

► — had not contaminated groundwater in Pennsylvania. Siegel did not disclose that the Chesapeake Energy Corporation of Oklahoma City, Oklahoma, had paid him and provided the water samples that his team analysed. *Environmental Science & Technology*, which published the analysis, posted a correction in April after the media revealed Siegel's links to the company.

Siegel says that he thought that this relationship was obvious, because he was working on a summer contract with the company's consultants, some of whom were listed as co-authors. "I never really anticipated this, but perhaps I was naive," Siegel says. "Because of the public nature of some of this science, I think we probably need a much tighter rein on what disclosure is."

Disclosure demands are coming from both sides of the aisle: climate sceptics have objected to a *Nature Climate Change* study⁶ that analysed some of the US Environmental Protection Agency's greenhouse-gas regulations, because it was written by researchers who have received grants from the agency — even though the grants are listed in a public database.

Some experts suggest that Earth scientists should look to the biomedical community for guidance. Many biomedical journals require authors to fill out a common disclosure form that publishers developed in 1978 and have continued to update. And universities and hospitals often require medical researchers to report each year on their financial arrangements with industry.

Eric Campbell, a sociologist at Harvard's Edmond J. Safra Center for Ethics, says that biomedical scientists, funding agencies and journals have better-established disclosure policies because their work often involves human participants, and because of the strong financial ties between academia and the pharmaceutical industry.

There are no plans yet for the Earth-science community to develop disclosure standards. But there may be nascent backing for such an effort. Véronique Kiermer, director of author and reviewer services at Nature Publishing Group, says that the publisher "would be supportive of discussions in the Earth-sciences community about the specific challenges of the field and a framework for the standards of transparency it requires."

Campbell says that such a group discussion would be useful. "You don't want the individual with the conflict making decisions about what they should do about it." ■

1. Oreskes, N. *et al. Environ. Sci. Technol.* <http://dx.doi.org/10.1021/acs.est.5b02726> (2015).
2. Soon, W. & Legates, D. R. *Ecol. Law Curr.* **37**, 1–9 (2010).
3. Yan, H. *et al. Nature Geosci.* **8**, 315–320 (2015).
4. Liu, J. *et al. J. Clim.* **22**, 2356–2371 (2009).
5. Siegel, D. I. *et al. Environ. Sci. Technol.* **49**, 4106–4112 (2015).
6. Driscoll, C. T. *et al. Nature Clim. Change* **5**, 535–540 (2015).



ELAINE THOMPSON/AP

A plastic cast of the skull of Kennewick Man.

ANCESTRY

Genome results rekindle legal row

'Kennewick Man' sequencing shows Native American roots.

BY EWEN CALLAWAY

The genome of a famous 8,500-year-old North American skeleton, known as Kennewick Man, shows that he is closely related to Native American tribes that have for decades been seeking to bury his bones. The finding seems likely to rekindle a legal dispute between the tribes and the researchers who want to keep studying the skeleton. Yet it comes at a time when many scientists — including those studying Kennewick Man — are trying to move past such controversies by inviting Native Americans to take part in their research.

"The controversy has been painful for lots of people; tribal members and scientists as well," says Dennis O'Rourke, a biological anthropologist at the University of Utah in Salt Lake City.

Soon after the skeleton's bones were unearthed in 1996, near the shores of the Columbia River near Kennewick, Washington, several local tribes demanded the return of Kennewick Man, whom they dubbed the Ancient One. The US Army Corps of Engineers — the federal agency that manages the land where the remains were found — sided with the tribes,

citing a 1990 law that mandates the return of Native American remains and artefacts to affiliated tribes: the Native American Graves Protection and Repatriation Act (NAGPRA).

Several archaeologists and anthropologists sued the US government to stop the return, arguing that Kennewick Man was too old to be connected to the tribes. In 2002, a federal judge ruled that NAGPRA did not apply because the US government had not established that the tribes had a cultural affiliation with Kennewick Man. The decision was affirmed by a US Appeals Court in 2004.

A team led by Eske Willerslev, a palaeogenomicist at the Natural History Museum of Denmark in Copenhagen, used cutting-edge methods to extract snippets of DNA from a flake of finger bone and then sequence the genome. The researchers then compared the genome to that of members of dozens of groups from across North and South America, including several members of the Confederated Tribes of the Colville Reservation, one of the five groups seeking Kennewick Man's reburial (M. Rasmussen *et al. Nature* <http://doi.org/5jyb>; 2015). Members of the

other four groups — the Nez Perce, the Umatilla, the Yakama and the Wanapum — opted not to contribute DNA to the study.

The Colville members were more closely related than were many North and South American tribes, but some other tribes still shared close ancestry with the 8,500-year-old. “We can’t say that the Colville are the closest living descendants of Kennewick Man, because the reference panel is too small,” warns Willerslev. “But I think we can say that Colville is very closely related to Kennewick Man.”

Gail Celmer, an archaeologist at the US Army Corps of Engineers in Portland, Oregon, says that the Colville people are still eager to pursue repatriation. Her agency therefore plans to reconsider whether Kennewick Man falls under NAGPRA. “We expect challenges, so we’re going to have to be very careful about how we do our reviews,” she says.

Hank Greely, a legal scholar at Stanford University in California, notes that with a genome sequence analysed, “it’s in the best interest of the scientists, of the government, and of Native Americans to think seriously about giving Kennewick Man’s remains back to the tribes”.

“The whole point of the Kennewick Man case was to ensure that important discoveries like this had an opportunity to be made,” says Doug Owsley, a forensic anthropologist at the

Smithsonian National Museum of Natural History in Washington DC and one of the scientists who sued the US government to gain access to the remains. “If I had to do it again, I would.”

James Chatters, an anthropologist who excavated Kennewick Man and who has since set up the consulting firm Applied Paleoscience in Bothell, Washington, is torn. “As a person who worked directly with the skeletal remains, I’d like to see them in peace,” he says. “As a scientist, I would hate to see one of the most complete North American skeletal remains be put back into the ground for political reasons.”

CLOSE TIES

Willerslev is sticking to the sidelines on the issue of repatriation. “It’s somebody else who needs to figure that one out,” he says. But he wants the tribes to be involved in his research; after his team determined that Kennewick Man was Native American, he informed the five tribes about the conclusion. Some of the members travelled to his Copenhagen lab to learn more about the research, donning full-body suits to visit the clean lab in which ancient DNA is extracted from remains. The lab did similar outreach with tribes in Montana after it sequenced the genome of the ‘Anzick’ boy (M. Rasmussen *et al. Nature* **506**, 225–229; 2014), helping to broker a deal to rebury those bones.

Many other researchers are taking a similar

approach. O’Rourke says that there is no one-size-fits-all strategy to working with native communities. He finds some of the North American Arctic groups he works with eager to contribute to his research; others are less so, and their opinions shift over time.

“We really have to change the top-down approach, where we come to people and say ‘these are our research questions and you should participate, because — SCIENCE,’” says Jennifer Raff, an anthropological geneticist at the University of Texas at Austin.

Just weeks before Kennewick Man’s remains were discovered, researchers working in Alaska discovered a 10,000-year-old human skeleton. They notified local tribes and quickly came to an agreement that allowed them to excavate and study the remains and keep the tribes involved in the research. “You don’t really hear so much about the good cases,” says Raff. ■

See go.nature.com/cnizi for a longer version.

CORRECTION

The News story ‘US “export rules” threaten research’ (*Nature* **522**, 266–267; 2015) should have said that information developed through fundamental research — rather than all unclassified information — is considered to be in the public domain.