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## **Introduction**

It has been a hot topic, in the field of archaeology and anthropology, that when and how humans came to exist in various continents such as America. America, presumably the last continent being populated, has piqued the interest of many New World archaeologists. From the hypothesis of continental drift to the theory of evolution, the researchers and other experts all strive to establish commonly held theoretical and evidence-base framework that provide explanation to phenomena on which humans are not able to make direct observation due to time. To give explanations to these phenomena, it is essential for us to look at the most credible and up-to-date scientific literature and make clear on what measures the scientists adopt to yield their conclusions. This paper revolves around the exploration and discussion on the early migration and peopling in the land of America and the early existence of distinct cultures. A series of relevant literature are presented in the body paragraphs to give readers a general picture on the topic itself, in which several most widely accepted theories are presented. The referenced literature will guide readers through different stances on the topic from experienced researchers and archaeologists. To mass majority in this society, archaeological evidence may not be of great important, but discussion on human existence in ancient America serves as mean for Native Americans to understand as well as appreciate their heritage. Only through the exploration in the cultural heritage and origin can society as whole start to make necessary adjustments on the policy and cultural norm in order to

accommodate people of different cultural background. Besides, in modern-day society, Native Americans are often regarded as a marginalized group that receives little to no attention.

Introducing people to the cultural, linguistic, and social heritage of ancient Americans can also be made of implication to policymakers, healthcare workers, linguists, and people without cultural competency and proficiency so that Native Americans can be integrated into mainstream American society. For these reasons, this article may serve to equip people with more understanding on the Ancient American migration and culture.

## **1. Literature Review: Theories and Evidence**

### **1.1 Introduction to Literature Review**

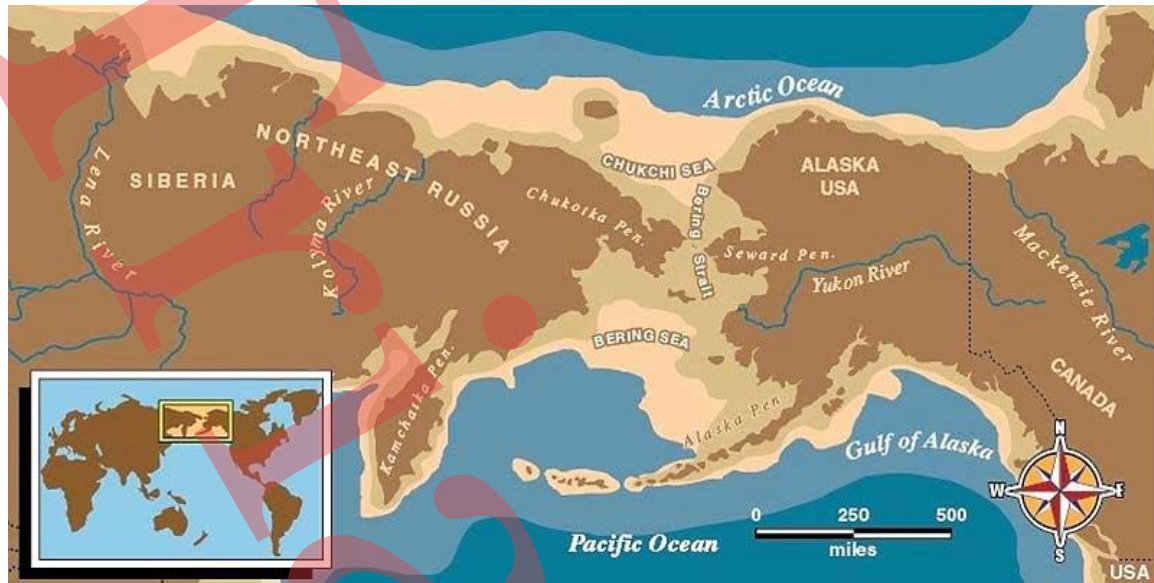
For a long time, the ancient history of North America is distorted; archaeological experts and laymen interested in the field accredited the establishment of American civilization to people like Europeans and Atlanteans. As ridiculous as it may sound, people also have been attempting to argue that the earliest American civilization was formed by aliens. Today, we are able to form more coherent and reliable hypotheses on the matter, which is backed up by the most up-to-date evidence or theories that incorporate concrete archaeological evidence. There are a number of hypotheses made on where Native Americans' ancestor came from and how they were able to disembark on the land of America. Both facets touch on the genetic, geographic, linguistic, and archaeological aspects of ancient Native American culture, which to modern-day humans are observed through the excavation of different tools the ancient Americans used and the observation made on different mounds and constructions that were supposedly built by the ancient Americans. Two of the most prominent hypotheses in the field include Solutrean hypothesis and the hypothesis of Clovis culture. Thus, the following section, in a chronological order, is dedicated to introduce hypotheses and

