



# DOG Watch

Expert information on medicine, behavior and health from a world leader in veterinary medicine

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## IN THE NEWS ...

### Hospitals Put Out the Welcome Mat for Pets

A growing number of hospitals around the country are prescribing what they call “pet medicine” to boost patients’ spirits. They’re allowing family pets to visit. North Shore University Hospital and the Hospice Inn, both on Long Island, even let pets stay with patients 24 hours a day.

Among the participants in this trend are the University of Iowa Hospital and Clinics, two Mayo Clinic hospitals and more than a dozen other medical centers. Requirements usually include a doctor’s approval, proof the pet is healthy and vaccinated — and recently groomed. While studies show hospital therapy dogs can contract bacterial infections, their exposure is greater, visiting several rooms while family pets remain with owners.

If there’s any problem, says a representative of the pet-friendly University of Maryland Medical Center, it’s that visits can be hard on those dogs who seem to respond viscerally to owners’ illnesses and take a day or two to recover. ♦

## Pursuing a Cure for Breast Cancer

*Researchers at Cornell are investigating the possible role of stem cells in the development of mammary tumors*



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Labrador Retrievers are among breeds prone to the disease.

Nearly 45 percent of mammary tumors in dogs are cancerous and prone to spreading as aggressively as some breast cancers in humans. Researchers at the Cornell University College of Veterinary Medicine hope to improve treatment of these mammary adenocarcinomas, with the long-term goal of a cure. Their pioneering focus: stem cells and their role in the disease.

Gerlinde Van de Walle, DVM, Ph.D., assistant professor of viral pathogenesis

and stem cell biology at Cornell’s Baker Institute for Animal Health, is working to identify adult mammary stem cells (MaSC) in both healthy and malignant canine and feline mammary gland tissues.

### Studying Susceptibility.

“Mammary stem cells have been identified in humans and mice, but not much is known about MaSC in dogs and cats,” she says.

Her theory is that mammary cancer is an adult stem disease and that MaSCs are particularly susceptible because they survive longer

*(continued on page 6)*

## Their Senses Need a Workout, Too

*Enrichment in the form of mental stimulation is as important as exercise in maintaining well-being*

Does your dog seem bored? It’s all too easy to assume that dogs don’t mind sleeping all day, but they’re intelligent creatures who thrive on mental and physical stimulation.

Take note if your dog shows little interest in events around him, his activity level is low, and his play bows are few and far between, says animal behaviorist Katherine H. Houpt, VMD, Ph.D., professor emeritus at the Cornell University College of Veterinary Medicine.

**Lack of Interest?** “If your dog never shows interest in toys or walks, is gaining weight and just lies around despite good health, he may be suffering from a lack of environmental stimulation,” Dr. Houpt says. “He can’t sign up for a course or

go to the gym, so it is up to you to provide the stimulation essential for his overall welfare.”

He may need what behaviorists call enrichment — activities that will revive his curiosity and motivate him to give his senses a workout. Here’s how to provide them.

### Brain Games: Tackling Puzzle Toys

Tiring a dog out — in a good way — doesn’t always have to mean long walks or strenuous exercise. Making him use his brain is just as beneficial. Games, puzzle toys and even training sessions are all good ways to work your dog’s little gray cells.

Take nose work. This fun game, in which dogs learn to identify specific scents and

*(continued on page 5)*

## New Rules for CPR Save More Lives

*They call for immediate action to begin compressions — not to check for a pulse*

For years, pet owners were instructed to first check for a pulse before using cardiopulmonary resuscitation to revive a dog. However, new guidelines issued by emergency care veterinarians advise you to immediately perform heart compressions. The reason: this protocol simply saves more lives.

"If a pet does lose consciousness, time is of the essence," says Gretchen Schoeffler, DVM, DACVECC, Emergency and Critical Care Section Chief at the Cornell University College of Veterinary Medicine. "You need to take action immediately, especially if the nearest veterinary clinic is 15 or 20 minutes away."

To ensure greater chance for survival, new guidelines from the American College of Veterinary Emergency and Critical Care urge action more than assessment.

**Increasing Survival.** "Evidence shows that every time you stop compressions, you decrease the chance of survival," says Elisa Mazzaferro, DVM, Ph.D., who is board certified in emergency and critical care at Cornell University's Veterinary Specialists Clinic in Stamford, Conn. "The mindset is that there is enough oxygen in the bloodstream so that compressions of the chest alone will circulate enough oxygen to keep an animal alive."

The revised CPR technique calls for 30 immediate chest compressions at a rate of 100 to 120 compressions per minute. That equals 15 to 18 seconds for the 30 compressions. Follow the 30 compressions with two quick breaths through the dog's nostrils.

Then immediately perform another cycle of 30 compressions and two breaths. Repeat these cycles until your dog is resuscitated, and he's breathing on his own or moving or you obtain professional help.

