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Sequencing of DNA from Native American ‘Clovis boy’ forces researchers to rethink handling of tribal remains.

Nature
Ewen Callaway
February 12, 2014

The remains of a young boy, ceremonially buried some 12,600 years ago in Montana, have revealed the ancestry of one of the earliest populations in the Americas, known as the Clovis culture.

Published in this issue of Nature, the boy’s genome sequence shows that today’s indigenous groups spanning North and South America are all descended from a single population that trekked across the Bering land bridge from Asia (M. Rasmussen et al. *Nature* 506, 225–229; 2014). The analysis also points to an early split between the ancestors of the Clovis people and a second group, whose DNA lives on in populations in Canada and Greenland (see page 162).

But the research underscores the ethical minefield of studying ancient Native American remains, and rekindles memories of a bruising legal fight over a different human skeleton in the 1990s.

To avoid such a controversy, Eske Willerslev, a palaeobiologist at the University of Copenhagen who led the latest study, attempted to involve Native American communities.

Continued on page 2
And so he embarked on a tour of Montana’s Indian reservations last year, talking to community members to explain his work and seek their support. “I didn’t want a situation where the first time they heard about this study was when it’s published,” he says.

Construction workers discovered the Clovis burial site on a private ranch near the small town of Wilsall in May 1968 (see ‘Ancient origins’). About 100 stone and bone artefacts, as well as bone fragments from a male child aged under two, were subsequently recovered.

The boy’s bones were found to date to the end of the Clovis culture, which flourished in the central and western United States between about 13,000 and 12,600 years ago. Carved elk bones found with the boy’s remains were hundreds of years older, suggesting that they were heirlooms. The ranch, owned by Melvyn and Helen Anzick, is the only site yet discovered at which Clovis objects exist alongside human bones. Most of the artefacts now reside in a museum, but researchers returned the human remains to the Anzick family in the late 1990s.

At that time, the Anzicks’ daughter, Sarah, was conducting cancer and genome research at the National Institutes of Health in Bethesda, Maryland, and thought about sequencing genetic material from the bones. But she was wary of stoking a similar debate to the one surrounding Kennewick Man, a human skeleton found on the banks of the Columbia River in Kennewick, Washington, in July 1996. Its discovery sparked an eight-year legal battle between Native American tribes, who claimed that they were culturally connected to the individual, and researchers, who said that the roughly 9,000-year-old remains pre-dated the tribes.

The US government sided with the tribes, citing the federal Native American Graves Protection and Repatriation Act (NAGPRA). The act requires that human remains discovered on federal lands—as Kennewick Man was—are returned to affiliated tribes for reburial. But a court ruled that the law did not apply, largely because of the age of the remains, and ordered that Kennewick Man be stored away from public view in a museum.

Sarah Anzick sought the advice of local tribes over the Clovis boy, but she could not reach a consensus with the tribes on what to do. She gave up on the idea, stored the bones in a safe location and got on with her other research.

In 2009, archaeologist Michael Waters, of Texas A&M University in College Station, contacted...
Anzick with the idea of sending the remains to Willerslev’s lab. (In early 2010, the lab published one of the first genome sequences of an ancient human, a 4,000-year-old resident of Greenland; see M. Rasmussen et al. Nature 463, 757–762; 2010.) “I said, ‘I will allow you guys to do this, but I want to be involved,’” recalls Anzick, who has published more than a dozen papers in leading journals.

In Copenhagen, she extracted DNA from fragments of the boy’s skull ready for mitochondrial genome sequencing, which offers a snapshot of a person’s maternal ancestry. Back in Montana months later, she received the sequencing data and discovered that the genome’s closest match was to present-day Native Americans. “My heart just stopped,” she says.

Right to Remains

After Willerslev’s team confirmed the link by sequencing the boy’s nuclear genome (a more detailed indicator of ancestry), Willerslev sought advice from an agency that handles reburial issues. He was told that, because the remains were found on private land, NAGPRA did not apply and no consultation was needed. Despite this, Willerslev made his own attempt to consult local tribes. This led to a meeting in September at the burial site, with Anzick, Willerslev and their co-author Shane Doyle, who works in Native American studies at Montana State University in Bozeman, and is a member of the Crow tribe.

“That place is very special to me, that’s my ancestral homeland,” says Doyle. He told Willerslev and Anzick that they should rebury the child where he was found. “I think you need to put the little boy back where his parents left him,” Doyle recalls telling them.

Doyle and Willerslev then set off on a 1,500-kilometre road trip to meet representatives of four Montana tribes; Doyle later consulted another five. Many of the people they talked to had few problems with the research, Doyle says, but some would have preferred to have been consulted before the study started, and not years after.

Willerslev says that researchers studying early American remains should assume that they are related to contemporary groups, and involve them as early as possible. But it is not always clear whom to contact, he adds, particularly when remains are related to groups spread across the Americas. “We have to engage with Native Americans, but how you deal with that question in practice is not an easy thing,” he says.

Hank Greely, a legal scholar at Stanford University in California who is interested in the legal and ethical issues of human genetics, commends the approach of Willerslev’s team. But he says that there is no single solution to involving Native American communities in such research. “You’re looking to try to talk to the people who might be most invested in, or connected with, particular sets of remains,” he advises.

Dennis O’Rourke, a geneticist at the University of Utah in Salt Lake City, who studies ancient DNA from populations native to the islands around Alaska, notes that indigenous groups have varying concerns: some want remains reburied, others do not, for instance.

The Montana Tribes overwhelmingly wanted the Clovis boy’s bones interred. Plans for a reburial ceremony, possibly at an undisclosed site, are now being hashed out, with the Crow Nation playing a lead role. It is expected to take place in the spring, after the ground thaws.
DNA evidence recovered from ancient human remains found in Montana is providing definitive answers to the origin of Native Americans.

Scientists unveiled the new research published in the journal *Nature* at the Montana Historical Society in Helena on Wednesday. Remains of the so-called “Anzick boy” show a direct lineage with most native peoples in North, Central and South America.

It’s the story of a burial, putting to rest a two-year-old boy north of present-day Livingston.

State Archeologist Stan Wilmoth says it was a Montana very different than what we see today; an area not far removed from receding glaciers about 12,600 years ago.

