

SEARCHING FOR THE MISSING IN A CITY OF MILLIONS

BY **JIM DAWSON**

U.S. Department of Justice efforts to improve the investigation of missing and unidentified persons began with a push by NIJ in 2003 to maximize the use of DNA technology in analyzing such cases. NIJ expanded its efforts in 2005 with the Identifying Missing Persons Summit, and in 2007 it launched the “unidentified persons” database. In 2008, the “missing persons” database was created. Those databases were connected in 2009, creating the National Missing and Unidentified Persons System, or NamUs. NamUs has resolved more than 17,000 missing persons incidents and nearly 3,706 unidentified persons cases.

In 1972 a young man from New York, just 20 years old, left home and vanished. For 42 years his sister, haunted by his disappearance, searched for clues and followed leads as she tried to find out what had happened to her brother — all to no avail.

Then, in 2014 she saw a Facebook posting for the First Annual New York City Missing Persons Day, sponsored by the New York City Office of Chief Medical Examiner (OCME). Organized by OCME’s missing persons unit, the event was being held in response to the overwhelming and ongoing problem of missing persons in New York City, where the resident population of 8.5 million swells to 10 million during the workday. There were more than 13,500 missing persons reports in the city in 2014 — typical of most years — and although most were resolved quickly, about 100 remained open. People who were suddenly gone, often with frantic and despairing relatives left behind.



On the hope that she might finally find her brother, the woman arrived at a modern glass building near the East River in Manhattan that houses OCME’s sophisticated DNA laboratory. She joined 80 other people in the building’s lobby — people from around the world — who were sitting under a large sign that read “Science Serving Justice,” waiting to be interviewed by staff members of the medical examiner’s office. They were foreign, domestic, from all social strata, all with one thing in common — a missing loved one.

Most important, they waited to provide DNA samples that could be analyzed and entered into NamUs, the National Missing and Unidentified Persons System established by NIJ to help find the more than 600,000 people who go missing in the United States every year. Although most of those cases are resolved quickly without involving

The problem of missing persons in New York City is significant. There were more than 13,500 missing persons reports in the city in 2014 — typical of most years — and although most were resolved quickly, about 100 remained open.

NamUs, hundreds of new unresolved cases are entered into the system annually. In addition to NamUs, the DNA samples taken at the OCME event were entered into the FBI's CODIS software — the Combined DNA Index System — to determine if any of those samples could be linked to one of the tens of thousands of missing persons' profiles in the FBI's National DNA Index System (NDIS).

The inside of the woman's cheek was swabbed, her DNA was processed, and the results were uploaded to NDIS. Several weeks later there was a "hit" and, in the understated language of the medical examiner's office, she was told that "a strong kinship match" was found with unidentified male remains. Tragic as it was, her long search was over. Her brother had been dead since 1973, his body discovered that year in nearby New Jersey. Fortunately, his DNA had been uploaded into CODIS in 2010, thanks to an NIJ grant that allowed New Jersey authorities to try to put names to some of the unidentified bodies they held.

Despite the grim nature of the case, the medical examiner officials who created Missing Persons Day considered it a success. The woman's decades-long quest to find her brother was over.

Two other cases were also resolved that day. First, a brother and sister submitted DNA that led to the identification of the skeletal remains of their father, whose body had been discovered on Long Island in

2003. Second, two sisters provided DNA samples that were matched to an unidentified individual who had also been found on Long Island — the body of their missing brother.

Despite the success of the 2014 event, OCME did not have the funds to conduct another Missing Persons Day in 2015. An NIJ grant allowed the event to resume in 2016, and further grants have allowed it to continue. And more people have been identified.

Although Missing Persons Day is perhaps the most visible community activity that NIJ supports at OCME, the sheer size and sophistication of the New York office makes it one of the largest recipients of a wide range of NIJ funding, with nearly 50 grants going to the medical examiner's office since 2006. Although some funds are designated for training, education, fellowships, and reducing sexual assault kit backlogs, some funding supports science-related research, especially in the area of DNA (see sidebar, "Helping Labs Increase Capacity and Reduce Backlogs").

