

Chapter 1

The Care Crossover

Dogs contribute to our lives in many ways. You're probably aware of Seeing Eye or Guide Dogs for the Blind, and perhaps Canine Companions for Independence. But many other groups train dogs for a variety of other special needs.

You've also probably seen police dogs, if not in real life then at least on television. But again, there are so many other ways that dogs help us. With all the worries about terrorism, dogs are sniffing for explosives in more places than ever.

And speaking of sniffing, the dog's nose ranks as the foremost odor detection device known to—or at least usable by—humans. Sure, dogs can track fugitives, but they can also locate endangered species, find termites in the walls of houses, and even sniff out human disease.

Our canine friends can also help our health in a more direct manner, as exercise partners. They're even good for our mental health, providing emotional support and stress relief. And in the realm of research, dogs are finally being recognized as excellent models—after all, they not only suffer from many of the same diseases, they share our environment intimately. The line between human and veterinary medicine frequently blurs, as we share breakthroughs and new treatments.

And speaking of the veterinary world, dogs can be the focus of careers. They even form the specialty of at least one CSI investigator.

DOGS IN SERVICE

The Seeing Eye was established in 1929, after Morris Frank and his guiding dog Buddy toured the United States to show what a trained dog could do. Guide Dogs for the Blind followed in 1942.

Some people think the dog directs the handler to destinations—all the handler has to do is name a place and then follow the dog. But that's not how it works. The handler tells the dog when and in which direction to turn. The dog goes forward in as straight a line as possible, moving around any obstacles with enough space for the handler and stopping

at each curb, step, or stair. In one of the toughest tasks, the dog must watch for and avoid obstacles, such as tree branches, at the handler's head height, far above anything the dog would have to worry about.

The final trait necessary in a guiding dog is intelligent disobedience. If a handler commands a dog forward into the street as a car approaches, the dog must choose to disobey rather than lead the team into disaster. This difficult discrimination is unique to guiding dogs.

Canine Companions for Independence (CCI) doesn't train guiding dogs, but since 1975 has trained dogs to do nearly everything else. They place assistance dogs to perform daily tasks such as picking up dropped items, opening and closing doors, and unloading groceries from the car or laundry from the dryer. Children too young to be fully responsible for an assistance dog can receive a sort of "starter" assistance dog, which serves as a skilled companion.

CCI also provides dogs to facilities, so a convalescent hospital may have a roaming assistance dog. In addition, the organization trains and places hearing dogs who can alert their hearing-impaired handlers to important sounds such as smoke alarms or alarm clocks.

The smaller Independence Dogs organization began a program of helper dogs for people with Parkinson's disease. This illness causes balance problems and frequent falls, as well as causing a person to freeze in place. The dogs have the common assistance dog task of helping their handlers maintain their balance, by staying close and steady. But these dogs also learn the uncommon task of "unfreezing" their handlers by tapping a paw on their foot. (For reasons unknown, a touch on the foot of a Parkinson's patient can often break an episode of freezing.) The initial trial program with the dogs achieved a 75 percent reduction in falls by the handlers.

Two organizations—Dogs for the Deaf and the San Francisco SPCA—began training hearing dogs one year apart, in 1977 and 1978. Both agencies



The Seeing Eye®, Inc.

With the help of an accomplished guiding dog, the blind can even hike in places you might not think possible.

get most of their dogs from shelters, where dogs surrendered for being too active or too energetic fit their needs precisely.

Some organizations are attempting to train seizure alert dogs, but more often, family dogs choose this task for themselves. A survey conducted of families including a dog and a child with seizures found that 80 percent of the dogs who exhibited seizure-alert behavior (licking the child's face, whimpering, and protective behavior such as pressing the child against a wall) were female. The alerts can range from seconds to hours prior to a seizure.