“We imagine they probably were in small extended family groups, following the mammoth herds” Wilmoth said of the people in the area at the time of the burial. That young boy is now providing a lot of answers.

“I was just a small child in 1968 when the only Clovis burial site ever identified was accidentally discovered on my parents’ property in Wilsall, Montana” said Stephanie Anzick, now a molecular biologist who has been studying the remains of the bones found on her parents’ place for years.

It’s the oldest human burial discovered in the U.S. and the only specimen ever found of the Clovis people. The Clovis are named for an archeological site in New Mexico and are defined by their use of distinctive sharpened stone tools, like scrapers and spearheads.

This last fall Dr. Anzick and an international team of scientists took this discovery to a much deeper level. They were able to produce the boy’s genome.

“The genome shows without any doubt that this child is (more) closely related to all Native American groups in both North America and South America than to any other group of human beings in the world,” said *Nature* study co-author Professor Eske Willerslev, who works with the Center for GeoGenetics at the University of Copenhagen, Denmark.

The genome shows 80 percent of all Native Americans alive today are direct descendants of this boy’s family.

“That is just incredible,” Willerslev said. “You can say a direct relative, not only a relative, but a direct relative, so to speak, to so many contemporary people. So I think that’s extremely important.”

The research also confirms theories that Native Americans are of Asian descent, likely crossing into North America through a land bridge that has long since disappeared.

Montana State University Native American Studies Professor Shane Doyle says to tribes in the state, what’s just as important as the scientific discoveries, if not more-so, are the cultural discoveries made here. The Anzick boy was buried with about 120 of the sharpened stones tools for which the Clovis people are known. Some of these tools are hundreds of years older than the young child, indicating

---PROJECT ARCHAEOLOGY---
they were heirlooms given to the boy in death.

“This was a two-year old boy, he wasn’t a chief, he wasn’t a great hunter, he wasn’t a great warrior, but the respect and love that was shown for him was really beyond measure,” Doyle said.

This is why Montana tribes plan to make this a re-burial story too. Plans are to bury the bones as nearly as possible to their original location this Spring or Summer.

“We will be putting scientific data back in the ground, we will be putting conclusions or future research back in the ground. But, this boy is not meant to be put on somebody’s shelf and taken off when you feel like it” Doyle said.

“That’s not what his parents put him in the ground for.”

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Shane Doyle Links Montana Tribes, International Researchers over Prehistoric Boy

*MSU News Service*

By Evelyn Boswell

February 12, 2014

BOZEMAN

On a beautiful fall day, Shane Doyle sang a somber song for a young boy who was buried some 12,600 years ago south of present-day Wilsall.

“I wanted to honor the spirit of the boy. There was a disturbance there. I felt like there needed to be some healing,” said the enrolled member of the Crow tribe and an instructor in the Native American Studies program at Montana State University.

Sarah Anzick said the honor song Doyle sang last September was beautiful, touching and a fitting tribute for the child she has known about since she was two years old, approximately the same age the boy was when he died from unknown causes. Anzick’s parents own the property where his skull and bone fragments were discovered in 1968. His are among the oldest human remains found in North America and the only Late Pleistocene human from a Clovis burial site.

Doyle’s song also helped confirm that he was the right person to serve as liaison between Montana tribes and an international team of scientists who conducted a genetic study that led to major findings that will be published in the Feb. 13 issue of the journal, Nature, said Anzick, a co-author and molecular biologist on the project.

“We were so fortunate that he was willing to join our team and facilitate the connections with the Native American communities,” Anzick said. “This is something I had tried to do many years ago, but was unsuccessful.”

A press release from *Nature* said the team of scientists reported the first complete genome sequence of an ancient North American human—the boy whose skeletal fragments were discovered near Wilsall, in association with dozens of ochre-covered stone tools.

The scientists found that the boy belonged to a population from which many contemporary Native Americans descended, including Doyle—and is closely related to all indigenous American populations. The study showed very early division within Native Americans, but all groups from which scientists have DNA show a close relationship to the Anzick child. The scientists said their study also presents one of the strongest challenges so far to the hypothesis about the origin of the Clovis culture.

It was generally believed that the Clovis people originally came from Asia and were directly related to contemporary Native Americans, but an alternative theory suggests that the Clovis predecessors emigrated from southwestern Europe. Clovis, with its distinctive stone tools, is the oldest widespread archaeological complex in North America. It dates to around 12,600-13,000 years ago.

Doyle, who is one of 42 co-authors of the *Nature* paper, said he isn’t a geneticist, but he has experience bringing MSU and the Montana tribes together. He, for one, is the link between MSU nursing students and tribal clinics. Doyle grew up on the Crow Indian Reservation and earned his bachelor’s, master’s and doctoral degrees at MSU. For his doctorate in education, he studied the Absaroka Agency archaeological

*Continued on page 6*
excavation, specifically how tribes and archaeologists can best collaborate. He currently teaches Native American belief and philosophy at MSU. He has been a member of the Bobcat Singers drum group since 1989.

He first met Eske Willerslev, principal investigator for the Anzick project, in September when Willerslev came to Montana, Doyle said. Willerslev is a world-renowned ancient DNA researcher at the Center for GeoGenetics at the University of Copenhagen in Denmark. Willerslev became involved in the Montana study through Anzick and archaeologist Mike Waters, director of the Center for the Study of the First Americans at Texas A & M University. Waters’ predecessor conducted research on Kennewick Man, a prehistoric man found on the banks of the Columbia River in 1996.

Besides singing a Northern Cheyenne honor song at the boy’s burial site, Doyle drove Willerslev to the Crow, Northern Cheyenne, Blackfeet and Flathead Indian Reservations to meet with the tribal historic preservation officers and other Native Americans to explain the genetic study and consult with the tribes about the boy’s reburial. Doyle said he would have taken Willerslev to more reservations, but they didn’t have enough time. Willerslev said he understands the many feelings that are involved when scientists study ancient human remains. He understands why members of the tribes hold strong feelings about the past.

From his Montana trip, he said, “I learned that all the cultural representatives I met in the tribes of Montana are clever peoples with a deep cultural and historical insight, and I was very well received by them all. A great experience. Shane guided me through this process. Without him, I would have been lost.”

