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—Temple Grandin, author of *Animals in Translation* and *Animals Make Us Human*

**WHAT THE DOG KNOWS**

**THE SCIENCE AND WONDER OF WORKING DOGS**

By Cat Warren

“A beautifully written, fascinating, heartwarming, and oft-hilarious homage to working dogs.”
—MARIA GOODAVAGE, author of *Soldier Dogs*

“Move over, CSI, and make way for Cat Warren and her forensic dog, Solo, to grab and keep your attention. Beautifully and compelling written—not only could I not put it down, I didn't want to.”
—PATRICIA B. McCONNELL, Ph.D., CAAB, author of *The Other End of the Leash*

“[Warren] has strong investigative and storytelling skills, which makes the book all the more enthralling and engaging.”
—CLAUDIA KAWCZYNSKA, BARK MAGAZINE

“Cat Warren has captured both the magic and the best science behind the success of the modern working dog.”
—BRIAN HARE, evolutionary anthropologist, director of Duke University’s Canine Cognition Center, and co-author of *The Genius of Dogs*

Cat Warren is a professor and former journalist with a somewhat unorthodox hobby: she works with a cadaver dog—a dog who searches for missing and presumed-dead people. What started as a way to harness the energies of her unruly, smart, German shepherd puppy, Solo, soon became a passion for them both (though Solo thinks it’s simply a great game, with the reward of a toy at the end). They have now searched for the missing throughout North Carolina for seven years.

Taking the reader from crime scenes to training sites and science labs, talking and working with other handlers and trainers, and interviewing animal psychologists, forensic anthropologists, breeders, and scent researchers, Warren explains how working dogs can capture the hidden worlds their noses know and translate that arcane knowledge for humans. The fascinating concepts behind the complex capabilities of working dogs emerge as Warren weaves the world of science and dog cognition with her own experiences in the field—all with an unsentimental yet sensitive touch.

*What the Dog Knows* tells the stories of cadaver dogs, drug and bomb detecting K9s, tracking and apprehension dogs—even dogs who can locate unmarked graves of Civil War soldiers and help find drowning victims more than two hundred feet below the surface of a lake. Working dogs sometimes seem magical, as they distinguish scent, cover territory, and accomplish tasks that no machine is yet capable of. *What the Dog Knows* reveals the science, the intense training, and the skilled handling that lie behind those abilities—and shows why we keep finding new uses for the wonderful noses of working dogs.

**ABOUT THE AUTHOR**

**CAT WARREN** is an associate professor at North Carolina State University, where she teaches science journalism, editing, and reporting. She lives with her husband, David, and two German shepherds, Solo and Coda, in Durham, North Carolina. Visit www.catwarren.com.

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**WHAT THE DOG KNOWS**

The Science and Wonder of Working Dogs

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[www.catwarren.com](http://www.catwarren.com)
Praise for WHAT THE DOG KNOWS

“A beautifully written, fascinating, heartwarming, and oft-hilarious homage to working dogs. A must-read for anyone who wants to know more about four-legged working heroes. I'd like to shake Solo's paw for inspiring Cat Warren to write it.”
—Maria Goodavage, author of Soldier Dogs

“Move over, CSI, and make way for Cat Warren and her forensic dog, Solo, to grab and keep your attention. What the Dog Knows is beautifully and compelling written—not only could I not put it down, I didn't want to.”
—Patricia B McConnel, Ph.D., CAAB, author of The Other End of the Leash and For the Love of a Dog

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“[Warren] has strong investigative and storytelling skills, which makes the book all the more enthralling and engaging.”
—Claudia Kawczynska, Editor in Chief of The Bark

“Warren writes with verve and provides rare insight into our working partnership with canines.”
—Kirkus Reviews

“No one who cares about dogs should miss this smart, funny, and at times surprisingly moving book.”
—Spencer Quinn, author of Dog on It

“Cat Warren has captured both the magic and the best science behind the success of the modern working dog. This book masterfully shows how even the best technology cannot compete with our best friends. If you have ever wondered what dogs are truly capable of, this is the book for you.”
—Brian Hare, evolutionary anthropologist, director of Duke University’s Canine Cognition Center, and co-author of The Genius of Dogs

“Warren highlights the profound partnership developed between humans and dogs during their intense but positive training and in real situations. We are with her as she starts training her dog and throughout the mistakes, triumphs, struggles, and rewards. . . . The people and dogs who inhabit this world are unforgettable.”
—Stacey O'Brien, author of Wesley the Owl

“A gifted storyteller, Cat Warren takes us on a fast-paced journey into the scents—some foul, some sweet, some softer than a breeze—of police detective work. . . . This is a book for anyone who loves dogs and has watched them catch a scent on the wind or in the leaves on the ground and wondered about that brilliant organ they possess: the nose.”
—Virginia Morell, author of Animal Wise

“[Warren’s] painstaking research on the history and science of working dogs debunks myths and explains what is known—and how much remains unknown—about canine abilities and behavior. By combining this hard information with anecdotes about training Solo, accounts of searching the North Carolina woods for dead bodies, and the stories of other trainers and their dogs, she has produced a book that is both informative and entertaining. Although her love for Solo is palpable, she remains analytical and clear-headed, never romanticizing what he or other working dogs do.”
—Bruce DeSilva, Edgar Award-winning author of the Mulligan crime novels
“In a series of accounts that sometimes read like detective stories, Cat Warren . . . takes us through the steps needed to create dogs that search for people—both living and dead—while describing her life and her special bond with a German shepherd named Solo.”
—Stanley Coren, author of Born to Bark and Do Dogs Dream?

