

## DNA to X-ray: Military has variety of tools to ID remains

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A U.N. honor guard carries a casket containing remains believed to be from American servicemen killed during the 1950-53 Korean War after arriving from North Korea, at Osan Air Base in Pyeongtaek, South Korea, Friday, July 27, 2018. The U.N. Command says the 55 cases of war remains retrieved from North Korea will be honored at a ceremony next Wednesday at a base in South Korea. (AP Photo/Ahn Young-joon, Pool)

The U.S. military remains released by North Korea on Friday will be sent to a military lab in Hawaii, where they'll enter a system that

routinely identifies service members from decades-old conflicts.

Identifications depend on combining multiple lines of evidence, and they can take time: Even after decades, some cases remain unresolved.

Dog tags found with the remains can help, and even scraps of clothing can be traced to the material used in uniforms. Teeth can be matched with dental records. Bones can be used to estimate height. And the distinctive shape of a clavicle bone can be matched to records of X-rays taken decades ago to look for tuberculosis, said Charles Prichard, a spokesman for the Defense POW/MIA Accounting Agency.

If a DNA analysis is called for, samples are sent to a military DNA lab at Dover Air Force Base in Delaware.

Tiny samples of bone or teeth, no bigger than the amount of bone in the last joint of the pinkie finger, are enough to yield usable DNA, said Timothy McMahon, who oversees the Dover lab as director of Defense Department DNA Operations.

Each sample is sanded to remove surface contamination, ground to the consistency of baby powder, and then treated with a substance that dissolves the bone and leaves the DNA for analysis. That DNA is then compared with genetic samples from living people who are related to the missing.

The military has been collecting DNA from such family members since 1992, and has reached the relatives of 92 percent of the 8,100 service members who were listed as missing at the end of the Korean War, McMahon said.

The goal is to find bits of DNA in common between the known relatives and the unidentified remains, suggesting both belong to a particular

lineage. One analysis develops a profile that combines what's found at 23 spots in the DNA, for example.

By analyzing different kinds of DNA, lab scientists can look for markers passed down by generations of women, or of men, or of both sexes. The lab once linked remains to a great-great-great-great-grandniece who initially had no idea she was related to the missing service member, McMahan said.

Once a link is made, the lab estimates how strongly it suggests the remains belong to a particular person, and send the results back to Hawaii. There, it's combined with the other lines of evidence.

"We're just one spoke in a wheel to make the identification," McMahan said. "We all work together."

Since Oct. 1, the Hawaii lab has identified 25 service members from the Korean War, part of the 119 identifications made overall in that time period, Prichard said. For the 12 months before that, 42 sets of remains from the Korean War were accounted for, which includes briefing the relatives in person, out of 183 overall.

The agency identifies remains from not only the Korean War, but also World War II through the first Gulf War in Iraq.

How long does it take?

If a clavicle bone can be matched to an X-ray, it might be done in just three days, Prichard said. But in other cases, it can take decades. He noted some remains recovered from North Korea from 1990 to 2005 are still awaiting identification.

For Jan Curran, of Gilbert, Arizona, the new remains turned over by

North Korea have stirred hope.

Curran has no memory of her father, naval aviator Lt. Charles Garrison, who was shot down over Korea and captured in May 1951. He died in captivity, and no remains have been identified.

Curran, 70, has spent decades working to give him a proper burial. She's attended scores of meetings for families of those missing in action in Korea. She was the driving force in the late 1990s in getting several of her family members—including her sister, an aunt, an uncle and cousins—to join her in giving DNA samples to the military in an effort to identify her father's remains, should they be found.

Will their long wait now come to an end?

"We know it's a small chance, but we can't help but hope," she said, her voice breaking with emotion. "It would be wonderful. It's too much to hope for.

"It's amazing, after all these years, how much it can still hurt not to have him."

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