturally extinct and certainly genetically obsolete as a definable entity. To be sure, ancestral ties are probable, but they are nothing special. Why should chance ancestral ties be meaningful if the ancestral connections are unidentifiable?

7. Catherine A. Ball, et al., “AncestryDNA Matching White Paper,” Ancestry.com, last updated July 15, 2020, <https://www.ancestrycdn.com/support/us/2020/08/matchingwhitepaper.pdf>.

Even though I became less concerned about a patriarch saying I was a literal descendant of Ephraim, I became more and more troubled by the doctrine of the gathering of Israel ingrained in the history, scripture, and culture of the Church of Jesus Christ of Latter-day Saints. How can a tribe really be restored after it has disappeared?

During the time I studied population genetics as it relates to tribal identity, my daughter had been using Primary songs to memorize the Articles of Faith. Her singing the first line of the tenth article of faith stuck in my head, “We believe in the literal gathering of Israel and in the restoration of the ten tribes.” I began asking myself: is this “literal gathering of Israel” and “restoration of the ten tribes” something that I can really believe? Joseph Smith could not have known, like I know, that the lost tribes are not lost like a set of keys is lost, waiting to be found when someone looks in the right place; instead, they are lost in the sense that they have forgotten who they are, and the physical evidence of their birthright is gone.

Spiritual Answers to Scientific Questions

Because of these concerns, I began to pray to know how to understand gospel principles surrounding the gathering of Israel. Concurrent with my prayers, I had been planning to begin serious scripture study of this topic for several weeks. The thought of studying something that was so troubling to me was daunting, so I procrastinated, focusing my scripture study on preparation for the youth class I taught on Sundays.

One night, I finally decided to initiate a focused scripture study on the gathering of lost Israel. After a prayer, I determined to look up each scripture listed in the Topical Guide to see if I could find some insight to address my concerns. I had not finished the first reference when my wife, Brooke, who was not aware that I had started this line of inquiry, turned to me and said, “Have you heard this scripture? It has some really interesting imagery.” She proceeded to read Ezekiel 37:1–14.

In this passage, the Lord shows Ezekiel a valley of dry bones. The Lord asks the prophet, “Can these bones live?” Ezekiel responds, “O Lord God, thou knowest,”⁸ as if to say, “they are so far beyond dead that they are dry and disjointed! You know that it is absurd that these bones should live.”

As my wife read this scripture, I immediately saw that over several months the Lord had been teaching me to understand Ezekiel’s prophecy. He had been showing me the same thing he showed Ezekiel, only he had been showing it to me in a language I understood—the language of population genetics. The lost tribes of Israel are like a valley of dried bones, the genetic heritage meaningless and the cultural heritage gone; they have been completely lacking in life for thousands of years. Rationally, there is no possible way that these tribes could come to life. There can be no gathering of a tribe that is culturally and genetically gone, just as it would be impossible to bring dried bones back to life. “Can these bones live?”

Brooke read on. After showing Ezekiel the valley of dry bones, the Lord commands Ezekiel to “prophesy upon these bones, and say unto them, O ye dry bones, hear the word of the Lord.”⁹ Ezekiel prophesied as he was commanded and “the bones came together, bone to his bone . . . the sinews and the flesh came up upon them, and the skin covered them above: but there was no breath in them.”¹⁰ As Brooke read this, I noticed that the Lord did not directly command the bones to come to life, but he told his prophet to prophesy to the bones, and they joined together and were restored. I saw in my mind’s eye an army of patriarchs, commanded to prophetically declare tribal lineage to all they bless. Through prophecy, patriarchs restore ancient identities, joining the dry bones together and covering them with the sinews of

8. Ezekiel 37:3.

9. Ezekiel 37:4.

10. Ezekiel 37:7–8.

gospel promises and the flesh of assured spiritual gifts. Patriarchs prophetically declaring lineage restore a cultural identity, which is the first step to a shared cultural heritage.

