



**ARCHAEOLOGY: Clovis Technology Flowered  
Briefly and Late, Dates Suggest**

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## ARCHAEOLOGY

# Clovis Technology Flowered Briefly And Late, Dates Suggest

For almost 80 years, one of the most enduring puzzles in the archaeology of the Americas has been the “Clovis culture,” known for its elegant, distinctively shaped projectile points. Was Clovis the progenitor of all later Native American societies, as many researchers have long maintained, and, if so, how and when did it arrive in the Americas?

On page 1122 of this week’s issue, Michael R. Waters of Texas A&M University in College Station and Thomas W. Stafford Jr., proprietor of a private-sector laboratory in Lafayette, Colorado, use new radiocarbon data to argue that Clovis was a kind of brilliant flash in the pan—a movement that may have flourished across North America for as little as 2 centuries around 13,000 years ago. The new dates also put Clovis a bit later than thought, making it harder to accept that it was the first in the Americas.

“What this paper does is reinforce how unusual was the phenomenon we call Clovis,” says Michael R. Bever of the University of Texas, Austin. “To have it rise and fall [throughout North America] in as little as 2 centuries” is a phenomenon with few equivalents in the archaeological record.

Waters says that he and Stafford, an expert in the complex art of radiocarbon dating, set out “to nail down the most basic question:

When was Clovis?” The heyday of the technology has typically been set between 11,500 and 10,900 radiocarbon years B.P. (The radiocarbon calibration is disputed for this period, but the widely used IntCal04 calibration puts the dates at 13,300 to 12,800 calendar years B.P.). In a controversial move, Waters and Stafford argue that no fewer than 11 of the 22 Clovis sites with radiocarbon dates are “problematic” and should be disregarded—including the type site in Clovis, New Mexico. They argue that the datable samples could have been contaminated by earlier material.

Of the remaining 11 sites, Waters and Stafford found that five had been recently dated by higher-precision techniques. The pair decided to redate the others, succeeding in all but one case. The results, Waters says, “were a real surprise.” All of the new dates—as well as all of the previous acceptable dates—occurred within, at most, a 450-year band. Indeed, they say, Clovis probably existed for as little as 200 years, between 11,050 and 10,800 radiocarbon years B.P.—a cultural flowering both somewhat later and considerably shorter than thought.

The later, more precise dates support the emerging view that Clovis was not the progenitor culture, because it overlaps or occurred after other cultures, including one in Monte Verde, Chile, dated to 1000 years before Clovis.

The real surprise of the paper, according to David Meltzer of Southern Methodist University in Dallas, Texas, “is the compressed time frame for Clovis writ large.” So fast was its apparent spread that Stafford suggests that Clovis may have been a set of technologies that were picked up by a mosaic of different cultures across North America rather than a single, fast-moving society. “These tight dates, if they hold up, may help us resolve that long-standing debate,” says Meltzer, who questions the decision to discard the 11 sites.

Meltzer stresses that the dates used are from a minority of North American sites, most in the west, whereas most Clovis points have been found in the east. Until more data are compiled, he says, researchers “can’t know whether this is a real effect or simply a consequence of sampling.” In a sense, Stafford agrees. “We need to get more people out in the field,” he says. “We hope these dates motivate that.”

—CHARLES C. MANN

## Stem Cell Grants Awarded

The California Institute for Regenerative Medicine (CIRM), which is funding human embryonic stem (ES) cell research in that state, last week announced its first \$45 million in research grants to 20 California institutions. The top recipient is Stanford University, with 12 awards totaling \$7.6 million over 2 years. Faculty with the University of California, San Francisco, came in second with 11 grants.

Among the awards are some novel attempts at reprogramming differentiated cells to a pluripotent—or ES cell—like—state. And the Burnham Institute for Medical Research in San Diego is getting \$638,000 to generate a library of ES cell lines that model a number of human genetic diseases. A second, \$80 million round of grants is slated to be announced this spring. CIRM is moving ahead with the aid of private donations and a \$150 million state loan, pending resolution of lawsuits that have delayed bond sales.

CIRM is also hunting for a president to succeed Zach Hall, who plans to retire in June. National Institutes of Health stem cell chief James Battey is rumored to be a top contender for the job.

—CONSTANCE HOLDEN

## Kaiser to Set Up Gene Bank

The health care provider Kaiser Permanente hopes that 500,000 of its 2 million adult members in northern California will participate in a massive genetics research program containing DNA samples with health information to find links between genes, environment, and disease. Kaiser has started asking members about their family history, lifestyle, and other matters and plans to collect saliva or blood samples from willing participants in the next few years. The venture “is contingent on our acquiring additional funding,” says Catherine Schaefer, director of the program, which has raised \$7 million of the tens of millions of dollars needed. It will safeguard the confidentiality of participants, and Kaiser will make data available on a case-by-case basis to outside scientists, she says.

Kaiser “is in a strong position,” but its plan won’t include a geographically diverse cohort nor the uninsured, notes Francis Collins, director of the National Human Genome Research Institute in Bethesda, Maryland. Collins would like to start a broader study from scratch, which he admits would cost hundreds of millions of dollars a year.

—JENNIFER COUZIN



**Clovis up close.** Researchers say more dates are needed at sites such as this one in Gault, Texas.

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