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## Blood hounds

### Trained in Mountain View, these highly skilled dogs have been used to track human remains in major cases all over the country

Michael Peña, Special to The Chronicle

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When Lynne Engelbert gives her doctor a blood sample, she asks for a few extra vials for herself. When she goes on vacation and gets sunburned, she keeps the peelings. And when her colleagues have teeth removed, they ask for them back.

They belong to the Canine Specialized Search Team, and as volunteer handlers of dogs that are trained to detect the scent of human remains, they must give up a lot more than just their free time and energy. The skin peelings and teeth are used, along with samples of blood, tissue and bone, to train the dogs to identify scents in order to locate human remains.

"We don't use pseudo-scents," said Engelbert, the team's program coordinator. The intrepid team trains at the NASA Ames Research Center in Mountain View, but these fine-tuned canines have been all over the country.

They were used to search for the dead and the living at the sites of the Oklahoma City bombing and the Sept. 11, 2001, terrorist attacks. They "cleared" the 150-mile-long slough where debris from the space shuttle Columbia landed in Texas, and, locally, they scoured countless acres for any trace of Polly Klaas, Xiana Fairchild and Laci Peterson.

But they cannot simply be called cadaver dogs. Some are trained solely to locate decomposed human tissue, blood and bones for disaster- and crime-scene investigations. A cadaver dog is trained to "alert" on rotting flesh and blood.

"Our dogs are very highly trained; they're more specific," Engelbert said.

"Cadaver dogs have a high-school diploma, while human-remains dogs have their Ph.D."

So how else do the trainers procure their grisly materials? They won't always say, but they have

asked midwives to donate placentas, bought imported human bones in Berkeley and collected blood-soaked soil from car-crash sites.

"We have paramedic friends," said Engelbert, of Saratoga. The team is a resource of the Santa Clara County Medical Examiner-Coroner's Office, which does not supply the trainers with scraps from its tables.

In each case, Engelbert stresses that all scent sources are acquired legally and ethically. But that can be a challenge in other states, where the handling of human remains is prohibited, she said.

Perhaps that's why the pooches that train at the former Moffett Federal Airfield are among the most experienced in the country. Lucy, Engelbert's 12-year-old border collie, has been a continuously certified disaster-search dog longer than any other dog in the United States.

Six dogs train on base regularly, about every other day, and they usually nose around under the belly of an 80- by 120-foot wind tunnel used to test aircraft aerodynamics. Stacks of dusty crates and moth-balled motors cause calm summer breezes to curl and lash in unexpected ways, creating "scent pools" that can throw even the most finely tuned dog noses off track.

On a recent afternoon, Sterling had a bit of trouble following the scent of tissue samples hidden by his trainer, Lynne Benson-Colbert. The spindly standard poodle high-stepped over pipes and shimmied between oily engines for several minutes before getting on his hind legs and darting his nose at a blue thermos.

"Let's just say it's something," said Benson-Colbert, chuckling but refusing to specify what was in the container. A San Francisco Fire Department paramedic for 17 years, she lives in Belmont and now spends much of her time with Sterling.

To the untrained eye, the 5-year-old poodle with a lovingly groomed charcoal coat and gem-studded collar appears destined for a best-in-show trophy. But Sterling's real assets are a well-trained snout and a hard-working disposition that is typical of his breed.

The dogs are conditioned at a young age through a process called imprinting. Several scent sources -- grave dirt, a mixture of hair and blood,

bones -- are laid out in an empty room, and the puppies are free to roam.

When they linger over a sample, the trainer presses a clicker and gives them a snack. Some dogs gravitate toward different sources, and this then becomes their specialty.

Cadaver and human-remains dogs are an outgrowth of search-and-rescue canines that stepped onto the scene about 30 years ago to sniff out lost hikers and escaped felons in the wilderness. Search-and-rescue dogs, then, are sensitive to the scents of the living, including urine and sweat.

Even though the handlers of all these categories of specialty canine have remained unpaid, it doesn't mean they don't go to great pains to train their animals.

In addition to prolonged blood draws, they regularly have a bone to pick with Diana Mansfield, manager of the Bone Room in Berkeley.

Classified as a natural history store, the Bone Room is a menagerie of insect and animal remnants and carries every bone of the human skeleton. Because the bones come from other countries and don't require as much sterilization as their domestic counterparts, they retain more of their original scent.

"They need bones that are less sterile than the norm," said Mansfield, who has watched dog trainers go to great lengths to ensure they don't contaminate bones with their own scent. "They always handle them with rubber gloves."

Human-remains dogs can also detect blood once painted on cement and then washed off, or blood that was smeared on drywall and later scrubbed off with bleach. In California, the state Office of Emergency Services issues certification. But dogs can achieve higher certifications if they can pick up on old or dry blood and other residual scents.

In fact, the team is considering a residual-scent study to see if the dogs can determine a person's approximate time of death and how long the odors linger. To do that, they need entire corpses, according to Mary Roach, author of "Stiff: The Curious Lives of Human Cadavers."

Roach, a San Francisco freelance writer, heard about the human-remains dogs three years ago. But because the cadaver study was still in limbo during Roach's research for the book, the team didn't make the cut.

Instead, Roach mentioned the keen canines in a footnote, along with trainer Shirley Hammond's infamous pink gym bag and plastic cooler. At times, they have contained bloody shirts, soil from beneath a decomposed corpse and human tissue encased in cement.

"These dogs are unbelievable," said Roach, whose book delves -- frequently with tongue in cheek -- into the cadaver's contribution to science and forensics. "They've worked on all the classic cases."

The dogs have even been used to identify unmarked graves in cemeteries where tombstones have been pulled. And in Fremont, they helped locate ancient burial grounds for Ohlone Indians.

"We're talking thousands of years ago," said Engelbert, whose own secretary volunteered a relative's cremains to be used in the training program.

"We never lose our stink."

## About the team

For details about the Canine Specialized Search Team, a nonprofit corporation, call (888) 413-2778 or see [www.csst.org](http://www.csst.org).

E-mail comments to [penfriday@sfgate.com](mailto:penfriday@sfgate.com).

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