theories in order to give readers a more generalized view on how experts in the field describe ancient American culture and the existence of humans in ancient America. More specifically, the following section will introduce two of the untenable hypothesis including Solutrean hypothesis and Clovis-first hypothesis. Then, it will introduce the Beringian Standstill hypothesis and pre-Clovis hypothesis. Pre-Clovis hypothesis will serve a role of replacing the Clovis-first hypothesis, demonstrating how the Clovis-first hypothesis loses its validity in light of the new pre-Clovis hypothesis

## **1.2 Beringian Standstill Hypothesis (BSH)/Beringian Incubation Model (BIM)**

Before resuming to explain the earliest civilization documented in America, which consists of Lithic and Clovis culture, we can perhaps equip ourselves with more understanding on how the earliest civilization came to exist. Gaining such understanding is not to be done without mentioning the Beringian Standstill Hypothesis. The Beringian Standstill hypothesis sets forth that the east Beringian Arctic steppe-tundra was a home to many indigenous who migrated from Eurasia before they were able to reach North America. Additionally, the Beringian Standstill hypothesis holds that the ancient Beringians are the only ancestral population of Native Americans. While the hypothesis does not give any consideration to species like apes or other humanoids, it directly points out that Beringians were the ancestor of humans existing in the Paleo Indian period, and it is one of the convincing theory that deals with the existence of humanoid before Native Americans crossed the Bering Strait.

Now, to put this outstanding finding into perspective, we have to look at a map of the Bering Land Bridge:



(credit to Kathy Alexander of the National Park Service, December 2021)

As the map shows, before the ice melted between the land of Eurasia and America, Bering Land Bridge was the only route that enables the settlers of Siberia and Eurasia to migrate to America. The map stretches all the way from Siberia to the modern-day Canada and Alaska. Assuming the glacier age hypothesis is correct, we are easily able to see how people entered America from places in Asia and Eurasia.

One of the evidences that make the Beringian Standstill Hypothesis so convincing to modern scholars is the DNA lineage between Asian and Native Americans. “Genetic studies demonstrate that Native Americans inherited their mitochondrial DNA from a handful of founder who arrived from Asia via Beringia” (Kivislid et al. 2007). Furthermore, in one of the studies conducted in 2018, data shows that a population of proto-Americans migrated from Asia during, or even prior to the Last Glacial Maximum. According to Vachula (Vachula et al. 2018), fecal biomarkers and elevated biomass burning in the Beringia region support the evidence that humans lived in Beringia region before they migrated to North and South America. “Elevated burning defies the expectation that natural fires would be less frequent in the Arctic during the last Glacial, thereby suggesting human

ignition as the likely culprit.” Additionally, “DNA of ancient human skeletons and living populations indicates direct links between far northeastern Asia and America” (Graf & Buvit 2017). Both DNA and archaeological data suggest the bond between Native Americans, Beringians and Eurasians. The Beringian Standstill Hypothesis remains as the most convincing theory of connection between Native Americans northeastern Asians.

Now, we have gained an understanding on how early settlers were able to migrate to America, we can continue to explore who these settlers are. Different theories have different stance on the issue. Some theories claim that the early settlers were of European descent, while other theories suggest that the early settlers of America were of Eurasian descent, particularly Siberian. The following three sections is dedicated in discussing two of the strongly held theories by archaeologists before the newer evidence suggests otherwise.

