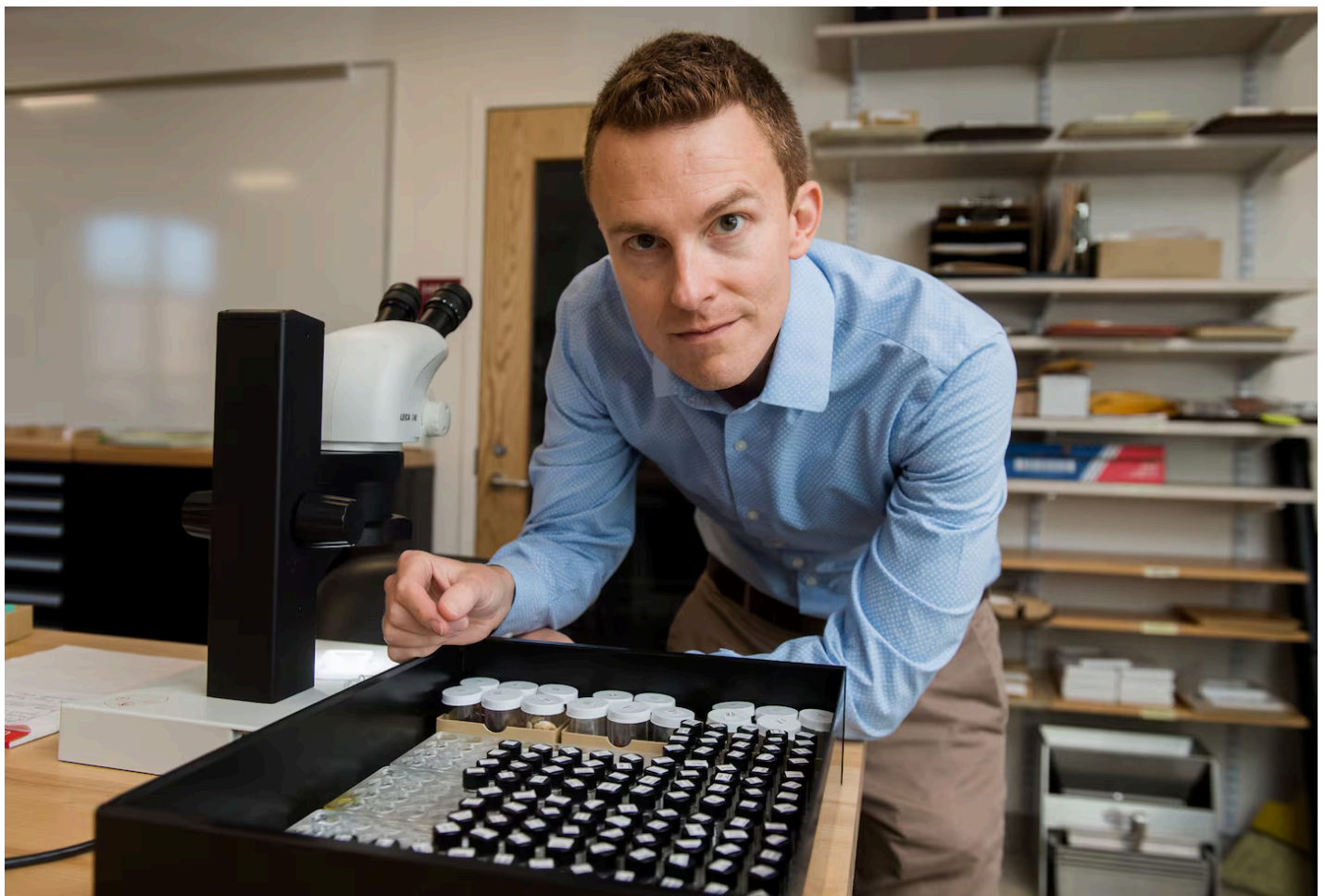


‘Your materials have been incinerated.’ The confounding process of traveling with scientific samples.

In light of Harvard biologist Kseniia Petrova’s arrest for failing to declare frog embryos, researchers share their experience transporting samples.

By **Angela Mathew** Globe Correspondent, Updated August 23, 2025, 11:40 a.m.



John Marston, director of Boston University's archaeology program, with samples of present-day plant seeds that he uses in his research to help identify archaeological seeds. Some of the seeds were imported under a USDA permit for plant materials. CYDNEY SCOTT FOR BOSTON UNIVERSITY PHOTOGRAPHY

When Harvard scientist [Kseniia Petrova](#) was detained at Logan Airport in February and [charged with](#) bringing frog embryos into the country for research purposes without declaring them to customs, it sent waves of shock through the research community. Petrova's visa was canceled, she spent nearly four months in immigration detention, and [remains under house arrest](#). She faces [three felony charges](#), including smuggling, and possible deportation to Russia.

To understand how scientists travel with samples, and how common the practice is, the Globe spoke with a handful of researchers from a variety of fields about their experiences.