If you're doing CPR alone, you may find it difficult to keep track of both the

compressions and the timing. Instead, count aloud as you perform 30 fast-paced chest compressions then breathe two breaths of air directly into the dog's nose. Do not stop to take his pulse — leave that for a veterinary professional.

Injuries and illnesses can cause heartbeat cessation in dogs after being struck by a car, choking on a chew toy or suffering from a chronic heart condition. If you believe your dog's heart has recently stopped beating, start chest compressions immediately:

- 1) *Open his mouth and ensure nothing is obstructing the airway.* This should take no more than five seconds.
- 2) *Lay your dog on his side on a firm surface.*
- 3) *For small dogs generally under eight pounds, you may opt for a one-handed compression technique.* Wrap one hand around the chest with the thumb over the heart on one side and the first two to three fingers over the heart on the other side. (The heart lies just behind the area where the front leg attaches to the body.) Wrap your hand around the underside — not across the back.
- 4) *For larger dogs, use the two-handed technique.* Place one hand over the other on the dog's chest, interlocking the fingers. In dogs with a rounded chest like Labrador Retrievers, place the heel of the bottom hand over the widest part of the chest (at the level of the sternum) and perform the compressions. In dogs with a keel-shaped chest (narrow and deep) like Greyhounds, place the heel of the bottom hand directly over the dog's heart and perform the compressions. For any sized dog, compressions should be strong enough to compress the



**Dogs under eight pounds** usually require one-handed chest compressions. Use the two-handed technique, with hands interlocked over the chest, for most larger dogs.

depth of the chest by 30 to 50 percent, being sure to allow the chest to completely recoil between compressions.

5) *Compress 30 times for 15 to 18 seconds and then blow two short breaths into the dog's nostrils.* Hold his mouth tightly closed and place your mouth over the nostrils to make an airtight seal. Blow short, strong, quick breaths into the nostrils to achieve a normal chest rise. Then resume the chest compressions.

Seek immediate veterinary help as soon as you can after starting CPR. If possible, have an individual call the nearest clinic to alert the staff that you're on the way and ask for advice. If you are alone, use the speakerphone to call so you can continue CPR.

"Being prepared for a pet emergency and knowing what to do when one occurs may make a difference in the outcome for your pet," says Dr. Schoeffler. She recommends owners enroll in pet CPR or first-aid classes taught by qualified instructors. Check with your dog's veterinarian for more information and a recommendation.

"In our ER room, we see an awful lot of trauma-related injuries, such as dogs having been hit by a car or involved in a fight," says Dr. Schoeffler. Certainly, you may face limitations when your dog has been injured, but if you know first aid and apply it correctly, it could be life saving. ❖

**ENRICHMENT...** *(continued from the cover)*

indicate their location, leaves big and small ones happily exhausted after working to find a particular scent hidden in a box, room or vehicle. The game is particularly good for hound-type dogs, Dr. Houpt says, but any dog can excel. Sign up for a class with your dog through the National Association of Canine Scent Work ([k9nosework.com](http://k9nosework.com)).

Puzzle toys that dispense kibble or treats when dogs roll or otherwise manipulate them are also enjoyable ways to provide a mental and physical workout. Rather than setting out a bowl of dry food for your dog in the morning, put the same amount of kibble inside a puzzle toy and let him play with it to get his meal.

Learning tricks also exercises a dog's brain. Using clicker-training techniques, you can teach your dog to sit on his hind legs, turn his head left and right, wave, roll over and wrap himself up in a blanket, and much more. Start with a movement that your dog does naturally. For instance, some dogs lift a paw when they are interested in something. Carry a clicker and treats around, click once any time you see your dog doing the desired activity (such as holding a paw in the air), and give a treat.

Your dog will rapidly learn that this behavior earns rewards. Then you can give it a name, such as "Wave," and start associating that word with the action. Once your dog understands that the word means to lift his paw, start rewarding him only when the paw is high up in the air, or moving up and down or back and forth.

The only trick Dr. Houpt recommends against teaching is shaking hands: "That encourages him to poke at you with his feet, which he will do when he wants attention."

**Get Physical: Check Out the New Sport Treibball**

Activity can be purely physical — chasing a ball or flying disc, for instance — or combine physical and mental stimulation, such as a walk with lots of built-in pauses. "People often don't let their dogs sniff;



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**Games like the Dog Miracle Puzzle** offer dogs a mental challenge to find hidden treats when they look for them by moving, lifting or pushing aside blocks with their nose or paws.

they just pull them along," Dr. Houpt says. "It's fine to do some of that for exercise and to teach them to heel, but you also want to give them some sniff time."

Sniffing is how dogs learn about their environment. It's comparable to a person's enjoyment of reading a newspaper or browsing Twitter or Facebook.

Don't give up on throwing a ball for your dog if he's not a natural retriever. Some dogs run and get it but don't bring it back to you, and a few jokesters just like to watch you throw the ball. If you have to go get it to throw it again, count it as exercise for yourself.