### **1.3 Solutrean Hypothesis**

Solutrean culture is the basis of Solutrean hypothesis. Solutrean culture was found largely in today’s Portugal, Spain, and France 17,000 years ago. It remained as one of the most popular assumptions on the peopling of America in the 20<sup>th</sup> century. Since 1999, Dennis Stanford and his colleagues have been the most prominent advocates for the Solutrean hypothesis. “The Solutrean hypothesis for the origin of the Clovis archaeological culture contends that people came from south-western Europe to North America during the Last Glacial Maximum” (Oppenheimer et al. 2014:752). 13,000 years ago, along with their biological properties, the south-western Europeans brought their methods of producing various living and hunting tools to the land of America by taking the boat through the North Atlantic Ocean. From there, they formed the earliest lithic culture in America, which then transformed to the Clovis culture from 13,500 BC to 11,000 BC.

The hypothesis is mainly based on the fact that the Clovis lithic technologies resemble those of European Solutrean. Experts supporting the Solutrean hypothesis usually use archaeological evidence found in places like Virginia, Pennsylvania, and Maryland to back their point up. Genetic evidence has also helped the proponents of the Solutrean hypothesis to get their point across. According to Brown and his colleagues (Brown et al. 1998), the mitochondrial DNA called “halogroup X2” is present in the North America as well as Anatolia, suggesting that Caucasian may have been the founder of early American population.

Solutrean hypothesis is halogroup-independent in nature. In other words, it is a hypothesis viewing that the peopling of America originates solely from Europe but not in places like Siberia or parts of Asia. Although Solutrean hypothesis remained as one of the most popular theories in the 20<sup>th</sup> century, scientists found other evidences defying the rationality of this hypothesis. In 2008, the evidence of Fagundes’ work (Fagundes et al. 2008) points out that halogroup X2 was merely part of the gene pool of Native American founding population. Therefore, the Solutrean hypothesis does not stand due to the fact that other types of mitochondrial DNA of Native Americans exist in other racial groups in Asia as well.

Unlike modern belief, Solutrean proposes that the migration from Europe to America happened during the Last Glacial Maximum as opposed to before or after the Last Glacial Maximum. What replaced the Solutrean hypothesis are the evidences supporting that ancestors of Native Americans came from Eurasia, in which it specifies that there are parallel genetic histories existing between the Native American races and races in Asia (Non-east Asia) and Europe. Simply put, certain mitochondrial DNA and physical features found in non-east Asiatic races are also found in populations of Native American descent, but in low frequencies, which in turn, dismisses the

proposal of the Solutrean hypothesis that the peopling of North America originated from Europe through a voyage across the Atlantic Ocean. To continue, the next section will introduce an alternative theory.

#### **1.4 Clovis-first model/Clovis culture & Lithic stage/Paleo-Indian**

The Clovis culture, also known as the Clovis-first model, is named after various lithic technologies that were found between 1920 and 1940 near Clovis in the state of New Mexico. The most advanced archaeological measures and radiocarbon methods suggest that the most of the lithic technologies found in association with the Clovis culture date back to 13,200 to 12,900 years ago. Following the discovery of the Clovis sites in North American in the early 20<sup>th</sup> century, scholars in the field of anthropology and archaeology came to an understanding that the Clovis people, who incorporated the lithic technology into their life based on hunting, were the first human settlers that founded the earliest culture on the continent of America. The distinct stone tools associated with Clovis culture include fluted-stone spear point, stone blades, cutting tools of stone flakes, and many other stone tools used by Clovis people to hunt mammonths, horse, mastodon, and other animals. It is worth a moment's notice that the blade used by Clovis people and the Solutrean people is different, as the blade used by Clovis people have bi-facial fluting that enables Clovis people to fit the blade onto a spear foreshaft more easily. The earliest site where archaeologists find evidence of existence of Clovis culture is in Sonora, Mexoco. "...the earliest widespread and recognizable group of hunter-gatherers were in place ~13,390 years ago in southwestern North America (Sanchez et al. 2014:10972)." Sanchez, in 2017, presented us with the evidence for Clovis hunting and habitation at an archaeological site in Sonara, Mexico. The presented data enabled scholars in the field to broaden the period of existence as well as the geographic range of Clovis culture and



people. Today, Clovis still exists supposedly as the oldest civilization on the land of America, although there a a number of scholars suggest otherwise.