All the scientists mentioned that they always declare samples when traveling with them. Many described the process of transporting samples as bureaucratic and complicated. Some noted that universities do not have adequate support when it comes to advising scientists on how to be compliant with changing government regulations.

John Marston, director of the archaeology program at Boston University, has transported samples internationally for his work for more than 20 years. Marston studies human relationships with the environment. His research on soil cores in Uzbekistan uncovered that between 500 AD and 1000 AD, people in Central Asia were cultivating rice earlier than previously known, pointing to the fact that their culture was being influenced by East Asia as opposed to just the Islamic civilizations to their West.

Marston uses soils and plant and animal remains like fossilized bones in his research. The plant and animal remains are preserved in charcoal, an inert material that's not biologically active, so they do not require an import permit from the United States Department of Agriculture but need to be declared at customs. For soil samples that contain organic matter like microorganisms, Marston always checks that his USDA permit is up-to-date before traveling. Live plant samples are also regulated by the USDA, and samples that come under the Endangered Species Act are regulated by the US Fish and Wildlife Service, he said.

When working with soil samples, Marston said he also gets export permission from the country the samples originated from, in addition to the USDA import permits. Marston says he typically packs soil samples in sandwich-sized Ziploc bags made of thick, industrial plastic inside a cardboard box. Marston has traveled with samples in his carry-on luggage in the past, but prefers to ship them using courier services such as FedEx. When traveling with samples on commercial flights, scientists also need to be in [compliance with US Customs and Border Protection rules](#).

“The process is very time-consuming ... they might hold it for several days,” Marston said of declaring soil samples at customs, because some airports may not have enough USDA inspectors working at once to look at the paperwork and the samples.

Kseniia Petrova talked to the media after being released from federal custody in Boston on June 12. JONATHAN WIGGS/GLOBE STAFF

When shipping soil samples, scientists have to address their samples to a USDA inspection facility. The samples get forwarded to their labs after an inspection, and scientists are obligated, under their permits, to incinerate the outer packaging and any loose samples that might have escaped from the packaging. If the outer packaging is plastic, it would need to be cleaned with high-grade disinfectant so that the lab is compliant with USDA guidelines, Marston said.

“This would all be specified line for line in our permit,” Marston said, “It’s individual to our lab’s protocol because our lab gets inspected every few years by the USDA.”

In Marston’s experience, including the wrong permit with samples can be damning. He remembers shipping samples with a colleague and learning that the soil had been

incinerated by USDA officials because of an incorrect permit. The scientists were not warned of their error with a courtesy call.

“Eventually I got the exterior box and when we opened it was empty except for a piece of paper that said ‘your materials have been incinerated,’” Marston said.

Steven Clemens, professor of earth, environmental, and planetary sciences at Brown University, studies how monsoon rainfall in Asia changed over thousands of years and the salinity of oceans over time. He mainly works with deep-sea sediments and, occasionally, ocean water, shipped in small vials.

Harvard Medical School's "frog palace." LUCY LU/NYT

Clemens said that samples of ocean water are not heavily regulated because it travels around the world on its own, but deep-sea sediments are because of the microorganisms living at the bottom of the sea floor. In the past, Clemens said it was common to freeze deep-sea sediment to transport it, but the [Nagoya Protocol](#), an international agreement that took effect in 2014, changed the norms to protect biological material. Now, deep-sea sediments are transported in anaerobic or high-pressure conditions to preserve living cells.

Clemens said that a collective he was conducting research with, the International Ocean Discovery Program, took on the responsibility for permitting and transporting samples, which allowed him to focus on the science.

“In general, free and fair exchange of samples for scientific purposes is a really important thing,” Clemens said, “a lot of the science that’s done now requires international

collaboration and trying to secure that in a manner that promotes the science dissemination of the results is important.”

An MIT research scientist who spoke to The Globe of condition of anonymity, because she didn’t want to draw attention to her lab, said she empathized with Petrova, especially since her samples were not harmful to others.

“I feel really bad for her, because a lot of these like rules are really difficult to interpret,” the MIT scientist said, “but you can’t lie about what you’re carrying.”

The scientist said that MIT has its own office that deals with imports and exports, but the staff doesn’t always have the correct answers on protocols to transport samples because different countries often change their rules. The MIT scientist said that in her research over the last 23 years, she has experienced individual customs officials deciding that certain samples should be categorized differently and unexpectedly requesting more paperwork, even after years of following a certain process. She said that universities and research institutions could invest more in helping scientists keep up with these rules.

“They change rules and regulations all the time,” the MIT scientist said.

Marston said that he has access to lab safety staff and lawyers at Boston University who can consult about the right protocols, but agreed that scientists mainly have to figure out the tangle of bureaucratic rules around transporting samples themselves and learn from experience.

“There are all these different pieces of the US government you need to be in compliance with,” Marston said, “it’s not a cut and dry process.”

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