In December, Doyle flew to Denmark where he spoke to Willerslev’s graduate students and met Waters for the first time.

Earlier this week, as the Nature publication neared, Doyle, Willerslev, Waters and Anzick spoke at two Montana press conferences about their genetic findings, plans for a respectful reburial, the project’s history, and implications for archaeology in the future. The first press conference was held Feb. 11 at Little Big Horn College in Crow Agency. The second was held Feb. 12 at the Montana Historical Society in Helena, where all the artifacts from the Anzick site will be displayed.

“This is truly a state treasure to be shared and enjoyed by all,” Anzick said.

Doyle said it’s obvious from the large number of artifacts that were found with the boy that he was loved.

Livingston archaeologist Larry Lahren, an MSU graduate who has studied the Anzick site for 40 years, said in a recent lecture at MSU’s Museum of the Rockies, that “You would be overwhelmed to look at the collection to see the size and quantity of the materials.”

He added that the site south of Wilsall wasn’t a cache, but definitely an ancient burial site. In addition to the skull and bone fragments that yielded significant genetic information were the remains of another boy. That boy was six to eight years old when he died. He was buried about 9,000 years ago.

Doyle, the father of five children from ages 1 through 9, said he...
feels for the anguished parents who lost their sons so long ago. He added that normal parental feelings and Native American traditions indicate that it’s time to rebury the boy whose genome is discussed in Nature.

The reburial will occur as soon as this spring and will be as close as possible to the original burial site, Doyle said. One of the major players will likely be Larson Medicinehorse of Crow Agency, who was involved in the reburial of Chief Pretty Eagle almost 20 years ago.

“You feel like it’s morally the right thing to do. It’s the reason why I agreed to help,” Doyle said of the upcoming reburial. Willerslev, Waters and Anzick agreed.

“As a scientist, I have mixed feelings as the remains may well still hold information to be gained,” Willerslev said. “However, I do respect this wish from the tribes, and I know they feel deeply about why it has to take place. Had it been my child, I would have wished it to be reburied too. As scientists, we have a lot to learn from the tribes.”

Anzick said, “I feel a moral obligation for the reburial and yes, as technology advances, we can always learn more. Had these remains been reburied just 10 years ago, they wouldn’t have revealed what we know today, and I’m certain we can learn even more.

“However, out of respect for the Native American communities and the parents of this child, a reburial is an important part of the equation,” Anzick said. “It is my hope through open communications, dialogue and Native American involvement, we can collaborate toward a working model which leads ultimately to a respectful reburial.”

Waters said, “This was a prehistoric tragedy. Someone lost their child. They lovingly buried this child with artifacts and red ochre. Like Shane pointed out, they would have been valuable and important things to people who were hunters and gatherers. They clearly showed the emotions of these early people.

“I appreciate the way Shane has been doing an outstanding job of shepherding us through the process of talking to various Native American groups and finding the path to the proper reburial of these remains,” Waters said.

Doyle said he is impressed with all the scientists on the project.

“They didn’t have to bring me in, he said.

He added that his life hasn’t been the same since he joined their team. Not only has it led to new interactions and opportunities for future collaborations, but the genetic findings proved what he has always believed.

“It’s one thing to believe and sense that your people have been here for thousands and thousands of years,” Doyle explained. “It’s another thing to have scientific evidence and proof that those paleo-Indians were us and we are them.”

The genetic study led to a rush of profound emotions, Doyle said. It made him proud of his ancestors and the way they cared for the land. It gave him new appreciation for family. He was shocked when he realized that the land where the boy was buried is part of the area included in an 1851 treaty signed by his great-great-great-great-grandfather Mountain Tail.

“All my family comes from this place and so did this little boy,” Doyle said. “We are not only connected by geography, but by blood. It was so moving for me.”

Location on the Clovis child burial from the Anzick site is marked by a pole

Photo: Sarah L. Anzick

—PROJECT ARCHAEOLOGY—
Research Team Says Most Native Americans Related to Anzick Boy

*Livingston Enterprise*
By Natalie Store
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Some have dubbed him Montana's King Tut.

In 1968, when contractors digging for loose rock in a Shields Valley bluff accidentally unearthed the remains of a 2-year-old boy whose bones were stained with red ocher, they had no idea they'd found one of North America's most significant archaeological sites.

No one suspected that the boy would eventually help tell the story of how the first Americans got here or from where they came.

But this week, a team of researchers who have been conducting genetic testing on the boy's 12,600-year-old bones announced they've run a complete genome sequence that verifies the boy found at the Anzick Site is related to most Native Americans in North and South America.

They've also determined the boy is of Eurasian descent, making it likely his ancestors traveled from Siberia to Alaska and then down into Montana.

The paper, titled "The Genome of a Late Pleistocene Human From a Clovis Burial Site in Western Montana," will be published this week in the scientific journal *Nature*. The paper is co-authored by Eske Willerslev, a geneticist at the University of Copenhagen in Denmark; Sarah Anzick, the daughter of Mel and Helen Anzick on whose property the site was found and a research specialist at the Rocky Mountain Labs in Hamilton; Michael Waters, an early American archeologist at Texas A&M University; and Shane Doyle, a Native American studies professor at Montana State University.

"The Anzick child is a direct ancestor to many Native Americans today," Willerslev said during a Nature telephone press conference on Tuesday. "As such, our study is in agreement with the truth that present-day Native Americans are direct descendants of the first Americans."

Doyle said that although tribal oral traditions have long confirmed the scientific findings, the paper would force a paradigm shift in archeology.

"You cannot overstate the importance," Doyle said in a recent interview. "This is one of the most significant scientific revelations in the Americas. We know for sure, without any argument, that the same people have been here for 12,000 years. All the archaeology that comes from this point forward is seen in a new context."

The Anzick site was discovered on the property of Mel and Helen Anzick near Wilsall. Along with the remains of the child, the discoverers found more than 100 red paleolithic points, bifaces, unifaces and foreshafts. It is the only known Clovis-period burial and the earliest cultural affiliation of human remains and artifacts in the Northern Hemisphere.