It is hypothesized that the earliest settlers of America, in this case the Clovis people, came from Asia. They either walked or took the boat to cross the an intercontinental land bridge after melting glaciers opened their way to the land of America (Watson 2017: 5554). The intercontinental land bridge is named as the “Bering Land Bridge”. Actually, the Clovis-first model started to gather its pieces and bit as early as 1590, when Acosta first suggested a gradual migration made up of hunters from Asia (Whitley & Dorn 1993). There are many other evidences supporting the hypothesis that the earliest settlers came from other continents and that Clovis culture is indeed the oldest civilization in both North and South America that lasted from 13,500 BC to 11,000 BC . “The Clovis complex is considered to be the oldest unequivocal evidence of humans in the Americas, dating between 11,500 and 10,900 radiocarbon years before present (Waters & Stafford 2007:1122).” Although there is ongoing argumentation as to the specific date of the Clovis culture, there has been an established consensus in agreeing that ancestral Indian populations came from Asia, and it was through the Being Land Bridge that they were able to arrive in North America at some point in the last ice age (McGhee 1989).

Another important thing is that whether or not the American Indians really came from Asia and Eurasia because only after we figure out this question can this paper continue to incorporate evidences holding that Paleo Indians and Clovis culture are the earliest civilization in America. To answer this question, we need to look at both genetic and geographic evidence. There is very limited direct evidence regarding the genetic lineage of Native Americans, one of which is Anzick-1, who was buried between 12,707 and 12,556 years ago at the Anzick site in Montana.



Upon excavation and taking Anzick's relic into the laboratory, scientists compared his nuclear genome with that of Eurasian and Native American populations, demonstrating that Anzick's genome most resembles the genome of Native American populations, and his genome was also found to be similar to Siberians than to other Eurasians (Raff & Bolnick 2014).

To date, most of the literature written about the early peopling of American involve either DNA or archaeological data from documented archaeological sites both in North and South America. According to Gruhn (Gruh 2020), a number of articles published in *Nature* find evidence that the early peopling of the American continent happened earlier than what people generally accept. As dramatic as it seems, the early settlement of American continent is seemed to have began at least 10,000 years earlier than many scholars assumed. The radiocarbon dating of archaeological sites in America indicates that some regions of Yukon in Canada, Alaska, and the United States already showed the trace of human settlement before 13,000 years ago. "For decades, that time frame was widely considered to mark the earliest possible date of initial entry, until data from sites more than 13,000 years old in North and South America, first reported in the 1970s, raised the possibility of earlier arrivals (Gruh 2020:47)."

### **1.5 The Pre-Clovis Hypothesis**

Interestingly, the newer and most up-to-date evidence suggests that there is an another side of the story as to who the earliest settlers of America were. The pre-Clovis hypothesis is this ground breaking theory which rejects the rationale of both the Solutrean hypothesis and Clovis-first hypothesis. The pre-Columbian period in North America is commonly divided into more than 10 periods in total, including the earliest Lithic stage, Clovis culture, Folsom culture, Archaic period, Dalton period, and many other. This section will be dedicated to discuss the evidence of Pre-Clovis

culture before the Clovis culture became insofar prevalent on the continent of America. As opposed to what is discussed in the previous section, many archaeologists suggest that the earliest peopling of America began before the Clovis culture. The Pre-Clovis is the name that archaeologists give to the people who settled in both North and South America before the Clovis culture prevailed. Besides, the Pre-Clovis culture is typically viewed to be began before 11, 500 RCYBO, which is the the temporal boundary separating the Pre-Clovis and Clovis culture.

A number of archaeological sites have presented us with the evidence indicating that the earliest peopling of American continents began before the Clovis culture. “These sites include Meadowcroft Rockshelter, Penn.; Cactus Hill, Va.; Saltville-2, Va.; and Topper, S.C. Except for Topper, pre-Clovis (earlier than 11,500 RCYBP) remains were encountered incidental to conducting normal research. (Goodyear 2005:103)” The bifacial projectiles found in archaeological sites in Pennsylvania, Virginia, and South Carolina made it easy for archaeologists to see how Clovis culture emerged from these technologies.