Identifying the Missing

The missing persons unit in New York City, one of only a handful of such units nationally that is located within a medical examiner's office, is perhaps the most scientifically advanced in the United States. This is largely because of the experience its staff gained from the September 11 attacks on the World Trade Center (WTC) that killed 2,753 people. OCME scientists perfected the process of generating DNA profiles from the more than 22,000 human remains that came from the WTC, most of them just "bits of bones," said Mark Desire, OCME's assistant director who oversees the missing persons work. "We applied the lessons learned from that to our everyday missing persons cases." Of the thousands of WTC human remains recovered, about 35% remain unidentified.

Chief medical examiner Dr. Barbara Sampson, a cardiovascular pathologist who also holds a doctorate in molecular biology, credits the progressive science of the entire OCME to Dr. Charles Hirsch, her predecessor, who set the standards high as he pushed the office to become a leading forensic

Helping Labs Increase Capacity and Reduce Backlogs

Throughout the 1980s and 1990s, DNA analysis gained widespread acceptance among forensic and legal practitioners. Since then, the criminal justice system has come to rely on DNA analysis as a critical tool for generating new leads, closing cases, and correcting errors. As more and more DNA samples are sent to the nation's crime laboratories each year, however, the backlog of unprocessed samples continues to grow. Laboratories continually improve their processing speed and efficiency, with help from NIJ research and development funding. Despite increased capacity, backlogs nevertheless remain a persistent issue because demand for DNA analysis is growing too quickly for capacity to keep pace.

NIJ leads the federal government's efforts to address the needs of the forensic science community. Since 2004, the cornerstone of NIJ's response to the DNA evidence backlog has been the DNA Capacity Enhancement and Backlog Reduction (CEBR) program. The CEBR program has awarded more than 2,000 grants totaling almost \$1 billion to support forensic DNA processing and analysis in the nation's crime laboratories. CEBR grantees have used NIJ's support to complete more than 860,000 cases, upload more than 376,000 forensic profiles to the FBI's Combined DNA Index System (CODIS), and produce more than 192,000 CODIS hits.

research center. Hirsch recognized early on that "DNA was going to be the future of forensics and we had to be at the forefront of that," Sampson said. Under Hirsch, she continued, "We weren't satisfied with just doing the job. We always wanted to do the job better and faster, using the most cutting-edge technology." (See sidebar, "Faces in Clay.")

Sampson said the problem of missing persons in New York City is significantly worse than in smaller jurisdictions. "People come here from all over the world and their families don't even know they're here," she said. Although the number of identifications resulting from Missing Persons Day is small, "it is so heartwarming to see these families. We give them a lot of services. The Red Cross is here, along with other organizations that help them through this."

Sampson said the DNA work, which often involves degraded or fragmentary samples, is "very slow and tedious." Despite the nature of the work, she said, the skill and technology at the lab are so advanced that "we can get DNA out of a stone."

The broader work involving missing persons started in earnest in 2008. It was supported by the first NIJ

grant to OCME's forensic biology division (see sidebar, "Using DNA Technology To Identify the Missing").

OCME used procedures that came, in part, from that grant to attack the backlog of cases from the 1980s and 1990s, including the 1,200 unidentified bodies buried in the city cemetery on Hart Island, known as Potter's Field.

DNA Kits

In 2009, funded by another NIJ grant, Desire's office developed a missing persons kit that is similar to the commercial ancestry DNA kits popular today. "We developed the kit, which is something that we can mail out to a family that's missing a loved one," he said. The kits include two swabs, sterile gloves, and packaging for returning the swabs to OCME in a postage-paid envelope.