"What the Dog Knows is first the story of the relationship between a hard-working cadaver dog and his human companion. But that deeply-felt relationship opens the way to an exploration of the working dog world and in doing so becomes something more—a realization of the intelligence, determination, and decency of these animals, a story both wonderful and wise."

“The capabilities of these specially trained working dogs are remarkable. The author provides fascinating insider information about a meaningful partnership that has important legal and personal consequences.”
—Amy Hempel, author of The Dog of the Marriage and The Collected Stories

“It doesn't take a dog-lover (such as myself) to appreciate Cat Warren's remarkable What the Dog Knows. Prepare to be enthralled and enlightened by this story of Solo and his mistress, whose clear, lively, personal, and intelligent writing will nail you from page one. It's a toss-up as to who is more fascinating—the dog people or the dogs themselves—in this wonderful and altogether unique book.”
—Lee Smith, author of The Last Girls

“Working dogs, be they search-and-rescue, cadaver, or explosive detection specialists, are—like their human partners—a breed apart. They inhabit a world of complete commitment, utter dedication, and extraordinarily rigorous training. What the Dog Knows is greatly enriched by author Cat Warren’s own love of digging. She and Solo take us on some fascinating detours through history and phony-baloney claims en route to the science, wonder, and awe that all rightly surround dogs’ noses.”
—Sue Russell, author of Lethal Intent and The Illustrated Courtroom

“A fascinating look inside what makes . . . working dogs tick.”
—South Magazine
A Conversation with CAT WARREN

On the way to pick up your new German shepherd puppy, you envisioned obedience rings and calm companionship, but this changed quickly.

Solo, my third German shepherd, spent his first evening with us in a frenzy, biting my arms, trying to hump our female Irish setter—running roughshod over my fantasies of a calm, mature, gentle shepherd who would lie under my desk as I worked. His first night with us, when he was nine weeks old, he tried to chew his way out of his crate, growling the whole time. I cried in my husband’s arms. David consoled me by saying we could just return him. I cried harder.

You're a professor, but you also do some rather unusual work outside of the university.

We didn’t return Solo to his breeder. She advised me over e-mail. I stopped whining and started working with him. He became a cadaver dog. I occasionally get a call when someone is missing and most likely dead. For Solo, it’s a complex game. Find the scent of death he’s been trained to recognize, tell me about it, and get a reward: playing tug of war. For me, the last nine years of learning how to work with him has opened a world beyond the university. It’s a fascinating one: filled with mystery, sometimes with sadness, but also with the challenges and satisfaction that comes from learning a new discipline—working alongside dogs, working with law enforcement, and exploring the natural and sometimes unnatural landscapes of North Carolina. In the process, I’ve learned a lot of scent science, dog history, K9 law, and even more about dogs and people. And about myself, of course.

What made you take such a different route with Solo, training him to be a cadaver dog?

Serendipity is sometimes driven by desperation. Solo was a singleton puppy—he didn’t know how to play well with other dogs. That’s an understatement. He hated most other dogs. Yet, he had qualities that working dog trainers love: energy, toughness, intelligence, and a good nose. I had no idea how to deal with him, though. When he was five months old, I took him to a wonderful K9 trainer who looked at him misbehaving, then at me, and said, “He’s just a jackass. What do you want to do with him?” That simple question was the beginning of my odyssey into the world of scent dogs.
Some of your time with Solo is spent with others in the working dog world, including other handlers, trainers, breeders, and police units. How have these relationships been important to you?

My epiphany in working with Solo wasn’t that working dogs are miraculous, but that their success is inextricably linked to the quality of their handlers, their trainers, and their breeders. I’m still a relative beginner. I make training and handling mistakes. Everyone does, of course, but it makes me appreciate the talent that I’ve been able to witness both while working with Solo and in researching this book. It takes imagination, deep knowledge and constant practice to train and handle dogs who use their noses for a living. It also takes careful, imaginative, competent work to use dogs effectively in criminal cases and on disaster scenes. I’ve grown to love not just working dogs, but many working dog people, and the forensic and police investigators who devote their careers to this difficult work.

Death is an inescapable part of your work, and you address it matter-of-factly, yet with great respect. But is it sometimes difficult when your search leads to a body?

