

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

THIS JUST IN

Most Expensive Cats

Ranked by *TheRichest.com*

TheRichest.com is a “leading source for Internet-savvy millennials searching for information on the topics they love.” With a pretty obvious focus on money, the website recently listed the 10 most expensive cats:

10. Ragdoll (\$1,000)
9. Peterbald (\$1,000)
8. Maine Coon (\$1,200)
7. Egyptian Mau (\$1,800)
6. Siberian Forest Cat (\$2,000)
5. Scottish Fold (\$2,000)
4. Bengal Cat (\$10,000)
3. Khao Maine (\$11,000)
2. Savannah Cat (\$20,000)
1. Ashera Cat (\$125,000)

Richest.com receives 220 million hits on their website per month. ■



These pretty Bengal kitties are among the most expensive cats and may set you back a cool \$10,000 each.

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Prednisone vs. Prednisolone

Many veterinarians believe prednisolone is best

The most commonly used steroids are the oral preparations prednisone and prednisolone, which treat a wide range of illnesses from autoimmune disease to allergies to eosinophilic granuloma complex, immune-mediated hemolytic anemia, and certain cancers.

In many animals, like dogs, the choice of prednisolone versus prednisone isn't an issue. Prednisone is converted by the liver to prednisolone, which is the active form of this corticosteroid, so the end effect is the same. In cats, however, there is some question about how well their livers can metabolize prednisone.

The question involves glutathione, an important enzyme for metabolism. Since cats have naturally low levels of glutathione, the theory is that they do not efficiently metabolize prednisone to prednisolone, which means the bioactive (and therapeutic) form of the medicine will not be present in as high a concentration, and therefore will be less effective at treating disease. Due to this, prednisolone is commonly considered the steroid of choice for felines.

This theory is controversial. Prednisone has been used with great anecdotal success for decades in cats. No studies have been conducted to determine the metabolism rate in the



Most cats do best with prednisolone.

feline liver or the effect that this has on managing disease. In cases where the liver is compromised, such as acetaminophen poisoning, hepatitis, or other liver disease, metabolism is likely greatly decreased, and prednisolone is warranted. But in a healthy cat with a healthy liver, this remains open to debate.

Since there is no significant difference between the side effects of each drug, an argument can be made that prednisolone should be prescribed when possible. However, if only prednisone is available, it is acceptable. The patient should be closely monitored to ensure that the desired response occurs. ■

RESEARCH

FIP Research Grant

Winn Foundation award

The Winn Feline Foundation awarded \$307,679 to 16 feline research studies for 2019, including \$25,000 to Gary R. Whittaker, PhD, at Cornell University, and Susan G. Baker, PhD, at Loyola University, for “Generating an attenuated feline infectious peritonitis (FIP) vaccine by inactivating EndoU.” Dr. Whittaker's work on the molecular mechanism of FIP is also funded by the Cornell Feline Health Center, among other sources. ■

CAT FIGURES

Cats in the U.S.

Most of us own two cats

The American Veterinary Medical Association lists these numbers for cat ownership in the United States:

- ▶ 30.4% (36,117,000) of households have at least one cat
- ▶ 2.1 cats is the average number of cats per household
- ▶ 74,059,000 cats live in the United States
- ▶ \$90.00 is the mean veterinary expenditure per cat per year ■

Predictable Cat Behavior in Breeds

New study says it may be in their genes

Different dog breeds are known for certain behaviors, like a Border Collie herding sheep or a German Shorthaired Pointer indicating a bird. Cat lovers have long noted the vocalizations of Siamese as an example of certain breed-specific behaviors, and now a recent study from Finland, published in *Scientific Reports*, found genetic connections between cat breeds and certain behaviors.

The study collected data from owners on 5,726 cats covering 19 breeds and breed groups and evaluated 10 different behaviors. They found some breeds clustered together (Turkish Vans and Angoras), which suggests physical appearance and some traits may be linked.