Along with many other evidences, Goodyear’s work helped to provide an alternative explanation for the origins of Clovis, which is oftentimes assumed to started from Siberia and through the crossing of Bering Land Bridge. One of these evidences is a study conducted in 2017 by Jennings and Waters. The study incorporates Debra L. Friedkin site in Texas to demonstrate that pre-Clovis culture is the origin for the Clovis culture. “We show that while Clovis and pre-Clovis share some important technological traits, they also differ in important ways. We conclude that the pre-Clovis assemblage from Debra L. Friedkin cannot be called “Clovis,” but it could represent a technological antecedent of Clovis. (Jennings & Waters 2017:25)” Also, according to Fagundes and his colleagues (Fagundes 2007), by re-evaluating the age of the Clovis sites found in North

America, researchers have come to a conclusion that the age of these Clovis sites is only between 12.7 and 13,2 thousand years ago. Furthermore, the confirmed human presence at the Monte Verde site that is located in South America ages around 14.5 thousand years ago. Because of the consensus on the temporal boundary between pre-Clovis and Clovis culture, which is 11,500RCYBP, now the re-evaluated age of various Clovis sites are calling for an alternative hypothesis to the Clovis-first model. Concurrently, DNA data has also supported the pre-Clovis hypothesis. “In general, the studies on mtDNA control-region variation have taken to support a pre-Clovis migration, between ~20 and 30 kya, before the LGM. (Fagundes 2007:584)” Although the limited information content of the mtDNA control region has caused uncertainties about and range on these dates, the Solutrean hypothesis that is long held by some of the archaeologists is defied. The question arose as to whether the peopling of America started with Clovis culture, and from the mentioned evidences, we are able to see that pre-Clovis hypothesis is more convincing than the old Clovis-first model because most up-to-date articles all confirmed the validity and reliability of pre-Clovis hypothesis.

From here, we are able to see the controversy between the Clovis-first model and the pre-Clovis culture as some scholars view the Clovis culture is the earliest culture contributing to the peopling of American but on the other hand, some other scholars view the pre-Clovis culture to be the origin of the Clovis culture that existed before the Clovis culture. “The empirical implications of the Clovis-first hypothesis are virtually untested. Scientifically evaluating the first peopling controversy requires scrutinizing the empirical test implications and logical coherency of both competing hypotheses (Whitley & Dorn 1993:626)” The controversy between the Clovis-first

hypothesis and the pre-Clovis hypothesis will continue to be tested through the discovery of other archaeological sites in America.

## **2.1 Implication & Discussion**

As stated in the introduction, Native American is oftentimes viewed as a marginalized group in modern American society. Canada and the United States both share this undeniable trait. Not only is Native American population low in number, but they also have less access to the healthcare system, criminal justice system, and social support network made up of neighbors, social workers, and advocates. Sometimes, the language service is not provided to them, and in some cases, they are also involuntary to seek help from people outside their unique culture because traditional Native American culture influences its members in a way that they always seek for assistance of individual and family matters from people inside their circle. For example, many Native Americans tend to find help from their leaders or people of psychic ability to ameliorate and cure their disease.

Throughout American and Canadian history, Native Americans encounter a wide range of challenges when attempting to integrate themselves into mainstream and dominant American society. As early as the founding period of the United States, there have been people who try to integrate Native Americans into White-dominant culture. For example, some Native Americans are invited to attend standard American schools in states like Virginia and North Carolina. But they are only left with no use to the original Native culture when their peers and families find out that they are unable to do things like hunting, building cabins, and living the lifestyle of traditional Native American culture. Upon the colonization of American by White races, endless battles were fought between the White settlers and Native Americans. The derogatory term “savages”, as many White

people would call them, has prevented the the signing of the peace treaty between Native tribal leader and White people in power. Although nowadays Native tribes have accepted and adopted the lifestyle of dominant American or Canadian society, a substantial amount of Native Americans are still preaching and living the traditional way of life.