In addition to sending the kits to people in and around New York City, they have been sent to law enforcement agencies in New York state and overseas, particularly to Mexico. Desire said, "We'll have a family in Mexico whose son came here to New York City and they haven't heard from him. We've got [unidentified] bodies in the morgue, and in Potter's Field, and one of

Faces in Clay

Bradley Adams stands in a room where human skeletal remains are laid out on tables, sculpted clay heads of crime victims line shelves high on the walls, and a few odd skulls and bones are scattered on sideboards. As macabre as this room appears, it is the office Adams works in every day as the director of forensic anthropology at the New York City Office of Chief Medical Examiner.

The cases in the room — be they the heads looking down on Adams or the worn bones on the tables — are all unidentified people. Many of them died violently, as evidenced by injuries to their skulls, and some just turned up dead, the cause unclear.

What they all have in common is that neither the medical examiner's office nor the police know who they are. Crime scene investigations have been completed, DNA has been taken and submitted to the FBI database, missing persons reports have been studied, but nothing to identify the individuals has been found.

So it falls to Adams and Joe Mullins, a private forensic sculptor, to give faces, and perhaps identities, back to the dead. Adams scans the skulls with a laser and then creates replicas using a sophisticated 3D printer purchased with an NIJ grant. Mullins, who for years has created age progression drawings of missing children for the National Center for Missing & Exploited Children, takes the replica skulls to the New York Academy of Art in lower Manhattan. There, students enrolled in the forensic sculpting workshop spend a week laboring over the skulls in an effort to give them back their faces.

Mullins comes to New York once a year to conduct the workshop at the art academy with the 3D-scanned skulls provided by Adams. As the five-day workshop begins, Mullins admonishes the students with a fundamental rule: No artistic license.

The class begins with Mullins giving each student the replica skull of an unidentified person. There is a system to constructing a face from a skull that requires an understanding of the relationships between bone structure, muscles, and soft tissue. The shape of the nasal opening is also important, as are the orbits around the eyes.

Usually it is Wednesday afternoon, the third day of the workshop, when the eyes are in place and enough clay has been sculpted that the faces begin to emerge. The class gets very quiet. "It's hard to articulate," Mullins says, "but by Wednesday afternoon the students understand the scope of what they are working on, and they've gotten a face. It's no longer just some abstract sculpture. They see that face staring back at them, and it's dead quiet."

A connection inevitably forms as the skull turns into a person and the students realize that what started out as an interesting facial reconstruction project has become personal. The faces stare back at you, Mullins says, and you understand that you are, in a sense, resurrecting a person, revealing a lost identity.

The results of four years of the forensic sculpting workshop are the heads that line the walls in Adams' office. Images of the heads are uploaded into NamUs, the National Missing and Unidentified Persons System, with the hope that one of the faces will look familiar to someone and trigger a phone call.

“We want the face to be in the ballpark,” Mullins says. “That’s where you want to be with these sculptures because there is ambiguity in there. You can’t stray far off the path of what the skull is telling you about the features, but things like hairstyle and facial hair get lost.”

Although the goal is to get the face right, he says, given the ambiguity, “almost is good enough.”

What is critical to remember, both Adams and Mullins note, is that these were real people, mostly the victims of violent crimes, who have lost not only their lives but also their identities. Ultimately, this isn’t about the art of sculpture, it’s about respecting the deceased, finding identities, solving cases, and reuniting loved ones with their families.

As many of the clay faces sculpted in past classes look down at him, Adams turns to the skeletal remains on the tables and explains the graphic stories of the bones. “She was found in a park and had been buried under some leaves and garbage,” he says of what is left of a smaller skeleton of a woman. On an adjacent table is another set of bones. “This case right here was found in a wooded area and had been wrapped up in a carpet,” he says.

He nods toward a third skeleton. “This guy had been shot in the head and had been out there for years.” Next to the shooting victim was a dismemberment case, a skeleton that had been found in pieces. Investigators found the head in a trash bag in a community garden in Brooklyn, while the torso was found at a recycling plant.

