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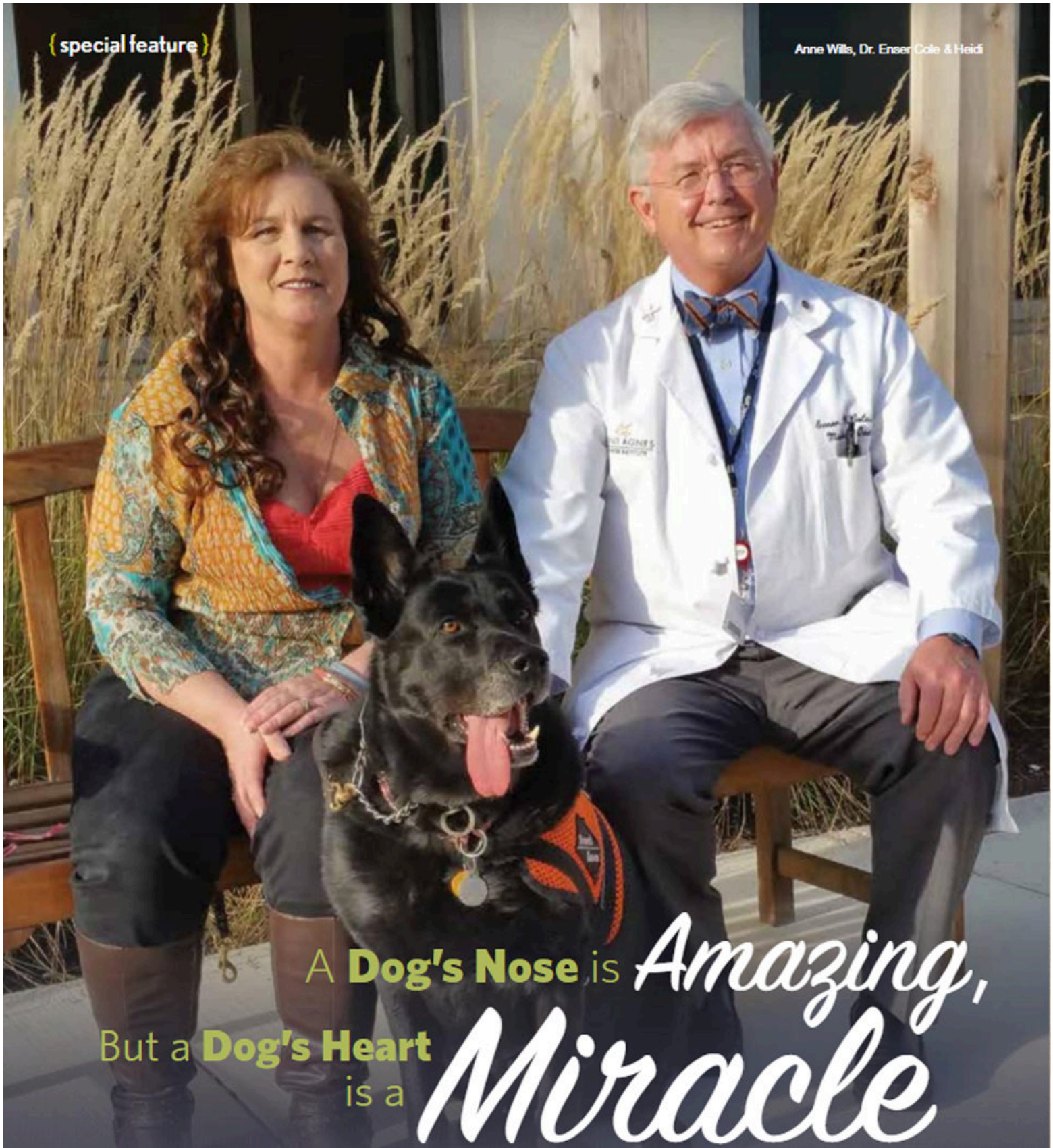
A **Dog's Nose** is *Amazing*,
But a **Dog's Heart** is a *Miracle*