In modern Canada, the Aboriginal people's health are still at stake compared other races. "While the last half century has witnessed significant gains in life expectancy for Canada's Aboriginal population and a considerable reduction in infant mortality, we see several troubling patterns of health including a high burden of chronic and infectious disease paired with severely inadequate approaches for addressing the social determinants of Aboriginal health. (Richmond & Cook 2016:2)" According to Richmond and Cook (Richmond & Cook 2016), Indigenous people, especially prior to colonization, relied heavily on their own ecosystem of Canada, in which their diet, medical practice, philosophy, and social hierarchy are deeply rooted in their own unique socio-ecosystem. This entrenchment in their own values and way of life has prevented them from becoming open-minded and accept the new way of life brought by the colonists. In the late 19<sup>th</sup> century, the "Indian Act" was signed into the law, giving the federal government of Canada constitutional responsibility for affairs relate to Indian population. Following signing the Indian Act, a number of treaties were also signed between the Canadian federal government and Indian people, in which Indians gave up some of their lands to the settlers in exchange for monetary resources, farming equipment, clothing, rights to hunt, and other benefits. The Indian Act is in some form of an epitome of ignorance and broad generalization because to say that federal government has the right to civilize Indian shows government's assumption that Indian culture is inferior and out-dated in nature. This dynamic between the Canadian federal government and Aboriginals happened less

than 200 years ago. We still have a long way to go, regarding how to better integrate Indian into mainstream Canadian culture. However, why should integration be deemed as a must for policymaker or Aboriginals? Maybe it is better to leave them be their own way. But a number of chronic as well as acute diseases due to Aboriginals' unique diet and lifestyle inescapably persuade government as well as advocates to render help to Aboriginals. The help cannot be given without proper assimilation and integration.

Enough with the history and situation of Native Indians, how can be evidences of Aboriginals' ancestry made of implication to people in different disciplines is a focus of this section. Thus, the Cultural Competence Continuum is introduced. First proposed by Terry Cross, Cultural Competence Continuum is divided into six stages from cultural destructiveness to cultural proficiency. Hypothetically speaking, when an individual or a group of people encounter a new culture, they are unable to assimilate and integrate themselves into this culture, thus they develop hatred or other negative emotions or actions towards such culture. After they try to put their identity aside and understand the various ideologies and customs presented by the novel culture, they can eventually become integrated and learn to appreciate the value of the new culture. The Cultural Competence Continuum is manifested in relationship between European settlers and Aboriginals because at first, they tried to fight each other out of self-interest, but as Europeans and Aboriginals developed a benign relationship, they ultimately become able to appreciate each other and the idea of integration and common ground. Going from cultural destructiveness to cultural proficiency is no doubt a gradual process that requires individual effort on many levels. Learning to appreciate one's cultural heritage and background is a premise because it helps people like Aboriginals to understand where they came from and the pride that is being taken when participating in social

activities as Aboriginals or Indigenous. By taking pride in their identity and background, Indigenous people can also make other racial groups to understand them better in terms of the way they live and how should they be interacted in different settings. To sum up, the discussion and exploration of ancient American culture and origins can contribute to a better integration society where everyone can learn where the Indigenous people came from and why they should appreciate their presence after all those years of migration from Eurasia and Siberia and all the suffering they have been through when trying to hunt animals for a living in Beringia.



## Bibliography

Anon

Native American archaeological periods – legends of America. *Legendsofamerica.com*. <https://www.legendsofamerica.com/native-american-archaeological-periods/>, accessed February 19, 2022.

Brown, M. D., S. H. Hosseini, A. Torroni, H. J. Bandelt, J. C. Allen, T. G. Schurr, R. Scozzari, F. Cruciani, and D. C.

Wallace

1998

mtDNA haplogroup X: An ancient link between Europe/Western Asia and North America? *The American Journal of Human Genetics* 63(6):1852–1861. DOI:10.1086/302155, accessed February 19, 2022.