The Anzick site is also likely the first evidence of religion in North
American archeology.

Doyle, a member of the Crow Tribe who is working as a consultant to the researchers studying the Anzick child, said he was startled by the profound love the Clovis people must have had for the child because they were a hunter-gather society who buried him with so many valuable tools. The tools might represent what the boy would have needed to hunt in the afterlife.

“It would be like putting everything you valued most—your cell phone, your laptop, your big screen TV, everything—in the coffin with your child,” Doyle said.

The First Americans

The Clovis people are the earliest documented culture in North America accepted by most archaeologists. They lived at the end of the last ice age, at about the same time that several large mammals such as the woolly mammoth and the short-faced bear were going extinct. The culture got its name from the first site associated with the people, which was found near Clovis, New Mexico, in 1932.

Early American archeology has long debated the origin of Native Americans. Some have surmised Native Americans are descended from a group of East Asians who crossed the Bering Sea via a land bridge. When Kennewick Man was discovered in Washington in 1996, some said he looked “European” which seemed to verify theories of a European origin for Native Americans. But the sequencing of the genome from the Anzick child puts other theories about the origins of the first Americans to rest, the researchers said.

Willerslev, an expert in ancient DNA, has also studied the remains of a 24,000-year-old Siberian boy from a site near the shores of Lake Baikal. Genes found in that 3-year-old boy match some genes found today in Eurasians in the Middle East and Europe and in Native Americans, he said.

Willerslev said the Mal’ta people from Siberia contributed genes to modern Europeans, Asians and Native Americans. Native Americans and the Mal’ta people share about one-third of their genes.

The genetic analysis in the paper...
will also report a gene diversion, Willerslev said. Although the Clovis people appear to have been related to people who came from Siberia, once people reached the Americas, one of the last continents to be populated, they apparently diverged into two groups.

Although the Anzick child is closely related to at least 80 percent of all Native Americans, Willerslev said he is a direct descendant of some and more like a cousin to others, such as some tribes in Canada. He cautioned genetic information isn’t available for all tribes in North and South America.

Consulting the Tribes

Although the scientists’ findings are groundbreaking, some questions remain about who has control of the remains and how the studies were conducted.

Larry Lahren, a Livingston archeologist and longtime caretaker of the Anzick Site, said he removed himself from the team studying the boy’s remains when he learned some researchers wanted to conduct genetic testing.

He said he believed the tribes had not given their permission to study the boy’s remains.

Lahren believes the boy belongs to the tribes under an expansion to Montana’s Human Skeletal Remains and Burial Site Protection Act approved in 2001.

“I don’t think I have the colonial right to study the known ancestors of living people without their permission,” Lahren said.

Lahren has been the caretaker of the site since the 1970s, yet few attempts were made to contact tribes until recently, Sarah Anzick said. She said she contacted several tribes in 2000 to determine how they might view genetic testing and that it was “very clear” at that time there was no consensus among tribes in Montana about the testing. She decided to move forward after the conversations.

Willerslev said researchers made their best attempts to get tribes involved as soon as they learned the boy was related to nearly all Native Americans. He said there was no model for a process for scientists to follow in working with tribes and that it wasn’t a given that the Anzick child was related to Native Americans when they started the studies.

He said he and Doyle visited tribes before the Nature paper was published because of a “real desire” to make sure Montana’s tribes had a say. People were impressed that he’d come from Denmark to tell them about his studies, Willerslev said, and visiting Montana’s reservations deeply affected him.

“By taking that trip, we put everything at risk,” Willerslev said. “There was a genuine and real possibility for them to respond. It was the right thing to do and I’m proud we did it.”

The researchers performed two extractions of DNA from the Anzick child’s skeleton, Willerslev said. Each time, a bone the size of “the joint on your littlest finger” was used. During the extraction process, chemicals that ultimately dissolve the bone matter separate out the DNA, he said.
Sarah Anzick said she personally delivered the marbled-sized samples of bone to Willerslev's lab in Denmark. Anzick, who has also worked on the Human Genome Project, performed the DNA extractions. She said during her work on the Genome Project, she became aware that sequencing technology had improved and that she was uniquely positioned to help with the genetic analysis of the boy. She said she wanted to participate because of scientific interest, but also to make sure the boy was safeguarded.

Several tribal historic preservation officers in Montana said they were briefed on the genetic testing in the fall of 2013, when Doyle and Willerslev began visiting most of Montana’s seven reservations. Although it was disappointing they weren’t informed until so late in the process, they were glad to be involved now, several tribal historic preservation officers said. They said their priority now was to make sure the boy was put back where he was found. (See related story.)

Conrad Fisher, tribal historic preservation officer for the Northern Cheyenne, said the studies had “put Montana on the map” in archaeology and that although tribes could have been contacted earlier, the Northern Cheyenne appreciate the opportunity to participate now.

“The wheel moves real slow,” Fisher said. “We didn’t have a lot of cultural resource law 30 years ago. But maybe this is the time for (more communication) to happen. I’m really glad and really happy that all the participants have agreed that the boy should be placed back in the ground.”

Although Doyle said some tribal representatives weren’t “overjoyed” about the genetic testing, he said many also wanted access to the knowledge that scientists are providing through research of the boy’s remains. He said he personally isn’t opposed to genetic testing as long as it’s done in a respectful way, although he also noted that before federal legislation in 1990s, tribes didn’t have control over their graves.

Tribes were seen as “subject to science not contributing partners,” Doyle said. Yet he said he sees the Anzick discoveries as part of a new era in relationships between tribes and researchers.

“This is the time when we need to sort of seize the opportunity and change culture,” Doyle said.

Doyle visited Willerslev’s lab in Denmark last year, which he said gave him a sense of peace about how the boy’s remains were being handled.

Willerslev, who said he’s always dreamed of working on Native American genetics, has worked on genomes of native peoples across the globe and said experiences like working with aboriginal Australians have made him sensitive to the issues inherent in handling remains of ancestors of living people. He said people with well-preserved oral histories can often reach further back into history than scientists.

“It’s really a delicate matter and really a very important matter,” Willerslev said. “If someone came to me and said, ‘I’m sorry, Eske but you are descended from the Vikings,’ I would be pretty unhappy about that.”