Lessons Dogs Teach Us

Spotlighting Long-Term Adoption

Holiday Gift Guide

"Eeney" and ***"Morey"*** are seeking a forever home. They are available through Operation Paws for Homes, Inc. (OPH). (details pg. 46)



Anne Wills, Dr. Enser Cole & Heidi

A **Dog's Nose** is *Amazing*, But a **Dog's Heart** is a *Miracle*

By Laura S. Jones

Photos Courtesy of Anne Wills

Anne Wills, founder of Dogs Finding Dogs, and her German Shepherd Heidi have always been close. They are a tracking team—working together to find lost pets, lost people, and illegal drugs—and have happily shared their lives for nine years. Heidi's nose is a work of art (she has received commendations from the state of Maryland and the County of Anne Arundel), and she is trained to use it well. When the team is working and Heidi picks up a scent, she alerts Anne to the presence of the scent. This "alerting" behavior turned very strange earlier this year, though, as Anne explains:

"Back in February, Heidi started barricading me, literally, on the couch. She wouldn't let me up. She would push herself up against my legs and then paw my arms, leaving deep scratches. And you know that big eyed look dogs get when they are scared? She had that, and she was also panting and drooling. She seemed panic stricken and this happened every day, every time I sat down. Initially I thought I spilled gravy on my shirt or something."

Anne wanted to make light of the situation, but, after a few days when it was clear this behavior was not caused by something transient like gravy or bad weather, Anne took Heidi to the vet. "They ran blood tests and did a thorough exam and found nothing wrong."

The behavior continued though, and with a new twist. "She started to shove her nose into my chest and would breathe deeply. And it wasn't just Anne and Heidi who were suffering from Heidi's distressed state. Heidi and Anne's other dog, Gretel, with whom Heidi normally got along, would get into skirmishes because Heidi wouldn't allow Gretel near Anne.

"Then it dawned on me that maybe I should go to the doctor." Anne thought maybe it was a blood pressure issue—she has had problems with that before—that Heidi was picking up on.

It was a few weeks before she could get the appointment, and when she saw her primary care physician, he could find nothing wrong. At first. "What brought you in," he said, after running the standard tests. When Anne finally told him the whole story about Heidi's strange behavior, he said, "Ah, let's get picture of that area to be safe."

The doctor called the next morning and said she had cancer. "You have to get this taken care of," he said. "Now."

A surgical biopsy revealed an enlarged lymph node —the size of an egg—at the exact spot Heidi had been sniffing." The surgeon who did the biopsy marveled at the findings and said to Anne that "you better thank that dog." Anne had no symptoms at all, even though she had been a smoker. Lung cancer is rarely detected without symptoms, and when a patient has symptoms, it is usually too late to for life-saving treatment.

After the lymph node was removed, Heidi calmed down. She still stayed closer than usual, Anne remembers, but the panicked behavior ceased.

The Doctor's Point of View

Anne's oncologist, Dr. Enser Cole, Chief of Medical Oncology at Saint Agnes Cancer Institute in Baltimore, is an animal lover himself. The proud owner of a Maine Coon cat named Gula, he was sympathetic to the human animal bond. Still, "this is not the way we usually detect lung cancer. I am not against it at all, but it is unusual," he said, chuckling. "I have heard of research on this in the past, but I have never actually seen a patient [whose cancer was detected by her dog]. Anne is a special person, and so is Heidi. It is a magical story."

In fact, Dr. Cole remembered that Heidi's talent at tracking got in the way after Anne's surgical biopsy in March. "Heidi kept getting upset when Anne came into the room. Anne eventually figured out that Heidi was detecting the narcotics she was taking to relieve the post-surgical pain."

