

ETHICS

Researchers to Return Blood Samples to the Yanomamö

The closest Kenneth Weiss has been to the Amazon rainforest was when he passed over it in an airplane last year. But the geneticist at Pennsylvania State University, University Park, says his freezers hold hundreds of 40-year-old blood samples from the Amazon's Yanomamö Indians. Now, in an agreement being worked out by Brazil, he and others are pulling tissue samples out of storage and preparing to have them shipped back to the jungle.

Weiss says he accepted the vials years ago as a favor to his postdoctoral adviser James Neel, who was retiring and wanted them preserved. Along with cultural anthropologist Napoleon Chagnon, Neel collected the samples from the Yanomamö in Brazil and Venezuela during fieldwork in the 1960s and early 1970s, and they've been stored since then in labs around the United States. (Neel died in 2000.) Weiss and others will be releasing parts of their collections to the Brazilian Embassy in Washington, D.C., which in turn will escort them back to Brazil and the Yanomamö tribe. Venezuela has not asked for samples taken from its Yanomamö tribes, Weiss says.

The return marks at least the third time that an indigenous group has retrieved DNA or other tissue from scientists, suggesting a shifting landscape in genetics studies on indigenous people.

Unlike a recent case involving the Havasupai tribe in Arizona's Grand Canyon (*Science*, 30 April, p. 558), those who worked with the Yanomamö have never fought the tribe's requests. The Yanomamö began seeking the samples about 10 years ago after the publication of *Darkness in El Dorado: How Scientists and Journalists Devastated the Amazon*. The controversial book by investigative journalist Patrick Tierney charged that Chagnon and Neel acted unethically in their dealings with the Yanomamö (*Science*, 19 January 2001, p. 416). The logistics of shipping the samples back has taken years to sort out.

"We can't just put a Paddington Bear tag on there and say 'Please deliver to Amazonia,'" says Weiss. Furthermore, there's confusion among Brazilian officials and researchers over what the Yanomamö will do with the material—in particular, some have said,



Back to the jungle. Blood samples collected by the late James Neel, shown here drawing a sample in 1968, and his colleagues will be returned to tribe members.

whether they might ingest the samples in a ritual. Chagnon considers that unlikely; the Indians "do consume the ashes of deceased kinsmen after cremating them," he says, but that's just ground-up bone. Still, the concern that the Yanomamö "could get sick from a new disease" is real, Chagnon agrees.

Researchers and diplomats alike want to ensure that the samples are safe and free of contaminants. That's easier said than done. The usual approach—heating material at very high temperatures—would cause the vials to explode. A suggestion to sterilize some samples with bleach was rejected, says Karen Pitt, special assistant for biological resources at the National Cancer Institute (NCI), which holds 477 vials. NCI is investigating the possibility of irradiating them. "We'd like to accelerate this," says Pitt.

Weiss agrees: "I'd rather have the freezer space and have these samples off my back." He received several hundred Yanomamö vials a few weeks ago from a colleague at Binghamton University in New York state in efforts to combine them for return. Both

Weiss and NCI ruled out further research on the samples when they learned that the Yanomamö wanted them back.

Scientists are increasingly trying to accommodate demands from indigenous groups. Three years ago, the Canadian Institutes of Health Research in Ottawa released new recommendations for aboriginal research requesting, among other things, that research be of benefit to the community, that researchers translate their publications into the language of the community, and that researchers get consent before transferring samples to a colleague.

"If you have a sample in your lab, you have been loaned it, you haven't been given it," says Laura Arbour, a medical geneticist at the University of British Columbia, Vancouver, in Canada who helped craft the Canadian guidelines. Arbour, who works with Canadian aboriginal populations, believes they should be treated as collaborators and shown drafts of papers prior to publication, something she routinely does in her own genetics work.

"I don't object" to this approach in principle, says Kenneth Kidd, a population geneticist at Yale University, but it would make research "a lot more difficult." He and his wife, Judith Kidd, have amassed 3000 samples from 57 populations over the years. It would be virtually impossible to find a nomadic tribe from whom samples were collected a decade ago and share a planned publication, he says.

Regarding the Yanomamö, there was no question that the request to return samples would be honored, says Pitt. "When the specimens were originally collected, there wasn't anything called informed consent," she says. "Now we're becoming a lot more sensitive to the rights of study participants to withdraw from a study."

As for Chagnon, he vigorously defends his work and believes that the Yanomamö are being pressured to make demands by politically motivated nongovernmental organizations. Ultimately, he says, the people of the Amazon will lose out by retrieving and presumably destroying the vials collected so long ago, which might have been useful in biomedical research. "The Yanomamö, like all populations, depend on medicines," he says. "I think it's reasonable that they should participate in what it takes to develop medicines, instead of being just the recipients."

—JENNIFER COUZIN-FRANKEL