He added, “If science wants to move on really in any matter with these topics, we need to do it hand in hand with indigenous peoples.”

Lahren, who has worked on the site since the beginning of his career, has become a pessimistic observer of the academics who have been involved with the Anzick site over the years. Dozens
Researchers Plan to Rebury Anzick Child

Livingston Enterprise
By Natalie Storey
February 12, 2014

The remains of a 2-year-old boy discovered in a Shields Valley archeological site that is 12,600 years old will soon be reburied, according to researchers studying his remains.

Sarah Anzick, the daughter of the landowners on whose property the boy was discovered, and Shane Doyle, a member of the Crow Tribe working with Anzick Site researchers, initiated talks with tribal historical preservation officers at a Montana Department of Natural Resources and Conservation meeting in October to rebury the bones.

Doyle said he hopes the remains of the boy will be put back into the ground this spring or summer, although there are many details that still need to be worked out, such as who will pay for the reburial.

“The main thing we need right now is some funding,” Doyle said. “We have the medicine man and the support from the other tribes. All the pieces are in place.”

The boy will be reburied in the bluff in the Shields Valley between the Crazy Mountains and the Bangtail Range where he was accidentally discovered more than 40 years ago. The site is marked with a diamond sign that states, “The location where it was found May 1968.”

Although Doyle and Sarah Anzick approached Montana's Burial Preservation Board, the group responsible for dealing with Native American remains found in Montana after 1991, the board said they had no jurisdiction and could only advise the Anzick family in dealing with the child's remains, according to a statement provided by Sheryl Olson, chief program and information officer.

Doyle said Montana tribes are strapped for cash, but is hopeful some other funding source can be found.

Eske Willerslev, the Danish geneticist who has been studying the boy’s genome, said the researchers agreed reburying the remains was their moral obligation.

“As a scientist, I can't say that it doesn't hurt my heart a little bit that this is going back into the ground, but as a human being I completely understand and appreciate that these people want it reburied and that they feel strongly about it.”

From here on out, the researchers said, all archeologists working on paleolithic remains in the Americas will have to assume they are related to Native Americans. They said they hope researchers who follow will also work with tribes.

“The study shows that you must assume any remains in the Americas are Native American until it’s proven differently,” Willerslev said.

Tribal historic preservation officers in the state, most of whom say visits from Doyle in 2013 were the first time they’d been informed about what was happening at the site, say they understand that a number of issues are at play in the reburial, but still hope the boy can be returned to the ground in a respectful manner.

“I think they should be reburied,” said Emerson Bull Chief, tribal historic preservation officer for the Crow Tribe. “But it's really hard for anyone to lay claim to it. From what they were saying, the DNA has a
connection to almost every tribe in North and South America. (The remains) are over 10,000 years old. There is no way anyone can actually lay claim to it.”

Conrad Fisher, historic preservation officer for the Northern Cheyenne, said tribes in Montana have never questioned that the boy is related to them. The child found at the Anzick site has been through enough, Fisher said, and deserves to be buried.

“We know where this boy came from. He came from a tribe here in native North America and this is where he belongs,” Fisher said. “We’ve known that. We are more interested in doing the right thing.

And that is having a proper burial and honoring that boy.”

Fisher also said the value of the remains to scientists and collectors could become issues in the reburial of the boy.

“We know that this is an old specimen and for whatever reason, people still have a fascination for Native American stuff,” Fisher said. “There’s no guarantee that the reburial will safeguard the remains.”

There have been several reburials of Native American remains in Montana following the passage of national and state laws protecting burial sites. Notably, In 1994, Chief Pretty Eagle was reburied at Crow Agency. Pretty Eagle, who died in 1903, was among 60 tribal members who were removed from burial sites along the Bighorn River in the early 1900s by Bighorn County Sanitarian Dr. W. A Russell, according to the National Park Service website. Russell sold the remains to museums, some for less than $500. Pretty Eagle’s skull eventually ended up in the Museum of Natural History in New York.

The researchers stress that science’s relationship with tribes has come a long way since then.

“I’ve always felt that they needed to be returned to the ground,” said Sarah Anzick. “It’s just the right thing to do. As a scientist, I also think everybody has a right to know who this individual is.”

Ancient Toddler Whose DNA Helped Science Will Now Be Reburied

LA Times
By Monte Morin
February 12, 2014

The skeletal remains of an infant who lived in what is now Montana about 12,600 years ago will be reburied in a formal ceremony now that scientists have sequenced its genome, researchers say.

The fragments of the young boy’s skeleton are the sole human remains directly associated with the short-lived Clovis culture, according to scientists. The relics were accidentally discovered by a construction worker in 1968, at the so-called Anzick burial site in western Montana.

The fragments, as well as 125 stone and antler tools, were covered in red ochre, a powdered mineral that was probably used during a burial ceremony, scientists believe.

In a study published Wednesday in Nature, scientists sequenced the genome of the boy, age 1 to 1 1/2, and said their findings shed new light on the complex human colonization of North America. It had generally been believed that the Clovis people’s predecessors had come from Asia, via an ancient land bridge. However, a competing proposal—the Solutrean hypothesis—held that they were actually descended from people who had emigrated from southwestern Europe.

The new research argued strongly against that possibility, scientists said.

“The ancestors of this boy originated from Asia. The study does not support the idea that the first Americans originated from Europe, as proposed by the Solutrean hypothesis,” said study coauthor Michael Waters, an archaeologist at Texas A&M University.

Waters said the evidence showed the boy’s remains were genetically related to most modern Native Americans, especially those in Central and South America.

“This indicates that a single migration of humans introduced the majority of the founding population of the Americas ... at the close of the last ice age,” Waters said. “These genetic findings are consistent with the archaeological evidence that shows the American continent was first explored and settled around 15,000 years ago, with Clovis emerging 2,000 years later.”