“We were able to take the lower-most vertebra that was associated with the head and the upper-most vertebra associated with the torso and fit them together,” he says. “You can see those cut marks — where the head was cut off — you can see those cut marks on both vertebrae.”

He does not know who this person was, but he knows he was male and, based on the “growth zones” in the bones, he can get a good estimate of age. “See how that is bumpy right there,” he says, pointing to the end of a collarbone. “The cap on the collarbone doesn’t happen until your mid-20s, and here it is totally missing, so he’s probably under 25.” He points to a small gap in another bone. “That’s where part of this bone hasn’t fully fused, so that’s more looking like late teenage years. Based on all of his indicators, I bet he’s 18 or 19 years old.”

Other violence was done to the man, all to prevent identification, Adams says. Even if DNA is recovered from the remains, if it doesn’t get a “hit” in the FBI CODIS database — the Combined DNA Index System — the remains, like dozens of others that come through Adams’ office each year, will be unidentified. And the investigation into the murder will go nowhere because the police do not know who the victim is.

Mullins says he and his students have completed the reconstructions of the unidentified skeletal remains in Adams’ office and now the forensic workshop is looking for replica skulls from other jurisdictions. “I want to spread the word [to other medical examiners’ offices] that if you have the skulls of unidentified people, we can get them scanned and work with them,” he says. “Don’t let them just sit there collecting dust. I mean, that’s somebody’s mom, cousin, uncle, aunt, and their family is frozen in uncertainty.”

Using DNA Technology To Identify the Missing

From 2008 to 2015, NIJ made 32 awards through the program “Using DNA Technology To Identify the Missing,” for a total of more than \$23 million. The program was, in part, a response to findings from the Bureau of Justice Statistics, which reported in 2004 that approximately 1,000 cases of unidentified human decedents go unsolved every year.¹ In January 2007, the *NIJ Journal* called attention to the magnitude of this crisis in the United States with an article titled “Missing Persons and Unidentified Remains: The Nation’s Silent Mass Disaster.”² Among NIJ’s efforts to address the increasing number of unidentified persons cases, the use of DNA technology stands out because advances in the past decade have allowed investigators to successfully extract DNA profiles from evidence that had yielded inconclusive results under earlier methods of analysis.

Notes

1. Matthew J. Hickman, Kristen A. Hughes, Kevin J. Strom, and Jeri D. Roper-Miller, *Medical Examiners and Coroners’ Offices, 2004*, Special Report, Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics, June 2007, NCJ 216756, <https://www.bjs.gov/content/pub/pdf/meco04.pdf>.

2. Nancy Ritter, “Missing Persons and Unidentified Remains: The Nation’s Silent Mass Disaster,” *NIJ Journal* 256, January 2007, <https://nij.gov/journals/256/pages/missing-persons.aspx>.

them might be him, so we can collect DNA from the family by sending out the kit.”

The kits containing DNA samples are returned in the mail, he said, “and we get them every week.” The office follows up on the kits sent in by the families with phone calls and has a system to keep track of all of the kits. “It’s been a wonderful help,” Desire said.

One of the issues encountered when trying to obtain DNA samples from families who have a missing relative is that some families do not trust law enforcement and are afraid to come forward. The realization that many people in New York City were afraid to report a missing relative was part of the reason Missing Persons Day was created, Desire said. When OCME announced the first event in 2014, the office was overwhelmed with requests for interviews from the media. “It was amazing because New York City is the media capital and everybody wanted to come and talk to us. I think there were probably 50 television interviews.”

The objective of those interviews, he said, was that “we could say we’d be having this event every year where families could go to the medical examiner at the Department of Health.”

Desire feared that families would come in expecting his staff to identify their missing loved one on the spot. As DNA analysis typically takes weeks or months, “I didn’t want them leaving disappointed,” he said. “So we brought in all of the relevant nonprofits, the spiritual care people, and the emotional and mental health specialists. They were all in the building, gave out plenty of information, and made contacts with the families.”

