

A10 City & Region

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THE BOSTON STRANGLER CASE

Riddles have solutions that may be unearthed

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vo to extract DNA evidence that they hope will prove, once and for all, that he was telling the truth when he confessed to being the Boston Strangler.

The past has seemingly crashed into the present, the skeletons of yesterday becoming the headlines of today. But for a city that prides itself on persevering through a history that seems destined never to change, resolution has a warm uneasiness, like a 70-degree day in November.

What unites the three cases — other than being mysteries that had transitioned to mythologies — is that they were once near the top of Boston's list of "things we'll never see in our lifetimes," just below what it would feel like to actually win the World Series and slightly above not having a Kennedy in office.

Now that list is getting very short.

Where's Whitey? For 16 years, it was a riddle that was never to be solved. He was dead, people said, or holed up in Ireland, or hidden by the FBI who didn't want him to tell the full story of his work as an informant.

Instead, he was in sunny Santa Monica, reading books about himself. Now the much-

mythologized mobster is living in the Plymouth County Correctional Facility, an 83-year-old man complaining that they wake him at 4 a.m. to get him to the courthouse in Boston in time to stand trial in 19 slayings.

Where are the Gardner paintings? Well, we still have not seen the end of that one, 23 years after the 13 paintings were cut from their frames. But in March, the Boston FBI office announced that they knew who was behind the most infamous art heist in history. The FBI didn't say who, mind you, only that they knew. And then they launched a public awareness campaign, similar to the one that led to the capture of Bulger, in an effort to recover the paintings. Check your walls, people; you may have them and not even know.

And now we come to the case of the Boston Strangler, which is either a legendary whodunit, or a legendary case of over-thinking because DeSalvo already said he did it more than four decades ago.

In the latest you-couldn't-make-this-up twist that is shortening our list, Boston police detectives trailed the relatives of DeSalvo, who was stabbed to death in prison 40 years ago, and waited for a



chance to grab something that would have their DNA on it. They got it when a relative discarded a plastic bottle, and DNA tests found there was a "familial match" to forensic evidence collected from the last of the Boston Strangler's 11 female victims.

A strange way to finally move the Boston Strangler case toward a final conclusion, but then again, Bulger was captured after a neighbor remembered meeting Bulger and his girlfriend, Catherine Greig, while they were caring for a stray cat in the neighborhood.

The announcement that DeSalvo's skeleton would be exhumed from his grave in Peabody came a day after jurors in the Bulger trial saw images of the bullet-pierced skeletons of two of his alleged victims, unearthed from crude graves where they had been



DAVID L. RYAN/GLOBE STAFF

buried on Halloween night in 1985. The past does not stay past if you dig it up.

Which leaves us with the Gardner paintings. Last year, authorities indeed tried to dig them up in the backyard of an alleged mobster in Connecticut, a search that reportedly

involved ground-penetrating radar, two beagles, and a ferret. The paintings remain at large.

If and when those paintings are recovered, what will be left on the list of things we'll never see in Boston?

Well, a lot of old-timers will

An old surveillance photo (above) showed reputed mobster James "Whitey" Bulger. For 16 years, "Where's Whitey?" was a riddle that was never to be solved. Some people said that he was dead. Instead, Bulger was in sunny Santa Monica Calif. — mystery solved — and now he faces trial. At left, paintings stolen from the Isabella Stewart Gardner Museum were still missing. It was yet another Boston puzzle still to be solved.

tell you that we'll never see another storm like the Blizzard of '78. Is it too early to put a chair in a parking space?

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How DNA evidence points to DeSalvo

Markers shared by men in family were examined

By Carolyn Y. Johnson

GLOBE STAFF

Advances in analyzing small, degraded amounts of DNA and the ability to trace genetic markers that are shared by male family members allowed the Boston Police Department crime laboratory to gather convincing evidence to link Albert DeSalvo to the 1964 murder of Mary Sullivan.

Since the mid-1990s, Donald Hayes, director of the Boston Police Crime Laboratory, had realized that samples taken from the crime scene, including semen on a blanket, contained DNA that could be used to identify the killer. He simply needed the right technology to unlock that valuable information.

Early attempts to use DNA testing had provided inconclusive results in 1999 and 2001. The samples, retrieved before DNA testing had been developed as a forensic technique, had deteriorated over the years. Hayes did not want to squander what was left — samples are destroyed when their DNA is analyzed — until he was confident technology was mature enough to provide real insight.

Last year, after DNA analysis helped police crack several other cold cases, he decided the time was right. Samples from the Sullivan case were sent to two independent laboratories. Samples taken from Sullivan's body during her autopsy and preserved on slides contained two people's DNA, hers and an unidentified male's. The male portion matched DNA retrieved from semen taken from a blanket at the crime scene, leading investigators to conclude they now had the genetic profile of her killer.

However, police did not have a DNA sample from their prime suspect, DeSalvo, so they resorted to a technique that allows investigators to make

matches using family members. The technique, called familial DNA searching, has become an increasingly common tool, used to identify victims of mass disasters such as Hurricane Katrina, large casualty events such as the World Trade Center bombings, and in routine police work.

"These are the same methods we use in all mass disaster cases, where if we don't have a known reference sample from an individual — a hospital biopsy, unlaundered clothing, a toothbrush that provides the reference sample to compare other samples to — then we have to go to relatives," said Dr. Frederick Bieber, a forensic DNA specialist at Brigham and Women's Hospital.

Such testing relies on the fact that certain kinds of DNA are handed down from mother to child or father to son virtually unchanged. Police followed DeSalvo's nephew, the son of his brother, and retrieved a water bottle he had been drinking from to obtain DNA that would allow them to look for a family match.

Investigators focused on the Y chromosome, which only men have, looking specifically at "short tandem repeats," regions of DNA where a short sequence of molecules is repeated over and over. The number of repeats varies; some men have more repeats of a particular sequence than other men. Since men inherit their Y chromosome from their father, those descended from the same father will have very similar patterns of short tandem repeats.

By looking at numerous repeated regions, analysts can determine whether a DNA sample likely came from men in a particular family.

"It's the different number of repeats that vary, individual to individual, so usually we're looking at at least 15 locations in the DNA and determining how many number of repeats each individual has," said Amy Jeanguenat, laboratory director at Bode Technology, based in

Lorton, Va. Bode Technology is one of the firms that performed testing, but Jeanguenat said she could not comment specifically on the analysis done in the Sullivan case because of an agreement with Boston police.

The testing indicated that DeSalvo was a match and excluded 99.9 percent of the male population, District Attorney Daniel F. Conley said at a press conference.

The next step that will more conclusively determine whether DeSalvo killed Sullivan will come after his body is exhumed. Investigators will take a bone marrow sample and analyze DNA found in the nucleus of cells, Hayes said.

Several outside forensic specialists were uncertain whether, 40 years after DeSalvo's death, the DNA will still be intact for analysis. They said it might be necessary to look at another type of DNA, found in the mitochondria, the cell's power plants, which are outside the nucleus and are often better preserved. But mitochondrial DNA would provide a less conclusive identification.

David Foran, director of the forensic science program at Michigan State University, worked on samples taken from Sullivan's exhumed body in the early 2000s to look for a DNA link to one of DeSalvo's relatives.

He said he analyzed a substance in her pubic hair that was "consistent" with semen but found no DNA match to DeSalvo, but he never had access to crime scene evidence. He said the new work appears persuasive, and the analysis of DeSalvo's remains could end one mystery.

"It certainly ends the debate about who killed Mary Sullivan," Foran said. "There are other debates, about whether there was more than one Boston Strangler. There will still be controversy."

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