Look into the sport of Treibball, a competitive sport in which dogs use their nose or shoulders to direct eight balls into a goal. Herding breeds excel, but any breed or mix can play and do well. This is a great way for you and your dog to develop teamwork and communication. For more infor-



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**A walk qualifies as mental stimulation** only if you give your dog "sniff time" to explore his environment.

mation, visit the website [americantreibballassociation.org](http://americantreibballassociation.org).

**Getting In Touch: Massage and Groom**

Tactile stimulation is an important part of canine enrichment. Petting, massage and grooming are all ways of touching that dogs find pleasurable. Pay attention to how your dog likes to be touched.

"If every time you reach for him, he puts his ears down, he probably doesn't want to be petted on top of the head," Dr. Houpt says, "but he might like to have his chest or back scratched, and a lot of dogs like belly rubs."

**Sound Hounds: Calming Classical Music**

Anyone who has seen a dog compete in freestyle, popularly known as dancing with dogs, knows that dogs enjoy and respond to music. Leave the radio on while you're gone to provide your dog with some aural stimulation. Choose the station carefully. One study showed that classical music calms dogs while heavy metal arouses them.

**Old Dog, New Tricks: How About a Stroller?**

Don't fall for myth that old dogs can't learn. Enrichment is just as beneficial for senior pets as it is for younger dogs. At least one study has shown that regular walks and human interaction improved the cognitive ability of older dogs.

Just because a dog is less active is no reason to exclude him from activities, Dr. Houpt says. He might be too arthritic to chase a ball, but he may enjoy going for a ride in a specially designed stroller or child's wagon. That kind of outing provides visual and aural stimulation as well as the pleasure of the breeze ruffling his fur and carrying interesting scents. At some point during the ride, let him get out and sniff or walk around.

It's not always easy to judge happiness and contentment in any species, Dr. Houpt says, but if you provide your dog with enriching activities, you're likely to notice a new sparkle in his eye and a new spring in his step. ❖

and epigenetic alterations in gene expression,” Dr. Van de Walle says. “Epigenetics are a regulating mechanism of genes, changing the expression of the gene over time without changing the DNA code.” Both genetic as well as epigenetic modifications are key contributors to cancer’s development, she says.

**Mystery Gene.** One gene is of particular significance in her research, though its role in feline and canine mammary cancer is unknown at this point: the spleen tyrosine kinase (SYK) gene, which has been shown to function as a tumor suppressor in human breast cancer. At Ghent University, Dr. Van de Walle’s team discovered that the SYK gene is also expressed in the mammary gland tissue of dogs and cats.

“Once we isolate and characterize the MaSC from healthy mammary gland tissue and breast tumor tissue in dogs and cats,” she says, “we can compare the SYK gene expression in healthy and tumor stem cells to see if there’s a difference, as has been described in human research.”

If SYK expression is turned off in mammary tumors, finding the responsible mechanism could result in turning the gene back on and slowing tumor formation, Dr. Van de Walle says, adding that the approach could possibly lead to the development of novel anti-cancer drugs.



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**Though any dog, even males, can develop breast cancer,** Irish Setters and about eight other breeds appear to be especially prone to it.

## UNDERSTANDING ADULT STEM CELLS

An adult stem cell, which can be found in various tissues, including the mammary gland, has these basic characteristics:

- ◆ It can reproduce identical stem cells.
- ◆ It can grow into different tissue types.
- ◆ It is responsible for adult tissue regeneration.
- ◆ It differs from embryonic stem cells.



GERLINDE VAN DE WALLE, DVM, PH.D.

**Mammary stem cells** from a dog’s mammary gland were grown in the laboratory as a mammosphere, which is a floating clump of mammary gland cells.

**Human Application.** In addition, in collaborative research with Cornell associate professor Scott Coonrod, Ph.D., they will investigate if a particular regulatory enzyme, known to be upregulated during breast cancer in humans, is also important during mammary cancer development in dogs. “Upregulated means that the enzyme is more expressed and more active in breast cancer compared to normal tissue,” Dr. Van de Walle says. “So if you can inhibit its expression and function, you might slow down tumor progression, as has been experimentally shown by Dr. Scott Coonrod for human breast cancer.”

The new study, which could help develop another potential anti-cancer drug, was recently funded by the Morris Animal Foundation, but it will be many years before stem cell therapy

could treat mammary cancer, Dr. Van de Walle says. “Maybe in five to 10 years we’ll be testing some of these theories if research goes smoothly. We believe it is of eminent importance to study MaSC in different species.” The end result could be that both dogs and women with breast cancer could be helped. ♦

## THE MOST VULNERABLE BREEDS

All dog breeds are susceptible to cancerous mammary tumors, but some breeds are reported to be at higher risk. They include:

- ◆ Boxers
- ◆ Irish Setters
- ◆ English Springer Spaniels
- ◆ Labrador Retrievers
- ◆ Pointers
- ◆ Samoyeds
- ◆ Miniature and Toy Poodles
- ◆ Dachshunds
- ◆ Keeshonds