If we are out looking for someone, it’s because law enforcement is almost certain that person is dead. So finding a body isn’t a nightmare. It represents success. Certainly for Solo, for the investigators, and for me. Usually for family and friends, although not always. But nine of ten times when we go for a search, we don’t find anything. Investigators are following vague leads, unreliable witnesses, or the need to simply rule out areas where a body might be. That’s their job, and at the best of times, it’s difficult work. Clearing areas—being able to say, “We don’t think the missing person is here”—matters, as well. The cases where we don’t find someone are the ones that keep me up at night.

A handler and a working dog’s training is ongoing. What are you and Solo working on now?

Solo is an experienced cadaver dog now, but that doesn’t mean he doesn’t need to practice. And training is the fun part of this work. He’s also getting older (he’ll be ten in March), so I’m slowly trying to train him to work on water, a skill that will still challenge his nose but not require quite as much stamina as covering fifty acres of dense woods in the summer. David and I have a new German shepherd pup as well, Coda, who has kept me awake at night stewing about brand-new training challenges. It feels as though I’m starting all over from the beginning with her. There’s a term for it, of course: “second-dog syndrome.” Each dog is different. As one of my mentors said, gently reminding me of my early training: “Solo’s on automatic pilot now.” Dogs make you live in the present, and forget what came before. Coda, the new pup, has an amazing nose and loves the game of search, but has an independent streak. That’s working dog-training shorthand for not entirely caring about what I think. In the long run, that independence will be an advantage. If she realizes we are a team. If I learn to communicate with her. Right now, she’s busting my chops daily. When I’m utterly frustrated with myself and with her, I look over at Solo, lying calmly, looking at me with devotion. He’s now the good one. We might get there yet with her.
Know more about WHAT THE DOG KNOWS

• The list of smells working dogs are trained to detect lengthens daily: abalone and accelerants; termites, truffles, and TNT; crack cocaine and citrus canker; mildew, moths, melanoma; spotted owls and spiny lobsters; cows in heat, gas leaks; and more.

• A good cadaver dog can detect the seemingly undetectable: the faint scent of someone who has died a few hours before and laid only briefly on a carpet; dry bones that are thousands of years old; someone buried four and a half feet deep or hundreds of feet below the surface of a lake; someone under concrete or under a layer of lime.

• There are some great death smell mimickers; for instance, the smelly, ugly corpse flower, *Amorphophallus titanum* (Latin for “huge deformed penis”), which blooms every six years. We want to believe the scent of human death is something special, though researchers are still figuring out what makes it unique.

• Forensic scientist Arpad Vass and his colleagues have identified 480 different volatile compounds wafting off decomposing bodies. Training a dog to find a missing person can be more complicated than it might sound.

• It’s a grim, but useful, reality that dogs, jackals, and coyotes like to scavenge, and don’t seem afraid of demons hanging out around corpses. Some religions made good use of that canid desire to eat dead people. The Egyptians had Anubis, the jackal-dog god of death. The Zoroastrians trained dogs to gaze steadily upon their dead, driving away the corpse demons.

• Once instructed properly, and with a bit of practice, Berkeley students did fine at sniffing along a chocolate trail on their hands and knees, blindfolded. Human noses are better for some tasks than most Westerners realize. Sherlock Holmes took pride in his abilities to distinguish smells to solve crimes.

• Pigs’ noses are good for finding more things than truffles, but military experiments in the 1970s using swine to find land mines backfired—and ended in a barbecue. Pigs weren’t the only species researchers tried to train as sniffer animals: others included coatis, coyote-beagle mixes, skunks, wolves, and rattlesnakes.

• Don’t believe the tall tales about some dog breeds being far superior in scenting abilities, or being able to track months-old trails. The bloodhound has a great nose, but size isn’t everything. That’s why military researchers trained lap dogs for some detection tasks—like trying to prevent hijackings.

• Dogs—even mostly honest, hardworking scent dogs—can be very convincing liars if they want a reward. The only solution is constant training and self-vigilance so that you don’t become a victim of the “Clever Hans” effect.

• The superiority of the dog’s nose for detection tasks is always being challenged—by different varieties of fake noses. Machines, genetically engineered cells, microelectronics. Nothing compares. So far. Dogs have the whole package. It’s not just their noses. They are mobile, adaptable, and willing partners.
THURSDAY, OCTOBER 3

FLYLEAF BOOKS, 7:00pm
Talk & Signing
752 MLK Jr. Boulevard
Chapel Hill, NC 27514

THURSDAY, OCTOBER 10

REGULATOR BOOKSHOP, 7:00pm
Talk & Signing
720 Ninth Street
Durham, NC 27705

WEDNESDAY, OCTOBER 30

QUAIL RIDGE BOOKS, 7:30pm
Talk & Signing
3522 Wade Avenue
Raleigh, NC 27607