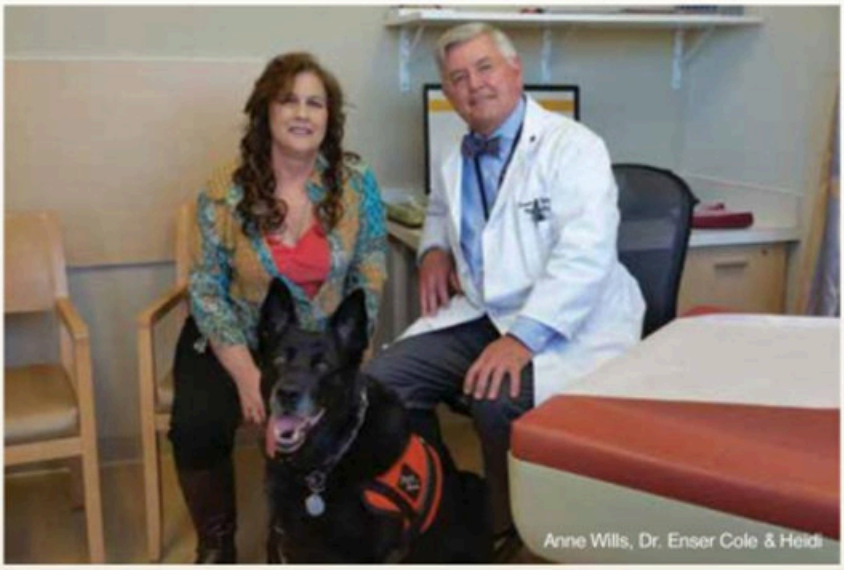
While Dr. Cole doesn't advise using dogs instead of cat scans to detect cancer, he does say "pay attention if your dog seems concerned. We know in medicine that when men come to the hospital, it is often because their wife or significant other is the push. The same thing occurs with women, too. Hopefully we know to pay attention to those who are significant in our lives, who really notice us, who care about us." And for many people, dogs are our most significant others, he acknowledges.

"This is quite special for me," Dr. Cole adds, "because my research interest is in early detection and lung cancer screening. Most patients are diagnosed too late for us to help. Anne will benefit from Heidi's early detection."

Even if your dog didn't detect your cancer, Dr. Cole says, share a photo of him or her with your doctor. "It gives me a more vivid picture of my patient and it helps to build the doctor/patient bond and build trust."

Recent Scientific Studies

The science supporting dogs' ability to detect cancer is not spectacular to many doctors and scientists, but it can seem pretty impressive to lay people. Reports of dogs detecting cancer are often anecdotal, though, and it is hard to conduct a study that meets the criteria required by medical journals of published papers. Often the studies are too small, or inadequately blinded, or marred in some other way. There was a small study in 2006 in which pet dogs were trained to identify compounds in the breath and urine of lung and breast cancer patients. But this year gave us an interesting


Anne Wills, Dr. Enser Cole & Heidi

preview into how more research may be conducted and how the power of dogs' amazing noses may be harnessed to help those not lucky enough to live with a dog like Heidi.

According to a study presented at the 2015 annual meeting of the American Urological Association in Orlando, a pair of German Shepherds were able to detect prostate cancer in urine with 98 percent accuracy.

Researchers in Italy enrolled 902 participants and divided them into two main groups: 362 men with prostate cancer, and a control group made up of 540 men and women in generally good health or affected by other types of cancer or non-tumor related diseases. All participants provided urine samples. Two 3-year old, female German Shepherds named Zoe and Liu were trained for about five months using positive reinforcement training during which the dogs learn to distinguish certain distinctive scents. (Both Zoe and Liu had previously worked as explosive-detection dogs.) "This study gives us a standardized method of diagnosis that is reproducible, low cost and non-invasive," said lead author Dr. Gianluigi Taverna.

Dr. Parsons, a surgeon at the University of California-San Diego's Cancer Center, considers the findings "provocative." However, he told Reuters Health, "The results need to be validated in different patient populations and using different dogs. If the results can be replicated, then we need to zero in on the biological or chemical factor(s) that are at play. Our ability to use dogs in a clinical setting to detect cancer is limited," he added. "Therefore, we need to determine what biomarkers are being picked up here."