Because service dogs of every sort are always in short supply and waiting lists are often long, organizations to help people train their own dogs for their own needs sprang into existence. Handi-Dogs works with people and their own dogs, or helps them find a dog, and provides weekly training sessions to meet their specific needs. The organization uses clicker training, finding it effective, pleasant, and doable by clients with limited arm strength and physical ability. (See Chapter 3, "Training That Works on Beings with a Brain," for a brief description of clicker training and its uses.)

CRIME-FIGHTING DOGS

You've probably seen a police dog in one venue or another, whether doing a demonstration at a dog day event, simply riding in a police vehicle, on the news, or on a TV show. They provide excellent service in many ways. Police dogs track fleeing suspects, enter dangerous situations ahead of their human partners, hold suspects at bay until help arrives, and search for drugs or explosive substances.

Police dogs generally live with their handlers both while on the job and after retirement. Their training costs thousands of dollars, but they usually remain on the job for seven years.

The military has used dogs since World War I, and not just for patrolling and guard duties. Dogs served as couriers, running crucial messages from one unit to another, often through enemy lines. After being adopted on the battlefield, a Yorkshire terrier gained fame by making parachute jumps with his unit and carrying a line through lengths of pipe.

During World War II, patriotic citizens gave up their own family pets to the war effort, sending them off to combat.

Other agencies also use dogs, from Fish and Wildlife to the Transportation Safety Administration, to Customs and Immigration. Nearly all of them rely on the dog's marvelous nose to do their work. We'll look into that particular ability in the next section.



Linda Benson



Linda Benson



Linda Benson

Sequim police department K-9 officer Titus, with his handler Mike, search for illegal substances in a car. Titus makes the find and is rewarded with a ball. Titus is a dog from local rescue, now doing important work.

A program of the New England Assistance Dog Services (NEADS) combines prisoners, veterans, and dogs, to the benefit of all. After initial puppy raising, the dogs are sent to live with a prison inmate. Because the prisoner has not much else to do, the training proceeds more quickly than in foster homes. Once trained, the dogs go to veterans injured in Iraq, Afghanistan, or other battle zones.

Many prison programs exist. The Prison-Pets Partnership began in Gig Harbor, Washington, in 1982. Selected inmates at a women's prison there have been learning dog grooming, care, and training while preparing their canine charges to be service dogs. Not a single woman



Did You Know?

Two U.S. Customs dogs, Rocky and Barco, patrolled the border between Texas and Mexico known as Cocaine Alley. In 1988, they recorded a record 969 drug seizures, a number so astonishing that Mexican drug lords offered a bounty of \$30,000 to anyone who could “take out” the dogs. No one did. They retired with honors.

who has participated in the canine program has returned to prison after serving her initial sentence—a remarkable achievement.

Finally, the Veterinary Genetics Lab at the University of California–Davis does for animals what CSI does for humans. Although the lab originated to determine the parentage of valuable cattle and horses, it now also uses DNA evidence to solve crimes. In one sexual assault case, the only hard evidence placing the suspect at the crime scene was dog urine. The victim’s dog had relieved himself on the suspect’s truck tire, and DNA analysis proved the link.

SCENT SENSE

As you will see in Chapter 10, “How the Dog Senses the World,” dogs possess a skill beyond compare when it comes to the world of odors. Here is just a brief look at some of the many ways that in-born excellence assists humans.

Most people probably think first of bomb-sniffing dogs or search-and-rescue or possibly drug-sniffing dogs. Bomb-sniffing dogs have been in even greater use since the attack on the World Trade Center. For example, you can see them at work almost any day on the loading docks of the Washington State ferries. At airports, you’re more likely to encounter a member of the Beagle Brigade, busily sniffing luggage for contraband fruits and meats.

Search-and-rescue teams also received much attention after 9/11. But those dogs and handlers do far more than search disaster sites. Lost children and Alzheimer’s patients are regularly found by dog-and-handler teams. Others specialize in avalanche rescue, by locating skiers and snowboarders buried under mountains of snow. (For more on how

one becomes involved in search-and-rescue efforts, see Chapter 13, “Lending a Hand.”)

