



# AMERICAN MUSEUM OF NATURAL HISTORY

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## **ANCIENT PUEBLOS TRACED DESCENT THROUGH MOMS**

### **DNA-BASED STUDY REVEALS A MATRILINEAL DYNASTY THAT LASTED FOR 330 YEARS IN CHACO CANYON**

New DNA analysis of ancient Pueblo remains suggests that the complex society that once existed at Chaco Canyon in the southwestern United States traced family relationships through the mother's line, confirming long-held contentions of modern Pueblos that the matrilineal system is centuries-old. Studies of the genomes of 9 individuals found buried along with a trove of ceremonial offerings at Pueblo Bonito reveal a matrilineal dynasty that lasted for about 330 years. The work is published today in the journal [Nature Communications](#).

"We have become accustomed to picturing archaeological descriptions of Chaco and its ruined settlements, its pots, its walls, even its astronomical alignments, yet the people and their social arrangements seem largely absent," said Peter Whiteley, a curator in the American Museum of Natural History's Division of Anthropology and a co-author on the paper. "This new work offers insight into the structure of Chacoan social life, allowing us to reconnect the people to the place."

Chaco Canyon in northwestern New Mexico is a major cultural center that was densely occupied between about AD 800 and 1130 and had more than a dozen multistory "great houses." First excavated by a Museum-led team in 1896, the largest of the Chaco Canyon great houses was Pueblo Bonito, which had about 650 rooms. Among those rooms was one particularly unusual space known as Room 33: a single small structure in the oldest area of the Pueblo that contained 14 human bodies along with significant amounts of symbolically important items like shells, flutes, and pieces of turquoise. Two of the bodies were buried below a rare wooden floor with the majority of the grave goods, signaling the

special treatment of elite individuals at Pueblo Bonito.

“It has been clear for some time that these were venerated individuals, based on the exceptional treatment they received in the afterlife. Most Chacoans were buried outside of the settlement and never with such high quantities of exotic goods,” said Adam Watson, a postdoctoral fellow in the Museum’s Division of Anthropology and a co-author on the new paper. “But previously, one could only speculate about the exact nature of their relationship to one another.”

Prior analysis revealed that the individual in the very bottom of the crypt – who was buried with thousands of turquoise and shell pieces in the richest known burial in the Southwest – was a male in his 40s who died after a lethal blow to the head.

In the new study, the research group, led by Pennsylvania State University and the University of Virginia, used carbon dating and ancient DNA methods to more closely analyze all of the skeletal material. This includes the second individual buried in the space above the first – also associated with a large amount of symbolic items – and the 12 individuals buried above the wooden floor. DNA can degrade greatly with time, but for this most recent study, researchers were able to successfully sample nine of the individuals from Room 33, finding that they were all related. Further analysis found mother-daughter and grandmother-grandson relationships consistent with a matrilineal system, in which children are considered born into the mother’s clan and her line is used for inheritance and descent.

The results indicate that Chacoan society was organized similarly to historic Western Pueblo peoples, like the Hopi of northeastern Arizona, and the Zuni, Laguna, and Acoma Pueblos of western New Mexico. “This work confirms what Pueblo people have been saying for a long time, that the matrilineal system that guides their society today goes back not just a century, but many hundreds of years,” said Whiteley, who has been conducting fieldwork with the Hopi since 1980 and is a leader in the study of kinship. “It honors the Pueblo sense of their own history, and it’s only possible now because of the melding of all of these different aspects of anthropology – archaeology, biology, and ethnology.”

Other authors on this paper include Douglas Kennett, Richard George, Brendan Culleton, and George Perry from Pennsylvania State University; Stephen Plog from the University of Virginia; Pontus Skoglund, Nadin Rohland, Swapan Mallick, Kristin

Stewardson, and David Reich from Harvard University; Logan Kistler from Pennsylvania State University and the University of Warwick; and Steven LeBlanc from the Peabody Museum of Archaeology and Ethnology.

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*Nature Communications* paper: <http://dx.doi.org/10.1038/ncomms14115>

#### **AMERICAN MUSEUM OF NATURAL HISTORY (AMNH.ORG)**

The American Museum of Natural History, founded in 1869, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses 45 permanent exhibition halls, including the Rose Center for Earth and Space and the Hayden Planetarium, as well as galleries for temporary exhibitions. It is home to the Theodore Roosevelt Memorial, New York State's official memorial to its 33rd governor and the nation's 26th president, and a tribute to Roosevelt's enduring legacy of conservation. The Museum's five active research divisions and three cross-disciplinary centers support approximately 200 scientists, whose work draws on a world-class permanent collection of more than 33 million specimens and artifacts, as well as specialized collections for frozen tissue and genomic and astrophysical data, and one of the largest natural history libraries in the world. Through its Richard Gilder Graduate School, it is the only American museum authorized to grant the Ph.D. degree and the Master of Arts in Teaching degree. Annual attendance has grown to approximately 5 million, and the Museum's exhibitions and Space Shows can be seen in venues on five continents. The Museum's website and collection of apps for mobile devices extend its collections, exhibitions, and educational programs to millions more beyond its walls. Visit [amnh.org](http://amnh.org) for more information.

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