Research in Progress at Auburn University and UC Davis

Canine Performance Sciences (CPS) is the successor of a research effort that began in 1990 at the College of Veterinary Medicine at Auburn University. Presently, CPS makes advancements "through research that protects and serves national and local communities by countering threats – specifically explosive, narcotic, biological, and ecological threats – through man's best defense, detection canines." In one of their research initiatives explained on the CPS website, Craig Angle (co-director of CPS) and Dr. Thomas Passler, an associate professor in the College of Veterinary Medicine, are investigating the ability of dogs to detect viral infections. "We have successfully trained two dogs to detect a virus in cattle and to discriminate that virus from other cattle viruses," says Dr. Passler. Dogs could be used in the future as a mobile pathogen detection system to detect pathogens on the front lines in humans, animals and plants," Angle hopes.

The CPS has also teamed with the University of Arkansas Medical School to evaluate the ability of dogs to detect thyroid cancer. Apparently, a large number of patients present with thyroid pathologies and ultimately surgically remove their thyroid glands only to find out that it was not necessary. "We are currently working with surgeons and scientists at the University of Arkansas to utilize the dog as a non-invasive sampling method for thyroid cancer detection," Angle said.

Several thousand miles away, the University of California at Davis Medical Center "employs" two puppies, Alfie the labradoodle and Charlie the German Shepherd, (both chosen for their excellent noses and their drive and motivation) as canine cancer detectors- in-training. They hope to have them in use by 2018, and are working in partnership with Dina Zaphiris of the In Situ Foundation. Dog detection may not be perfect, nor can it be done on a large scale, but it is an inexpensive, safe, non-invasive way to screen for cancer, especially early on. According to Peter Belafsky, professor and physician at UC Davis, pups like Charlie and Alfie "could save countless lives."

The Future

The necessary next step, some argue, is to know exactly what the dogs are smelling, as Dr. Parsons noted, then make a machine. But before dogs got involved, scientists didn't even know cancer cells had an odor. In a 2014 article for Slate.com, Brain Palmer sums up: "[These] dog studies suggest that tumors leach volatile organic compounds in detectable concentrations, and that these emissions differ from those of noncancerous cells.. [A] small core of well-trained animals [could] help us figure out what, exactly, the chemical signals are. Machines—man's other best friend—can take it from there."

Dogs will get us there. Just like they have gotten us everywhere else.

What Anne wants other dog owners (and potential cancer patients) to know in the meantime is this: "Pay attention to your dog. The psychology of dogs is that they watch. They know your moods. They key in on things we miss because that is how they communicate. If your dog is acting weird, ask yourself why. Take the time to know your dog. Watch what they do. Dogs are very smart and have a lot to say if we learn their language."

Throughout the summer, and after her biopsy, Anne received radiation and chemotherapy which shrunk the tumor. Surgery was contemplated, but in the end, Anne and her doctors decided against it and will pursue further non-invasive treatment.

The best part is that Anne has a future now, and it is because Heidi cared enough to be concerned about what she smelled. "If I hadn't paid attention to Heidi, I would be making funeral arrangements," she says.

BASIC SCREENING FOR LUNG CANCER

Dr. Cole wants people not lucky enough to have a cancer sniffing dog to be aware of basic screening protocol. Essentially, patients who are 55-74 years old and have smoked for 30 pack years (a pack a day for 30 years, or 2 packs a day for 15 years) are at high risk and should visit their primary care physician for a referral to get screened.

DID YOU KNOW:

While this article focused on Anne and Heidi and cancer detection dogs, there are other kinds of assistance dogs, and they are trained differently. Cancer sniffing dogs are trained for the smell, assistance dogs are trained to the person, for triggers. (As for guide dogs for the blind, references to them arguably date as far back as the mid-16th century.)

Diabetic Assistance Dogs are a common type of medical assistance dog who can use their noses to assist individuals with diabetes by detecting fluctuating blood sugar levels and alerting their handlers to these changes, preventing hypoglycemic comas and helping diabetic individuals to better regulate blood sugar levels. One of the more famous of these types of assistance dogs is Roxie, a four year old Australian Shepherd who has completed two Tough Mudders (10 mile obstacle races) with her owner, Desiree Rincon. The pair will be featured in Runners World. Sergeant Rincon developed diabetes after surgery and radiation for cancer and suffers from diabetic seizures. Roxie, who came from Pets for Vets, alerts her when they are coming on so she can take action.

{ "If I hadn't paid attention to Heidi, I would be making funeral arrangements." }