Continued on page 14
While conducting research, senior study author Eske Willerslev, an evolutionary biologist at the University of Copenhagen, met with a number of Native American tribes in Montana to discuss the research. He said scientists and Native American groups haven’t always gotten along well, so he wasn’t sure what to expect at first. “They showed a lot of interest in the study, but all of them said that now is the time for the skeleton to go back into the ground,” Willerslev told a documentary film crew. “This was a heart blow, because being a scientist, reburying probably the most important skeleton in the history of the Americas, it’s hard.” But Willerslev said it was a sacrifice that science had to make. “I realized that if scientists and Native Americans want to pursue their past together, there needs to be compromises on both sides. Therefore, we need to respect that they feel very strongly about this issue.”

The Clovis culture is so named because its first remnants were found in 1932 in Clovis, N.M. To archaeologists, the culture is characterized by the distinctive fluted stone spear points it left behind. The points feature a groove that allows them to be secured to a shaft.

Waters said the Clovis culture ended about 12,600 years ago, or around the same time the boy was buried. He said some of the tools buried with the boy were made of elk antlers—a rare commodity at the time—and dated to the beginning of the culture about 13,000 years ago.

The difference in age, Waters said, suggested the antler tools were ritual or heirloom objects that had been kept for generations. “They were something special,” he said.

Study coauthor Shane Doyle, an enrolled member of the Crow tribe and a Native American studies instructor at Montana State University, acted as the liaison between researchers and local Native Americans during the study.

At a news briefing, Doyle told reporters the child’s remains would be reburied this spring or summer. He also thanked the researchers for involving Native American tribes. “I feel like this discovery basically confirms what tribes have really never doubted, that we, we’ve been here since time immemorial, and that all the artifacts, objects in the ground are remnants of our direct ancestors,” Doyle said.
Ancient DNA Ties Native Americans from Two Continents to Clovis

NPR Transcript
By Richard Harris
February 13, 2014

Bones and artifacts have told the story of the people who migrated to the Americas from Siberia about 15,000 years ago. These ancient migrants are believed to be the distant ancestors of the people who spread across North and South America in the millennia before Europeans arrived, from the Inuit to the Cherokee to the Maya and many more. Now that story is bolstered with some dramatic ancient DNA. Scientists say they have decoded the genome of a baby who died in present-day Montana more than 12,000 years ago. NPR's Richard Harris reports.

MICHAEL WATERS: Clovis is what we like to refer to as an archeological complex.

HARRIS: Michael Waters at Texas A&M says that complex is a set of tools made of bone and stone. Those artifacts were common for about 400 years, starting about 13,000 years ago. There is only one set of human remains associated with those tools—an infant who was buried along with more than 100 artifacts in present-day Montana. Now scientists have been able to read the DNA taken from that precious discovery.

WATERS: So this genetic study actually provides us with a look at who these people were.

HARRIS: The most obvious conclusion from the study, reported in Nature magazine, is that the Clovis people who lived on the Anzick site in Montana were genetically very much like Native Americans throughout the western hemisphere.

ESKE WILLERSLEV: The Anzick family is directly ancestral to so many peoples in the Americas. I mean, that's astonishing.

HARRIS: Eske Willerslev led the effort to read that genome from his lab in Copenhagen. The genes reveal that early Americans are the product of two lineages that most likely met and interbred in Asia before making the trek across the Bering land bridge. Michael Waters says this helps clarify the relationship among Native Americans.

WATERS: So this strongly suggests that there was a single migration of people into the Americas. And these people were probably the people who eventually gave rise to Clovis.

HARRIS: This finding contradicts a long-shot hypothesis that that Clovis's ancestors actually came from Europe, not Asia. But it leaves many other questions about Clovis unresolved. The artifacts from this culture are found from Washington State to Florida and many places in between. But the culture also disappeared suddenly, around
12,600 years ago. Waters doesn’t find that too mysterious.

**WATERS:** People change all the time and cultures change all the time and technologies change. And they change because people are adapting to new environments and changes in climate. And at the end of the Clovis time period, around 12,600 years ago, when this child was buried, you know, the climate was changing. It was the beginning of the Younger Dryas cold snap. This is when you start seeing a lot of cultural differentiation taking place.

**HARRIS:** The DNA now makes it clear that the people who used Clovis tools lived on, even though they left their old technology behind. But Eske Willerslev says the Clovis genes give only a broad-brush view of how and when migrations throughout the Americas took place.

**WILLERSLEV:** We have no idea exactly where the U.S. fits in this pattern, and to be completely honest, we have no idea how they actually moved through time, these different groups across the continent. In order to answer that question, there’s only one way to go, and that is actually sequencing more genomes from ancient remains.

**HARRIS:** That will require, among other things, cooperation with native peoples. In the case of the Clovis child, the archeologists worked closely with modern tribes to make sure they were treating the remains appropriately. They say the Clovis infant will be reburied on the property where he was unearthed later this year.

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**DNA Politics: Anzick Child Casts Doubt on Bering Strait Theory**

*Indian Country Today*

By Alex Ewen

March 11, 2014

Scientists from the University of Copenhagen and Texas A&M have analyzed the DNA of the remains of a young boy ceremonially buried some 12,600 years ago in Montana. Their new data sheds light on the ancestry of one of the earliest populations in the Americas, known as the Clovis culture, but also rekindles the debate over the ethics of handling ancient remains and the political consequences of scientific studies of Indian peoples. It also undercuts recent attempts by archaeologists to deny the antiquity of Indians and thus avoid the political and legal repercussions of disturbing ancient burial sites or mistreating ancient human remains.

The analysis, published last month in Nature, shows that today’s indigenous groups spanning North and South America are genetically related to the early peoples who roamed this continent, overturning previous, controversial findings by scientists and the courts. Over the past 15 years a subtle shift has occurred in the nomenclature of the oldest period in America’s prehistory. Whereas previously the inhabitants of this hemisphere in the period before 8,000 BC were known as Paleoindians (Ancient Indians), starting in 1999 a number of archaeologists began to insist on referring to them as Paleoamericans (Ancient Americans).

**Related:**

More Reasons to Doubt the Bering Strait Theory

According to these archaeologists, recent scientific studies cast doubt on whether these ancient peoples were related to modern Indians. The change in terminology was needed to “avoid an inference of biological continuity between the current Native American populations and the earliest populations.”