Fagundes, Nelson J. R., Ricardo Kanitz, Roberta Eckert, Ana C. S. Valls, Mauricio R. Bogo, Francisco M. Salzano, David Glenn Smith, Wilson A. Silva Jr, Marco A. Zago, Andrea K. Ribeiro-dos-Santos, Sidney E. B. Santos, Maria Luiza Petzl-Erler, and Sandro L. Bonatto  
2008

Mitochondrial population genomics supports a single pre-Clovis origin with a coastal route for the peopling of the Americas. *The American Journal of Human Genetics* 82(3):583–592. DOI:10.1016/j.ajhg.2007.11.013, accessed February 19, 2022.

Goodyear, Albert C., and Publication Info

Evidence of pre-Clovis sites in the Eastern United States. *Scholarcommons.sc.edu*.

[https://scholarcommons.sc.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1026&context=sciaa\\_staffpub](https://scholarcommons.sc.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1026&context=sciaa_staffpub), accessed February 19, 2022.

Gruhn, Ruth

2020

Evidence grows that peopling of the Americas began more than 20,000 years ago. *Nature* 584(7819):47–48. DOI:10.1038/d41586-020-02137-3, accessed February 19, 2022.

Jennings, Thomas A., and Michael R. Waters

2014

Pre-Clovis lithic technology at the Debra L. friedkin site, Texas: Comparisons to Clovis through site-level behavior, technological trait-list, and cladistic analyses. *American antiquity* 79(1):25–44. DOI:10.7183/0002-7316.79.1.25, accessed February 19, 2022.

Oppenheimer, Stephen, Bruce Bradley, and Dennis Stanford

2014

Solutrean hypothesis: genetics, the mammoth in the room. *World archaeology* 46(5):752–774. DOI:10.1080/00438243.2014.966273.

Raff, Jennifer A., and Deborah A. Bolnick

2014

Palaeogenomics: genetic roots of the first Americans:

Palaeogenomics. *Nature* 506(7487):162–163. DOI:10.1038/506162a, accessed February 19, 2022.

Sanchez, Guadalupe, Vance T. Holliday, Edmund P. Gaines, Joaquín Arroyo-Cabrales, Natalia Martínez-Tagüeña, Andrew Kowler, Todd Lange, Gregory W. L. Hodgins, Susan M. Mentzer, and Ismael Sanchez-Morales

2014

Human (Clovis)-gomphothere (*Cuvieronius* sp.) association ~ 13,390 calibrated yBP in Sonora, Mexico. *Proceedings of the National Academy of Sciences of the United States of America* 111(30):10972–10977. DOI:10.1073/pnas.1404546111, accessed February 19, 2022.

Tamm, Erika, Toomas Kivisild, Maere Reidla, Mait Metspalu, David Glenn Smith, Connie J. Mulligan, Claudio M. Bravi, Olga Rickards, Cristina Martinez-Labarga, Elsa K. Khusnutdinova, Sardana A. Fedorova, Maria V. Golubenko, Vadim A. Stepanov, Marina A. Gubina, Sergey I. Zhadanov, Ludmila P. Ossipova, Larisa Damba, Mikhail I. Voevoda, Jose E. Dipierri, Richard Villems, and Ripan S. Malhi

2007

Beringian standstill and spread of Native American founders. *PloS one* 2(9):e829. DOI:10.1371/journal.pone.0000829.

Vachula, Richard S., Yongsong Huang, William M. Longo, Sylvia G. Dee, William C. Daniels, and James M. Russell

2019

Evidence of Ice Age humans in eastern Beringia suggests early migration to North America. *Quaternary science reviews* 205:35–44. DOI:10.1016/j.quascirev.2018.12.003.

Waters, Michael R., and Thomas W. Stafford Jr

2007

Redefining the age of Clovis: implications for the peopling of the Americas. *Science (New York, N.Y.)* 315(5815):1122–1126. DOI:10.1126/science.1137166, accessed February 19, 2022.

Watson, Traci

2017

News Feature: Is theory about peopling of the Americas a bridge too far? *Proceedings of the National Academy of Sciences of the United States of America* 114(22):5554–5557. DOI:10.1073/pnas.1705966114, accessed February 19, 2022.

Whitley, David S., and Ronald I. Dorn

1993

New perspectives on the Clovis vs. Pre-Clovis controversy. *American antiquity* 58(4):626–647.  
DOI:10.2307/282199.

Pre-Clovis