The event allowed families of the missing to meet with other families in the same situation. For the first time, they were talking to each other and to OCME staff, Desire said. “So now we get calls on a weekly basis from other families asking, ‘When is your next Missing Persons Day? I want to come in and give a DNA sample.’”¹

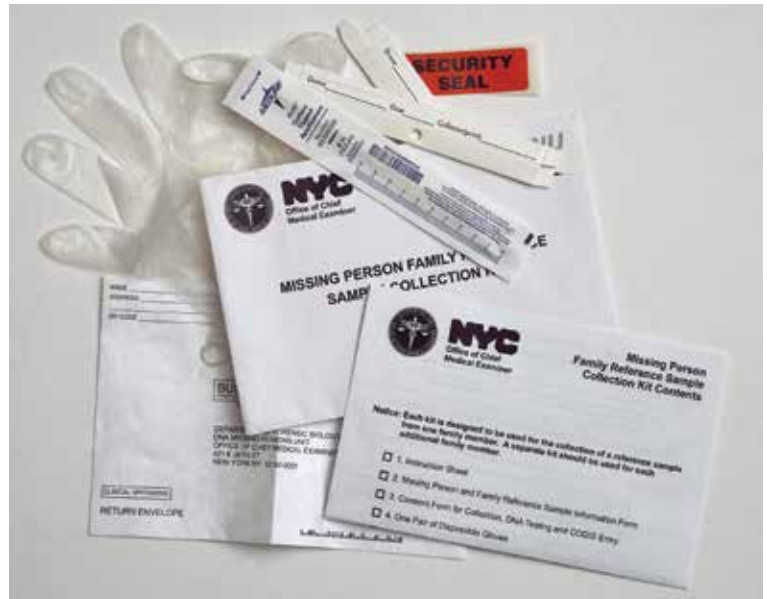
Although NIJ funding allowed the event to resume in 2016, because of the DNA kits the families do not have to wait for the next event, Desire said. If someone calls in, “we’ll mail them out a kit that day,” he said. “And we’ve made identifications based on that.”

Because of the success of Missing Persons Day, members of his unit are regularly invited to events held throughout New York. Some of those events are designed to help families obtain medical services, enroll their children in public schools, or find jobs. The event organizers have realized that some of the families may have missing relatives, “so we are invited and we have tables set up,” Desire said.

At some of the events, the participants spoke only Spanish or other languages that Desire’s science staff could not speak. So he turned to NIJ for another grant that allowed him to hire bilingual DNA scientists. “We now have two,” he said. “One from Mexico and one from the Dominican Republic. I studied Spanish in school for four years, but a Spanish-speaking family is going to trust me a lot more if I have my scientist from Mexico with me. Just immediately, the warmth and the trust that those scientists have [with the Spanish-speaking community] is exactly what I envisioned and they are who we send out to these events,” he said.

Although OCME runs Missing Persons Day independent from law enforcement, the New York Police Department (NYPD) and other law enforcement agencies work closely with the medical examiner’s office. “On Missing Persons Day, we have the NYPD with us because if, God forbid, we have a case where a woman comes in and says, ‘My husband has been missing for a year and I think he was murdered,’ we can do something about it,” Desire said. “We can say ‘law enforcement is here for you’ and get them involved.”

Most of the cases, like the woman whose brother disappeared in 1972, are straightforward missing persons cases. Regardless of the circumstances, Desire said, “our job is to identify your loved one.”



The missing persons DNA collection kit is typically sent to families to determine if they are linked to any unidentified individuals in the medical examiner’s database.

About the Author

Jim Dawson is a forensic science writer and contractor with Leidos.

Note

1. NamUs participates in Missing Persons Days held around the country, including in Alabama, Arizona, Arkansas, California, Colorado, Florida, Illinois, Kentucky, Maryland, Michigan, Missouri, Nevada, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, and Washington. In 2018, NIJ staff attended 20 separate Missing Persons Day events in 15 states..

Image source: jokerpro, Shutterstock.

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