Arson dogs sniff out accelerants used to start fires, helping fire investigators to do their jobs. Drug-sniffing dogs of course locate drugs, from marijuana to methamphetamines. Incredibly, dogs have even been taught to recognize the odor of pirated DVDs in international shipments.

Relatively new, but quickly expanding, is use of dogs in natural conservation. Canines in various locations find the scat of wolverines, cougars, cheetah, jaguar, lynx, maned wolf, grizzly, and black bear. Others track the animals themselves, ranging from the desert tortoise to indigo and brown tree snakes to black-footed ferrets. Dogs are even used to find noxious weeds such as knapweed to help in their eradication. Even more incredibly, dogs riding in the bows of boats have located the scat of right whales and orcas—in the case of orcas, before the poop sinks.

Dogs also sniff out some of our most annoying and expensive household pests and problems. Some years ago, some savvy people realized that dogs could be more effective than trained inspectors at locating termite infestations in homes. Dogs have been tracking down the hidden pests ever since. They also nose out household mold, saving not just the walls and ceilings, but the inhabitants’ health. And for hotels and other guest lodgings, dogs can locate a truly insidious pest—bedbugs. This program has grown in scope in the aftermath of lawsuits and judgments against hotels whose guests were bitten by bedbugs in their rooms. A dog can locate the problem or declare a room clean in only three or four minutes. Finally, dogs are finding spilled or forgotten mercury (a health hazard) in schools and other locales.



Science Says

Dogs are built to be incredible scenting machines. Yes, they have much more sensory equipment than other animals, but even beyond that they’re refined to sniff. Did you ever wonder about the design of the dog’s nostrils, with those slits at the sides? Gary Settles, professor of mechanical engineering at Penn State University, studied canine olfaction and found that while air comes straight in on a sniff, on the exhale the nostrils flare, the slits on the sides open, and the exhale goes out to the sides. So the dog isn’t disturbing a scent by exhaling right into it. Elegant design!

Laux/RO



This dog and handler are in a helicopter being taken to a search area.

Dogs are also sniffing humans directly to locate disease. Many anecdotal reports had been floating around about dogs sniffing, even biting at, a mole on their owner's body, which turned out to be cancerous. Now research confirms that dogs can locate cancers not just on

the surface. Historically, physicians have used odors to diagnose disease. Hippocrates detailed the musty smell imparted by liver disease and the fruity breath of those with diabetes. Studies are now demonstrating that dogs can sniff breath and identify lung, breast, or liver cancer; sniff urine and recognize bladder or prostate cancer; and sniff skin and find melanoma. (Note that an article in the *British Medical Journal* reports that the dogs being tested at sniffing bladder cancer were clicker trained in only three weeks—further testament to the power of positive training.) A study done by the Pine Street Foundation



Boomer Box

It isn't out of the question that baby boomers may be the first aging population to experience a "scan" by a dog trained to sniff out evidence of cancer as a regular part of an annual checkup. Wouldn't you prefer that to a blood draw, mammogram, prostate exam, or any of the other usual tests?

determined that the five dogs tested for detecting lung cancer were 99 percent accurate. For breast cancer, the dogs achieved 88 percent accuracy, with the added advantage of no false positives (false positives are one of the major problems with mammograms). Because early diagnosis can often make all the difference in any cancer, dogs may someday become part of the normal medical team.

EXERCISE AND WEIGHT CONTROL

What's the hardest part of any program of exercise and weight reduction? Staying with it, of course. What you need is an exercise buddy, someone to urge you to get out there and do it, to help firm up your resolve. Your little furry friend can fulfill this duty as energetically as few humans can manage.

Nestle Purina PetCare developed an online program called Healthy Steps. The interactive three-level wellness program for dogs and their owners outlines healthy activities and tips for both sides of the partnership. At each level, participants can choose from a variety of recommended activities. There's a downloadable calendar to track progress, and even a forum for sharing tips, accomplishments, and setbacks. (Look under "Dog/Human Care Organizations" in the Online Resources appendix.)