Turkish Vans tended to show the most aggression toward both people and other cats. On the other hand, British Shorthair, Norwegian Forest Cat, Ragdoll, Persian, and Birman ranked as the least aggressive, the least extroverted, and the least fearful. Interestingly, the British Shorthair breed has been developed by crossbreeding Persians. "All of these breeds are also longhaired," says the study. Anecdotally, longhair cats are thought of as mellow and less active.

It's important to remember that each cat is an individual, with the effects of rearing and environment influencing behavior. This study reinforces the notion that some behaviors may be linked to certain physical traits and a genetic connection in cats. ■

<https://www.nature.com/articles/s41598-019-44324-x>



A young Angora cat.



CatWatch

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Food Reduces Allergens from Cats

An egg product may neutralize the trigger

A study published in the peer-reviewed journal *Immunity, Inflammation, and Disease* in June 2019 found a statistically significant reduction in an allergen that comes from cats when they were fed an egg product that neutralizes the allergen.

Fel d1 is a major allergen from cats, produced primarily in their saliva and spread to their coat during grooming, and then to the environment. The researchers believed that the hair from cats who had been fed egg foods containing the antibody Fel d1 IgY would show a significant reduction in the active allergen. "The egg product includes anti-Fel d1 antibodies to counteract the natural Fel d1 without altering the cat's physiology or nutrition," says PetFoodProcessing.net.

The researchers evaluated hair from 105 cats over a 12-week period. Hair was collected four times over the two-week baseline period, then weekly during the 10-week treatment period, during which time cats consumed a food containing the antibody anti-Fel d1 IgY.

From the third week, the study found a significant reduction in the allergen with an overall average decrease of 47% by week 10, ranging from a 33 to 71% decrease compared to the baseline. Cats with the highest baseline allergen levels showed the greatest decrease.

The researchers concluded that feeding the antibody to cats successfully reduced the allergen on their haircoat, with the greatest decreases observed in cats with initially high levels. Feeding a diet with anti Fel d1 IgY significantly reduced the active Fel d1 on the hair of cats. The study was funded by Nestlé Purina Research and conducted by Purina employees. ■

Satyaraj, E. et al. Reduction of active Fel d1 from cats using an antiFel d1

egg IgY antibody. *Immun Inflamm Dis.* 2019;7:68-73. 10.1002/iid3.244



Most cat lovers power through
allergies, but it sure would be
nice to have a solution.

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Dental Sprays for Cats

While not a silver bullet, these products may help

Studies have shown that 50 to 90% of adult cats are affected by periodontal disease to some degree or another. These are pretty staggering statistics for our beloved pets, especially when you consider that dental disease can be a precursor to systemic infections and organ failure as well as being painful in and of itself.

Dental disease can occur in your cat's mouth in several different ways: irritated gums, the buildup of transparent plaque on the teeth and its transformation into hard calculus (tartar), and even tooth resorption.

The gold standard for home dental care for pets is daily brushing along with regular professional dental cleanings at your veterinarian's office. A variety of commercial products are available, including special diets, treats, toys, mouth rinses, and our topic of focus today: dental sprays.

What Are Dental Sprays?

Dental sprays are solutions that can be sprayed into your cat's mouth and are intended to prevent or remove plaque. If plaque is kept to a minimum, it can't develop into calculus, the nasty brown layer over teeth that is difficult to remove. Most dental sprays do not need to be applied directly to the teeth, as the product mixes with the cat's saliva and is then circulated around the mouth as she licks and swallows.

Ingredients vary among products, but may include: chlorhexidine, alcohol, xylitol, essential oils, enzymes, herbs, or chlorine dioxide.

Follow the instructions on the packaging closely. Some products have different dosages based on the size of the pet. As with any product, you are more likely to see positive results if you use the spray consistently.

Tooth Brushing

Yes, you can teach your cat to have her teeth brushed! Start by allowing her to lick a pet-safe toothpaste off your finger or a brush, and then gradually work up to brushing all of her teeth (you may need to start by getting her comfortable with having her face handled). Introducing tooth brushing should be a positive thing, so only work on it a little each day and don't try to rush. It may take a month or more to complete the process, especially with older cats. Go to vohc.org to find recommended toothpastes, brushes, and more.