After Ezekiel prophesies for the dry bones to come together, the Lord commands Ezekiel to prophesy to the four winds to “breathe upon these slain, that they may live.”¹¹ Ezekiel prophesied as he was commanded, “and the breath came into them, and they lived, and stood up upon their feet, an exceeding great army.”¹² As my wife read this, I saw Saints, with knowledge of their tribe revealed to them by their patriarchs, seeking out the blessings promised to their ancestors in temples built across the four corners of the earth. I saw prophets and apostles declaring blessings and duties to these Saints who have been joined to their covenant identity, thus restoring a mission and culture, completing the restoration of a tribal identity and breathing life into the house of Israel. Ezekiel’s vision concludes with the Lord declaring:

these bones are the whole house of Israel: behold, they say, Our bones are dried, and our hope is lost: we are cut off for our parts . . . Thus saith the Lord God; Behold, O my people, I will open your graves, and cause you to come up out of your graves. . . . And ye shall know that I am the Lord, when I have opened your graves, O my people, and brought you up out of your graves, And shall put my spirit in you, and ye shall live, and I shall place you in your own land: then shall ye know that I the Lord have spoken it, and performed it.¹³

My vision of Ezekiel’s prophecy ended as my wife finished this passage. I may have never found this scripture on my own, since it was not listed in the Topical Guide under “Gathering of Israel.” The subsequent section of Ezekiel 37 describes joining the sticks of Judah and Ephraim, another important part of the gathering. Prophecy and revelation on multiple levels (patriarchal, apostolic, and individual) is the only way

11. Ezekiel 37:9.

12. Ezekiel 37:10.

13. Ezekiel 37:11–14.

“dry bones” can become “the whole house of Israel.” Missionaries play a part by telling the dry bones, wherever they are in the world, “Hear the word of the Lord!”¹⁴ Without knowing it, I had been shown that it was impossibly unlikely that there would ever be a group definitively identified as a “lost tribe” through genealogy, history, or genetics, just as Ezekiel could see that the Israelite tribes held captive in Assyria were becoming obsolete during his lifetime. The “bones” of the kingdom of Israel would become very, very dry before Israel was to be restored; the Lord showed this to Ezekiel over 2500 years ago and taught me the same principle through the language of population genetics. I have found that a solid understanding of science can prepare us to ask the right questions, but only through continuing revelation can we understand the meaning of ancient prophecies today.

An Expansive View of the Gathering of Israel

Since my experience with Ezekiel’s valley of dry bones, my eyes have been gradually opened to the possibility of the biblical Abraham, Sarah, Isaac, Rebekah, Jacob, and Rachel being among the common ancestors of all of humanity. Some might say that this is just a fact of mathematics; after all, many people alive on earth at that time are ancestors of billions alive today.

For me, the thought that *everyone* today is likely descended from Abraham brings hope. Abraham did not just want many descendants; he wanted “all the nations of the earth [to] be blessed” by his posterity.¹⁵ It is remarkable to me that it was probably only in the last two or three centuries that these biblical patriarchs and matriarchs could have become common ancestors of everyone. Perhaps this was necessary before the priesthood keys related to gathering Israel could be restored in the last days. Malachi prophesied that acknowledging our common

14. Ezekiel 37:4.

15. Genesis 12:1–3, 22:18.

ancestry would be critical for us to survive the last days.¹⁶ Joseph Smith saw temple work as a great welding link that would connect all the people of the world, past and present.¹⁷ The whisperings of the Holy Spirit have taught me that lost Israel is not a *few* people among the many; it is a connection that is unacknowledged within in *each and every* person I see. Through the restored gospel of Jesus Christ and the keys of prophecy, *everyone* in the world can be blessed with the inheritance that is rightfully theirs by hearing and heeding the word of the Lord.

16. Malachi 4:5–6.

17. Doctrine and Covenants 128:18.

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