And, of course, we all know that exercise does far more than help you lose weight. One medical researcher found that nothing was more strongly associated with reducing the risk of colon cancer than increasing exercise. Other studies have found that heart attack survivors who owned dogs survived longer without subsequent attacks than dogless survivors. The effect appears to be partly due to increased exercise, but also in part simply from the calming effect of living with a dog. (See Chapter 2, "Exercise and Environment," for some tips on keeping both of you safe and happy while you work out.)



Did You Know?

Nestle Purina helps owners keep track of their dog's body condition with an easy set of observations. Go to <http://purina.com/dogs/health/BodyCondition.aspx> to do a rib check to see what kind of shape your dog is in.

EMOTIONAL WELL-BEING

In the realm of health, emotional wellness shares equal importance with physical wellness. And dogs really shine when it comes to emotional support.

Studies have shown conclusively that dogs lower stress and blood pressure far better than other humans in general and spouses in particular. Participants who acquired dogs partway through the study found that their blood pressure and heart rate during stressful situations dropped to match those who had owned dogs from the beginning. While medication can reduce resting blood pressure, dogs appear to do the most to reduce blood pressure when a person is under stress.

In 2003, the U.S. Department of Transportation stated that animals used to aid people with emotional problems such as anxiety would be given the same access privileges as guiding or assistance dogs. St. Vincent's Hospital in New York City found some of their patients so anxious about the care of their pets while the owner was hospitalized that the hospital founded the Patient Pet Care program. They coordinate walking, feeding, and any necessary veterinary services for patients' pets, or if necessary arrange for temporary foster homes.

A study of hospitalized heart-failure patients found that their anxiety levels dropped 24 percent when visited by a dog, but only 10 percent if visited by a human volunteer.

For some autistic children or those suffering from severe anxiety attacks, dogs have been the key to a better life. Assistance dogs can be taught to make paws-in-lap body-leaning-in full-body contact when an anxiety attack begins, giving the youngster comfort and something to focus on besides the anxiety-producing circumstances. These dogs have completely changed the lives of families.

Even for healthy children and adults, making new social contacts can be a difficult experience. A study published in the *British Journal of Psychology* found



Jean Fogle

The R.E.A.D. to Rover program helps children having trouble with reading by providing a fuzzy, non-judgmental ear.

that even scruffy-appearing people had more people speak to them if they were accompanied by a dog.

RESEARCH AND MEDICINE

But dogs have even more to offer in the realm of medicine, in research into cancer and other dread diseases. Here is a summary of some of the medical advances we owe to dogs.

At North Carolina State University, research on spinal cord injuries revealed that if there was any glint of information traveling from the brain to the rear legs, paralysis could be reversed in half of the dogs. The researchers expect to apply their findings to human medicine.

The National Center for Infectious Diseases, recognizing that the lines are blurring between human and veterinary medicine, created the position of Associate Director for Veterinary Medicine and Public Health. The office will attempt to further partnerships between veterinary and human research and health organizations.

Dogs have been instrumental in tackling several eye problems in humans. You've probably seen ads for RESTASIS™, the prescription drug for dry eye. But did you know the research for the drug was done in dogs? The University of Georgia bulldog mascot Uga IV was one of the first dogs to benefit from this treatment.

One genetic disease that is rare in humans but more prevalent in Briards (a breed of dog) causes blindness. Called congenital stationary night blindness in dogs and Leber congenital amaurosis (LCA) in children, the disease—caused by a defective gene—results in the degeneration of the retina and blindness. In Briards, normal genes were cloned from dogs without the disease and injected into the subretinal space of the eyes of affected dogs. The dogs had been blind since birth, but three months after treatment, testing showed they had developed functional vision. They were still seeing fine five years after treatment. Human trials are now under way.

Muscular dystrophy is also seeing potential treatment advances due to dogs. Two dogs severely disabled by the canine form of the disease were treated with stem cells from other dogs. Afterward, they walked better and faster and could even jump. Researchers hope the therapy can assist humans with muscular dystrophy and even those with age-related muscle wasting.