Brushing is still paramount in dental care, but sprays may be part of a dental care program.

Multimodal Approach

Lindsey Schneider, DVM, Dentistry and Oral Surgery Resident at the Cornell University Hospital for Animals, says, "Ultimately, all homecare products are most effective when used as part of an overall dental care program that begins with a veterinarian examination and professional treatment. Daily tooth brushing is the most effective way of maintaining our pets' oral health and minimizing the progression of periodontal disease, and other homecare strategies (such as dental chews, water additives, sprays, etc.) work best when used in conjunction with tooth brushing."

Many dental sprays claim that there is no need for brushing, but combining the two may be beneficial. Dr. Schneider says, "I think it would be fine to use the spray at the same time as tooth brushing (either immediately before or after), but I would refer to the manufacturer instructions for their recommendation." Brushing physically dislodges plaque particles and may help the spray penetrate better.

Choosing a Product

"When discussing oral home care with clients, I refer them to the Veterinary Oral Health Council's website, vohc.org, which contains a list of products that

have been awarded the VOHC Seal of Acceptance," says Dr. Schneider. "These products are awarded the seal only if they meet pre-set standards of plaque and calculus (tartar) control in clinical trials. However, the results must be considered with a healthy dose of skepticism, as the trials are typically funded by the company selling the product." Only one dental spray has been awarded the VOHC Seal: Essential HealthyMouth Anti-Plaque Oral Spray (eight ounces for \$56.67 at healthymouth.com).

Few studies have evaluated how effective various substances are for controlling plaque and calculus in pets, and even fewer specifically in cats. Most of the ingredients in pet dental products were selected based on human studies.

While humans and cats do share plenty of traits and some of these ingredients may be beneficial for cats as well as humans, it is important to remember that we are not biologically the same and cats may not respond to things the same way that we do. For example, acetaminophen (Tylenol) is well-tolerated in people but extremely toxic to cats.

Keep an eye on the ingredients list too. Dr. Schneider warns that the essential oils menthol, eugenol, and thymol, commonly found in human dental hygiene products, can taste bad to cats. Cats also are more sensitive to essential oils than dogs, so care should be taken to not give too much of any spray that contains these substances.

Bottom Line

Little-to-no scientific data supports the use of dental sprays in cats, but a carefully chosen product is unlikely to do harm and could be a beneficial component of your cat's dental health care plan. ■

What You Need to Know

- ▶ You still must brush your cat's teeth
- ▶ Sprays contain ingredients that may enhance the effects of brushing
- ▶ Products with a VOHC Seal are your best bets
- ▶ Be wary of products containing essential oils
- ▶ Begin your regimen with a veterinary dental exam

Emerging Effective Cancer Option

Immunotherapy helps the body use its own weapons

The Animal Cancer Foundation says that of the 32 million cats in the United States, 6 million are diagnosed with cancer each year. That's a staggering number, and researchers are working hard to find cures. Among the most recent advances in oncology is immunotherapy. While standard cancer therapies—chemotherapy, radiation, surgery—directly destroy cancers, they also may harm normal cells and tissues. Immunotherapy is different. It destroys only the abnormal cells.

Immunotherapy uses your cat's own immune system to fight cancer. A healthy immune system is triggered when it detects a rapid replication of cancer cells. Unfortunately, however, it's sometimes not enough: The cancer cells may get ahead of the immune system. This may be due to the cat's immune system not being strong enough to react or because the cancer cells are somehow "hidden" from recognition. In cases like these, researchers believe, the immune system needs to be stimulated or jump-started to recognize the foreign cells and attack them.

Not Yet Perfect

While immunotherapy sounds perfect, there are caveats. Immunotherapy tends to work best after a tumor has been "debunked" (made smaller by surgical removal, radiation, or chemotherapy), which means immunotherapy is more of an adjunct to traditional therapies and

adds to the cost of cancer treatment.