There were concerns from some quarters that the change was due less to science and more to politics. It did not go unnoticed that the principle advocates for the term Paleoamerican were the archaeologists Robson Bonnichsen, the director of the Center for the Study of the First Americans at Texas A&M University, and Richard Jantz, director of the Center for Forensic Anthropology at the University of Tennessee, Knoxville. Both had also been lead plaintiffs in the famous suit brought by
What was very interesting was the Y-chromosome (passed from father to son) results, which was not reported in the press.
many dozens of modern humans since their discovery. Cranial fragments were glued together with rubber cement. Everybody who came through carried off a few pieces of the child’s skeleton.

But in a sign that times are changing, the Anzick family, on whose land the child was found and who own the tiny skeleton, are working with Indian tribes in Montana to rebury the infant. The scientists claim the genetic analysis proved that Indians were originally from Siberia and migrated across the Bering Strait 15,000 years ago. Michael Waters, the co-author of this study, published February 12 in the journal Nature, said to the press:

The genetic data…confirms that the ancestors of this boy originated from Asia…A single migration of humans introduced the majority of the founding population of the Americas south of the ice sheet at the close of the last Ice Age [15,000 years ago].

But this statement is by no means the consensus among those who study American prehistory, nor are his conclusions necessarily born out by the findings. If anything they actually raise more questions than they answer.

Waters and his associates found that the child is a member of one of the five “haplogroups,” of Mitochondrial DNA (passed from mother to children) that are commonly found among Indian people, haplogroup D.

This haplogroup is widely found in Asia and Siberia, and there is no question that there are genetic links between the two hemispheres. What was very interesting was the Y-chromosome (passed from father to son) results, which was not reported in the press.

Branches 21 and 25 represent the most recent shared ancestry between Anzick-1 and other members of the sample. Branch 19 is considerably shorter than neighbouring branches, which have had an additional ~12,600 years to accumulate mutations.

In other words, compared to other similar DNA, for example those of certain Mayan Indians (the “neighboring branches”), the Anzick child’s DNA was approximately 12,600 years younger. Since the child was already 12,600 years old, it would mean that the Mayan DNA was at least 25,000 years old and imply that the Mayans had left Asia, or genetically separated from Asians (if indeed they actually came that way), more than 10,000 years before the current theory says they should have.

Genetic studies have consistently shown that Indian DNA is very ancient, but since most archaeologists do not accept the idea that Indians have been in the Americas longer than 15,000 years, the discrepancies between the genetic dates and the mainstream archaeological views have yet to be explained to anyone’s satisfaction.

The theory that Indians first crossed into the Americas through the Bering Strait 15,000 years ago, although firmly held by archaeologists for more than 100 years, has come under increasing challenge, not simply from genetic evidence, but also from new archaeological discoveries in South America.
An American Indian Perspective on Ancient Burials

Responses to a questionnaire by Wabusk Ragged Robe, Enrolled member of the Ainanin (White Clay People) widely known as the Gros Ventre

One person’s archaeological record is another person’s final resting place. I think that ancient Native American burial sites should be treated with respect and left alone or quickly re-interred, without being subjected to research. Modern Native landholdings represent a fraction of their former traditional territories. Many burial sites are outside of reservation borders. The Native American Graves Protection and Repatriation Act (NAGPRA) does not apply to private property. Repatriation is another option. Although the Anzick child cannot be clearly identified as Crow, and some members of the Crow tribe as well as other Montana tribes did not want to claim responsibility for reburial, Shane Doyle and other Crows stepped up on behalf of the child because it is located in their (Crow) former traditional and political territory. Because of development, there are more and more remains and artifacts being unearthed unintentionally that need to be left alone, repatriated, or reburied in a safe location.

Native Americans rarely gain anything from scientific and genetic research that is conducted on ancient sites and remains. Kennewick Man comes to mind because tribes were not allowed to claim him at first because of his “scientific importance”. In the end, tribes could not claim him because experts determined he was not irrefutably of Native ancestry. The Yanomami of South America were victimized through genetic research because their DNA was patented by researchers. Lately, these types of research have been used to buttress the Bering Strait theory and discredit Native histories. There has been enough collecting, research, and examination of Native People living and dead.

As a Native American person, I do not believe that remains of Native Americans should be studied, or any ancient remains for that matter. When remains are discovered, their being studied often results in their eventual storage or display. Unearthed pioneers, settlers, and colonists rarely suffer the same fate as Native remains. At the courthouse in Bozeman, there are historical display cases. There is no mention of the centuries of Native presence, history, or contributions of Indian people to Bozeman or Montana. There are human remains in the cases. It should not be surprising that the remains are of a Native person. There are no remains of white people, but great attention is paid to their history and “contributions” to the city and state. Native remains are not afforded the same respect as that of non-Indians.

It is a Native American belief, that children are not our own, they are on loan from the Creator for us to take care of. Also, Native people understood death as the final of the four stages of life. Mourning a loved one is a serious task for Native people. In earlier times, among my tribe, when a parent lost a child they would cut their hair, slash their bodies, and wander the hills crying without food and water for days until a relative could convince them to return. When a person dies they are cleaned and dressed in the best clothing available. The deceased’s prized possessions are placed with them so they do not return to look for them. There is a journey feast and ceremony four days after they passed, and a memorial feast or ceremony a year after the death. The ceremonies are for both the survivors and the departed to heal and move on. This child [Clovis child from the Anzick site] was obviously beloved, and is a great example of the care and love that Native people utilize in their funerary practices.

Artifacts that are found at burial sites should remain intact with the remains they were discovered with. The artifacts that are found with Native Americans are not there by accident. They were personal effects of the dead, or placed there to satisfy the bereaved relatives’ belief in the life cycle which includes an afterlife where the object could or would be needed by the departed. The underlying belief is that possessions are placed with them so they do not return to look for them which allows for their journey and transition into death and beyond. This transition is important to the deceased so the living perform the burial and subsequent ceremonies or observations to do their part to help out the loved one that was lost. Artifacts are somebody’s earthly possessions and often are part of the spiritual equipment needed to face death and achieve eternal peace. Ancient people’s remains can be found on display with the artifacts they were buried with. What is eternal or peaceful about that?

