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9/11 victim identification: 17 years later, largest forensic investigation in US history continues

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The bone had been cleaned, cut, pulverized, chemically treated and incubated five times before it produced enough DNA for a positive identification.

The first two attempts were nonstarters.

Forensic scientists with the Bode Technology Group in Virginia, where New York City sent many unidentified human remains in the aftermath of the Sept. 11, 2001, terror attacks on the World Trade Center, failed twice in 2002 to extract clear, liquid DNA that could generate a profile.

The bone, dehydrated and vacuum-sealed in a white package marked with an American flag and bar codes, came back to New York City's Office of Chief Medical Examiner.

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About 10 years ago, newly equipped with more advanced technology, the medical examiner's Missing Persons Unit began trying again. And again.

Then, in July, a breakthrough: a complete DNA profile and a conclusive link to Scott Michael Johnson, a 26-year-old Montclair resident who worked on the 89th floor of the south tower as a securities analyst at Keefe, Bruyette & Woods.

"It was exhilarating," said criminalist Carl Gajewski, a member of the unit.

The 10-person team made more than 100 identifications of 9/11 remains this year. Johnson was the only new discovery and the first victim to be identified since August 2017.

Andrew Schweighardt, a criminalist with the unit, said the finding briefly paralyzed him. He heard a description of Johnson before he heard his name and immediately thought of his

cousin, Joseph Anchundia.

Anchundia also worked for a banking firm in the south tower. He was also 26 years old. His remains had also not been found.

Schweighardt felt his heart seize.

“Part of me is always hoping that one day, we’ll find something of him that we can recover,” he said.

That day could be a long time in coming.

Of the 2,753 people killed in the attack on New York, 1,111 victims, about 40 percent, remain unaccounted for.

Nearly 22,000 human remains were collected from the rubble of the World Trade Center and surrounding utility manholes, roofs and streets between 2001 and 2010.

Most were either whole bodies or tiny fragments, heavily damaged by the fiery crash of the planes, the pressure of the towers collapsing and the tremendous amount of water used to put out the smoldering wreckage, said Jay Aronson, an associate professor of science, technology and society at Carnegie Mellon University and author of “Who Owns the Dead? The Science and Politics of Death at Ground Zero.”

More: Deaths from 9/11 diseases will soon outnumber those lost on that fateful day

“If you want to destroy DNA, the best way of doing it is with heat and moisture,” Aronson said.

The degraded remains did not stop the city’s chief medical examiner at the time, Charles Hirsch, from promising families that his staff would “do whatever it takes, for as long as it takes, to identify every victim of this tragedy.”

Seventeen years later, the largest and most complex forensic investigation in U.S. history continues.

“Our commitment to making these identifications is as great today in 2018 as it was in 2001,” said Mark Desire, assistant director of forensic biology for the Medical Examiner’s Office.

Identifications remain to be completed

As of early September, 14,549 remains, or 66 percent, have been identified, according to the Medical Examiner's Office

The remaining 7,356 samples are either too damaged to extract DNA from or have produced DNA profiles that cannot be matched to a databank of 17,000 reference samples from victims and family members. About 100 victims have no references, Desire said.

Johnson's extracted DNA was compared with a sample from his toothbrush and confirmed with samples from his parents.

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Remains that have DNA profiles but are not matched to a reference sample or are unclaimed are stored in an underground repository beneath the World Trade Center site, Desire said. The repository is closed to the public and can be viewed only through an adjacent reflection room for victims' families at the National September 11 Memorial and Museum.

The medical examiner's Charles S. Hirsch Center for Forensic Sciences holds some 4,000 unidentified, largely bone remains, said Timothy Kupferschmid, chief of laboratories.

They have been tested and retested up to 15 times, Desire said.

Bone is one of the toughest materials from which to extract DNA, he said. The difficulty is compounded by the bones' exposure to fire, water, mold, bacteria, jet fuel and even sunlight.

Technological advancements

Forensic scientists in the city's DNA crime lab, the largest of its kind in North America, could not generate DNA profiles for about 600 bone fragments this year, Desire said.

But they are not giving up.

Ongoing advances in techniques for extracting and identifying DNA samples continue to stretch previous limits of recovery, Desire said.

"We know we're going to be able to do stuff, even next year, that we're not able to do today," he said. "Every year, we're successful on remains that we had no hopes for in the past."

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Every identification made this year was impossible in 2001, when scientists had to manually grind bone samples into powder with a mortar and pestle, Desire said.