In addition, much of what we know about feline immunotherapy has been extrapolated from work with humans and lab animals. At the moment, it's difficult to determine which cats will benefit from immunotherapy and which therapies have trials and data backing their safety and efficacy will benefit from immunotherapy.

"One challenge with immunotherapy is predicting which patients will respond. There is a lot of research going on (some of which is currently funded by the Cornell Feline Health Center) both to find ways to increase the number of patients that respond to immunotherapies and to identify biomarkers that will predict which patients will respond," says oncologist Kelly R. Hume, DVM, DACVIM, Associate Professor, Clinical Sciences at the New York State College of Veterinary Medicine at Cornell.

"Because there are very few immunotherapies available in veterinary medicine, there are still many hurdles to overcome in commercializing these products," says Dr. Hume. "Practitioners and owners need to be vigilant about requesting peer-reviewed efficacy and

safety data on immunotherapy products that are commercially available."

Vaccine Possibilities

Oncept, a vaccine designed to prevent or minimize metastasis (spread) or recurrence of oral melanomas in dogs, has been tested for use in cats. In cats, the most common location for melanomas is in the iris of the eye. Studies show that the vaccine is relatively safe for use in cats with minimal side effects. Efficacy for prolonged survival is not yet known.

A vaccine of recombinant canarypox virus expressing feline interleukin-2 (IL-2) is approved for use in Europe as adjunctive immunotherapy after surgery for some feline cancers, including feline injection-site sarcomas, or fibrosarcomas. (IL-2 is an important T cell stimulatory cytokine approved as an exogenous anti-tumor agent.)

Called Oncept IL-2, this vaccine is indicated for cats with fibrosarcoma (2 to 5 centimeters in diameter, which is $\frac{3}{4}$ of an inch to two inches) without detectable metastasis or lymph node involvement. The goal of Oncept IL-2 is to reduce the risk of relapse and to increase the relapse-free interval. It should be used in addition to surgery and radiotherapy. The vaccine requires multiple injections and is not recommended for cats who already have metastases to the lungs.

While it does seem counterintuitive to give a vaccine for a vaccine-related

What You Should Know

- ▶ All cancers are not the same. The term "cancer" covers a multitude of individual, and often very different, conditions.
- ▶ The best response comes from attacking cancer on multiple levels.
- ▶ Immunotherapy can be specific, targeting only abnormal cells and not harming normal cells.
- ▶ Participating in a cancer clinical trial can help you financially while supporting important cancer research.



Immunotherapy, used with other therapies, might extend the time we have with our cat battling cancer.

istoman47 | Deposit Photos

Have You Considered Participating in a Clinical Trial?

Most of the research on feline cancers is done with cats with naturally occurring cancers. What this means is that many cat owners may have the opportunity to participate in a clinical trial. An important resource for owners of cats with cancer is the listing of clinical trials. While the trials differ in what is provided (all costs, specific items, on-site evaluations), enrolling your cat may help you with financial costs and you will know that you and your cat are contributing to a knowledge bank to help cats in the future. <http://vetcancersociety.org/pet-owners/clinical-trials/>.

Cancer Is Individual

"It's always important to remember that cancer isn't just one type of disease. Therefore, treatment regimens need to be tailored to individual patients," says Kelly R. Hume, DVM, DACVIM.

cancer, results show that this approach may provide some benefit. It is currently conditionally licensed for use in the U.S. with clinical trials ongoing at the University of Pennsylvania. Research is encouraging: "In the absence of immunotherapy, tumor recurrence was observed in 61% of animals within a 12-month follow-up period after treatment with surgery and iridium-based radiotherapy. In contrast, only 39 and 28% of cats receiving either NYVAC-human IL2 or ALVAC-feline IL2, respectively, exhibited tumor recurrences" (see <https://www.ncbi.nlm.nih.gov/pubmed/14625567>).