Dogs, including Tibetan terriers, suffer from a disease called neuronal ceroid lipofuscinosis (NCL), which is remarkably similar to a childhood human disease called Batten disease. Symptoms in both species progress through blindness, seizures, loss of motor function, and decreasing cognitive ability. Researchers have identified the culprit



These Tibetan terriers romp with a sufferer of Batten Disease.

gene in several breeds of dogs (though not yet in Tibetan terriers) and soon hope to be able to identify both canine and human carriers.

But by far the most research and treatment breakthroughs are occurring in the field of oncology. Cancer is the leading cause of death for both elderly humans and dogs over 10 years.

The drug SU11248 was developed to treat cancer in dogs, but it is showing promise in humans with gastrointestinal stromal cancer, shrinking tumors in two-thirds of study participants. It has also shown promise in the treatment of advanced kidney cancer, which is an extremely difficult cancer to treat.

Gene therapy for soft tissue sarcomas and oral melanomas is in follow-up studies in dogs and early-stage clinical trials in humans with malignant melanoma. Tomotherapy, a treatment that can target a tumor without affecting the surrounding tissue, was used first in dogs and is now approved for widespread human use. A vaccine for canine melanoma uses DNA from humans (or mice) to trigger an anticancer immune response in dogs. It has successfully eradicated some cancers and quadrupled the average survival time of affected dogs. The canine trials are speeding the process of developing a similar drug for humans.

The bone cancer drug Quadramet was tested in dogs. An inhaled form of chemotherapy, tested first in dogs, is making its way through human trials.

Dogs are the only species that suffer naturally recurring brain tumors at the same rate as humans. One researcher has determined that brain tumors in humans and dogs express the same proteins. Those proteins are targets for drugs to fight the disease, and the new drugs will almost certainly be tested first in dogs.

Finally, veterinary researchers developed a cancer-starving diet for dogs suffering from lymphoma. The high-fat, low-sugar diet fortifies the dog but starves the sugar-loving cancer. It has improved the quality of life and longevity of affected dogs, but it has not yet crossed over to human medicine.



On a Personal Note

The pain in my leg could only be described as being gnawed from the inside out by hungry rats. An alert ER doctor had sent me for an MRI of my back, and we were awaiting the results. On a Friday afternoon, a phone call summoned us to the office of a general practitioner we'd never met—my own GP was on vacation, and Dr. Oakes didn't want us to have to wait through the weekend. We sat in an exam room, me squirming to try and find some position that didn't hurt, when Dr. Oakes walked in. His complexion was as gray as fireplace ashes and he didn't waste any time letting us know why—he had to deliver the news that I had stage IV breast cancer, metastasized to my spine. I felt bad for him as I asked how long he thought I might have. "We're talking months, not weeks," he said, trying to put as positive a spin on things as he could. But my head heard what he said and not only rejected his prognosis but gave me a reason for rejecting: "No, that's not right, because Nestle's only four and he's not my last dog."

I wasn't brave in the face of the news. You could say I was delusional, I suppose. But by the time you're reading this book, Nestle will be at least nine, and we should both still be here. So my life, perhaps more than most others, is measured in dog years.

THE CANINE AND HUMAN GENOMES

We share more than 90 percent of our genetic structure with our dogs. And geneticists point out that while human families may have only two siblings, dog families may have eight or nine or more, giving the researchers much more to study. Serious breeders keep meticulous records, so relatives can be positively traced. Also, most dog breeds have existed for only a couple hundred years or less, so they have relatively fewer genetic mutations. That makes it easier to find the gene responsible for a specific disease. Before the canine gene map was completed, the researchers had identified the gene responsible for a hereditary kidney cancer in dogs. The same gene was found to be responsible for a rare kidney cancer, Birt-Hogg-Dube syndrome, in humans. Extensive work using canine and human genomes is under way.