The Missing Persons Unit now works with a milling machine, which weakens the bone with liquid nitrogen and pulverizes it with a piece of metal.

The finer powder is more receptive to the chemicals that crack open cells to release DNA, Desire said, and allows for more DNA to be extracted.

Many of the advancements in forensic science have been developed in-house by the DNA crime lab as a direct response to the difficulties in identifying 9/11 victims, Desire said. The new methods and technologies have helped with other missing persons cases and have been shared with labs and police departments working on highly degraded bones around the world.

“Out of necessity, we’ve advanced the bone optimization protocol,” Desire said. “That has been one of the positives that has come from this.”

The Medical Examiner’s Office could not provide a cost estimate for the 9/11 identification effort, but Aronson, the Carnegie Mellon professor, pegged it at well over \$80 million.

Aronson said Hirsch’s unprecedented promise in 2001 has placed an enormous financial and emotional burden on New York City and the Medical Examiner’s Office and forced remains to be kept in a repository reviled by many victims’ families rather than interred.

“I don’t think that any medical examiner will make the same promise in the future,” Aronson said. “This was unique. It was a political decision, in part, and an emotional decision, in part, but certainly not what I would consider a rational scientific decision. At a certain point, you’re getting diminishing returns. You have to ask whether it makes sense to continue to do this and whether it adds value to the families and to the city and the country.”

A sense of closure

Peter Killeen, a stress counselor for Port Authority police unions who worked with families and officers in the aftermath of 9/11, said the return of remains provides a sense of closure for some but may offer little value for others.

“Everyone grieves in their own way. Some people may have accepted the fact that they will never receive something of their loved one from that day and moved on as best they can,” he said, “while other families are hanging on for something that will be returned to them.”

Diane Horning of Scotch Plains received the remains of her 26-year-old son, Matthew Horning, twice.

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She collapsed when she was told of the first identification several years after 9/11.

“When you get that notification, the reality is made tangible,” Horning said. “There’s always a part of you, if you don’t have any tangible evidence, that allows yourself to deny it, and once you get that call, you really can’t deny it anymore. You know it’s true.”

The Horning family decided it wanted to be notified of any future identifications. Some families choose never to hear from the Medical Examiner’s Office again.

“I’m not sure if it’s anything I can intellectualize. It’s just a gut feeling,” Horning said of her family’s decision. “It’s like if you lost a loved one in an overseas war, you want them brought back home. The Medical Examiner’s Office has been very kind and diligent in giving us that option. We felt we wanted it.”

Perhaps a few years passed between the first call and the second, and the family was finally able to bury Matthew Horning in a cemetery.

Horning said the Medical Examiner’s Office has not called in years.

Tom Meehan of Toms River said the recovery of his daughter Colleen Barkow’s remains six days after 9/11 provided answers to pressing questions.

“In a small way, we know what happened to her, the manner of her death,” Meehan said. “Having that knowledge gives us comfort.”

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Barkow’s remains were cremated and buried.

Rosemary Cain considers herself fortunate to have been able to lay a small part of her son, Firefighter George Cain, to rest. But she believes more parts of him are among the unidentified remains and is dismayed that they have not been buried.

“Those bodies are sacred,” Cain said. “Whatever’s left of their mortal remains is very sacred to a mother or a father or a sibling.”

Sally Regenhard, who lost her firefighter son Christian Regenhard, and Jim McCaffrey, who

They no longer think about the possibility of getting them.

They focus their energy now on shutting down the repository by the museum, which they describe as a money-making tourist trap, and entombing all unidentified remains in an above-ground memorial akin to the Tomb of the Unknown Soldier at Arlington National Cemetery.

“The important thing is not just identifying a fingernail, a sliver of DNA on a piece of dirt,” Regenhard said. “For me personally, the important thing is to have all these remains entombed in an honorable, respectful site so that I could say, ‘This is where you go if you want to pay your respects.’ ”

The only place Regenhard said she can do that today is at the Church of the Good Shepherd in the Bronx, where a small memorial garden contains a stone dedicated to her son.

She last went there on Aug. 26 to mark what would have been Christian Regenhard’s 45th birthday the day before.

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The families of the missing live in a kind of suspended reality, Regenhard said. Without remains, there is no burial, and without a burial, there is no physical evidence of what happened to their loved ones.

“The knife in the heart of any parent or anyone with a loved one is if there is no evidence that this person has died,” she said, “then there is no evidence that they ever lived.”

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