Autologous Vaccines

Vaccines called "autologous vaccines," are made from tissues extracted when a tumor is surgically removed. In this process, antigens on the tumor cells are isolated and used to develop a vaccine that is unique to your cat and her cancer. Because her own cells are used, the likelihood of any major reactions is low.

"The science behind the technology is the idea that every patient's tumor is different, and so an immunotherapy of some kind that's 'off the shelf' and intended to treat every tumor is simply at a disadvantage because of the diversity of tumors," says Mark Suckow, DVM, chief scientific officer for Torigen Pharmaceuticals, a company that specializes in cancer immunotherapy, in an interview in *American Veterinarian*.

"The vaccine stimulates the immune system, resulting in a cascade of events that culminate in the stimulation of T-lymphocyte cells, which respond and attack the tumor based upon the antigens that we have provided," says Dr. Suckow.

Cats who are using this therapy

Do You Have a Question for Elizabeth?

The Cornell Feline Health Center's resident cat loves to answer questions. You can email her at catwatcheditor@cornell.edu or by regular mail to CatWatch, 535 Connecticut Ave., Norwalk, CT 06854-1713.

receive three injections one week apart (so far, 88 cats have been treated).

Cancer types ranged from melanoma to hemangiosarcoma, with squamous cell carcinomas and vaccine-associated fibrosarcomas being the most common. More time is needed to evaluate efficacy, but this is a promising option.

At Cornell

One of the studies funded by the Cornell Feline Health Center is being carried out at Cornell University and is headed by Cynthia Leifer PhD. This project is looking at chimeric antigen receptor (CAR) immunotherapy to eradicate feline alimentary T cell lymphoma. Lymphoma is the third most common feline cancer. The alimentary form attacks the gastrointestinal tract, the liver, and other abdominal organs. Survival time is currently poor, with most cats succumbing in six to 24 months.

The technique involves taking T lymphocytes from cats with this cancer and modifying the cells genetically. Introducing CARs into the cells is believed to "prime" the cells to find and destroy cancer cells. The modified cells

Hope for a Biomarker

Researchers are looking for a biomarker—a measurable indicator of cancer like the CA125 test for human ovarian cancer—that would help veterinarians identify which therapy might be most effective for an individual cat with its own unique cancer.

are then reintroduced into the cancer patients. This type of immunotherapy has shown promise in people and is being looked at in dogs and cats.

The Future

Immunotherapy is part of the future in feline oncology. With multiple ongoing studies and more research being devoted to feline health, cancer options for your cat will continue to grow, with treatments customized to the individual cat and her cancer. There is great hope in the veterinary community that prognoses for survival and increased quality of life will improve as a result of this important work. ■

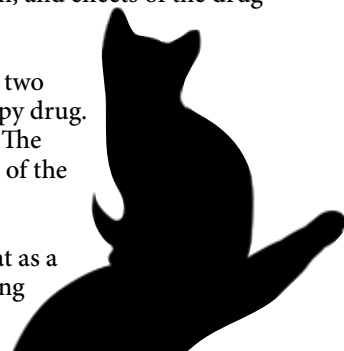
5 THINGS

5 Questions About Cancer Therapies

Your input into your cat's treatment is important.

In a recent issue of *DVM360*, Michael O. Childress DVM offered five important questions to ask about cancer treatment. Your involvement in your cat's care and treatment decisions is important.

- 1 Does this therapy appear in peer-reviewed scientific literature? That means people knowledgeable about feline cancer have evaluated the treatment.
- 2 Are there published clinical trials using this therapy in cats with naturally occurring disease? In this case, the reports show results of using this method for cats with the same cancer as your cat in "the real world."
- 3 What are the pharmacokinetics and pharmacodynamics of the drug being considered? This refers to the metabolism, distribution, and effects of the drug being used. Has this drug been evaluated and used in cats?
- 4 How was the benefit of this drug evaluated? There are two primary ways to look at effectiveness of a chemotherapy drug. The first is the effect on the actual tumor, i.e. did it shrink? The second is: Did it increase the life span and/or quality of life of the cats who were treated with it?
- 5 What side effects and complications may occur in a cat as a result of this treatment? It's important because vomiting for a week may be acceptable to you but permanent incontinence may not. ■



MAJIVECKA | Deposit photos

Assemble a Simple First-Aid Kit

Ten basic items and you're prepared for most problems

A cat lover should be prepared for any minor first aid that her cat may need over her lifetime. Special items may need to be customized for your individual cat (such as extras of any medications she is on), but a basic first aid kit can be started with just 10 items.