—PROJECT ARCHAEOLOGY—
An American Indian Perspective
on Ancient Burials

Responses to a questionnaire
By Tara Top Sky, Enrolled
member of the Neh-iy-aw tribe
widely known as the
Chippewa-Cree

When a burial site is found the
first thing to do is to find out
which tribal people occupied
the area and then to contact the
tribe (council, culture committee,
Tribal Historic Preservation
Officer (THPO), and/or elder(s))
If the region is unknown, tribally,
than there is a Culture Committee
and THPO office in Rocky Boy,
Montana that specifically deals
in Native American archaeology
sites across the country to survey
the sites and offer solutions to
resolve such matters.

I actually do not think that
anything could be gained from
scientific or genetic research
of burial sites. In the Native
American culture a burial site it
meant to be the final resting place
of the deceased as is in any other
culture. There are other Native
American sites that could be
scientifically studied for the gain
of knowledge of the early people
of this continent.

Objects of ancient American
Indians could be studied if they
are not from a burial site. There
is much to be found and studied
of the Native American culture in
other areas besides a burial site.
There are many buffalo jumps
and camp sites, and still to this
day artifacts are being found in
Yellowstone National Park along
the rivers and old trails.

The artifacts that are found
at a burial site should be treated
with the utmost respect. In my
own Native culture we smudge
ourselves with sage and say a
prayer for ourselves and the
deceased before and after leaving
a burial site. We are told not to
take what is left with the deceased
because it is a part of them and
we do not want to disturb their
final resting place. If they
do have to be moved they should
be reburied with everything that
they were buried with.

I know the curiosity that goes
along with finding such an old
site and wanting to know who
these people were and where they
came from and all of the other
questions that go along with the
curiosity. If there was anything
that comes from surveying such
a site it would be that the Bering
Strait Theory is something to be
questioned by all people who still
believe it. Native Americans are
the only ones that were born of
this continent from the beginning
of time. As told to me by my
elders.

I think [the Clovis child
burial] shows the love they had
for their child by even having a
burial site. I think that any parent
would feel much grief at the loss
of a child. I believe that if there
was not any love for the child
they would have not even buried
the child. In my own Native
culture, there are stories of how
my people have been here since
the beginning of time, the oral
stories that have been passed
down could not have been done if
there was not love for and of the
people. They are stories of family
and how to be together as one, as
well as to get along with everyone
in my own culture.
What do we owe the Clovis child?

Last Best News
Guest Editorial
By Larry A. Lahren
March 30, 2014

In May 1968, while removing fill material with a front-end loader on Mel and Helen Anzick’s property near Wilsall, equipment operator Ben Hargis saw a prehistoric stone tool fall out of the bucket. Along the edge of a prominent outcrop, where Flathead Creek and the Shields River join, Ben found the gravesite of a 1- to 2-year-old male child, interred with more than 100 stone tools covered with red ochre.

This burial is the most significant Paleoindian site in North America, representing the earliest evidence of religion in the Western Hemisphere and the oldest, most complete assemblage of funerary items left by the Clovis culture that lived here at least 11,000 years ago.

Since I first viewed the burial artifacts and skeletal remains in 1968, my role has been to ensure that this child, and what his parents intended for him, received the respect we all deserve.

An international research team led by Professor Eske Willerslev, director of the Center for GeoGenetics at the University of Copenhagen, Denmark, has implied that they followed respectful, legal and ethical guidelines during the course of their recent genetic studies.

But did this happen?

House Bill 165, the Montana Repatriation (Reburial) Act, was introduced to the Montana Legislature in 2001. The act was created at the request of the Law, Justice, and Indian Affairs Committee.

Eddy McClure, staff attorney for the Montana Burial Preservation Board, opined that:
“both common law and legal decisions have consistently recognized that human skeletal remains are not property abandoned when interred. Discoverers, therefore, have no right of ownership, and they cannot confer a right of ownership to another. Neither a private nor public person, other than a descendant of culturally affiliated group, can legally claim ownership of human skeletal remains or funerary objects.”

When the political dust settled, Clovis burial funerary items were excluded from the act. However, it still provided the intent and tribal standing for the repatriation of the Clovis skeletal remains. At the time, the location of the skeletal remains, which had been taken out of state, was not even known to tribal representatives.

More than a year ago, I was advised that genetic studies of the Clovis child were complete. Willerslev asked me to give the project my after-the-fact blessing and to be one of 42 co-authors on an article to appear in Nature magazine (Feb. 13, 2014). Another request was to arrange for Native contact in Montana. I declined and suggested the researchers contact the state archaeologist, the Montana Burial Board and Montana tribal Leaders.

At a pre-publication meeting on Sept. 21, 2013, Professor Willerslev had a problem. Studies were already complete—so how could he show that he followed legal and ethical guidelines and demonstrated proper respect for the child’s remains?

Continued on page 22
To reduce Willersev’s angst, I invited Shane Doyle, Crow tribal member and adjunct professor in Native American studies at Montana State University, along with a teacher and students from Crow Agency to visit the site the next day.

Shane had no knowledge of the genetic studies, or the politics involved. I made it clear to Willersev that Shane was an independent visitor, not a representative of the tribes, the university or any other entity.

At the site, I explained the burial context. Willersev then stated that the Clovis child shared genetics with contemporary Native Americans.

“Speaking from the heart, I think you should put him back now,” was Shane’s long-thought-out response.

He then agreed to be an unofficial liaison with the Montana tribes.

During a whirlwind tour to the Northern Cheyenne, Salish-Kootenai and Blackfeet reservations, tribal leaders asked the Crow to pursue repatriation of the child’s ancient remains. Larson Medicine Horse will oversee the ceremony, scheduled for this June.

What about the funerary items associated with the child? The burial of “replicas” has been suggested.

For nearly 50 years, the Clovis burial has been subject to institutional and individual opportunism, aggrandizing and “ownership” by what I call “Clovis carpetbaggers.”

Last month, when I visited the Clovis child’s funerary items on clinical display at the Montana Historical Society, I was overwhelmed with the same humble, naive feelings I had when I first beheld them.

I wondered what message has been sent to the people who buried the child; to those that are genetically related to them; to this and the next generation of archaeologists; and to humanity?

Do colonial attitudes and science’s “need to know” override ethics, law and respect for Native American values?