A method of restraint is always important. For a cat, a small towel or blanket that she can be wrapped in is ideal. That way you can control paws and mouth if you need to. In addition, many cats calm down once covered. You might also want to include a muzzle for cats or some calming spray such as Feliway (feliway.com).

A digital thermometer is important to check for fever or hypothermia. Ear thermometers work, but the least expensive and most accurate is a digital rectal thermometer. Coat the end with a little petroleum jelly or mineral oil before you insert it to make the process easier on your cat—and you!

Eye wash, the largest bottle you can fit in your kit, is important to include in your kit. You can use it for flushing out a wound as well as an irritated eye or an eye with an obvious foreign body such as plant material.

Antibacterial wound wash choices abound, but chlorhexidine solution is your best bet. You can purchase small containers of wipes with it on them. A wound wash helps you flush out debris such as dirt. If you prefer an iodine scrub, choose a diluted formula, like Betadine (undiluted iodine will burn the tissue). Avoid hydrogen peroxide as it can further harm the wound.

Bandage supplies include gauze pads and nonstick bandages to cover a wound along with gauze rolls to hold a pad in place. Self-adhering wrap, like Vetrap

During a Disaster

You may want to expand your first-aid kit to an “emergency/evacuation kit.” This type of kit would include a few days’ worth of medications and food. Add a folding container that could be used as a litterbox and a gallon plastic bag of litter. A container of water with a suitable water bowl is important. Put a harness and leash along with a collar in the kit with your contact info and that of a family member or friend who could be reached if you aren’t available or are injured. For more information on handling disasters, see <http://bit.ly/CatWatchDisaster>.

bandaging tape, is superb for applying over the first layer to hold everything in place. (Your kit should also include scissors, if they aren’t otherwise readily available.)

Topical ointments, creams, or sprays should include an antibacterial product to cover an injury or wound and an antihistamine or corticosteroid ointment to stop itching or relieve inflammation. Apply these after cleaning the wound or injury site.

Hydrogen peroxide to induce vomiting may come in handy if your cat has swallowed something dangerous, but ALWAYS check with your veterinarian or an animal poison control center before you induce vomiting! Some toxins should not be vomited back up, as they will

do more damage on the way back up. Remember that hydrogen peroxide breaks down over time and must be kept in the dark bottle and replaced according to expiration date.

Activated charcoal is important to have on hand for cases of possible poisoning. Again, check with your veterinarian or an animal poison control center before administering any to your cat.

Important medical information

is critical. Include your veterinarian’s information, a list of your cat’s chronic health conditions, medications she is on, her vaccination record, phone numbers for an animal poison control center, and contact info for the nearest animal emergency center. If you are traveling, be sure to put in contact info for places along the way and for your destination. While you may think, “I know all that,” in a crisis it can sometimes be difficult to think clearly. This also will help if someone is assisting you with the cat.

A plastic dosing syringe from your veterinarian helps in administering hydrogen peroxide, activated charcoal, or even water to a dehydrated cat. With these syringes you can dose accurately and if your cat chews on it, she won’t be injured.

These are essentials. You can customize your kit and expand it as needed (when it comes to emergencies, the possible list of supplies is quite long). Remember to check expiration dates and replace products as needed. If you have a diabetic cat, consider some packets of honey (in a zipped plastic container to help with any leakage). If your cat has kidney problems, ask your veterinarian about having some subcutaneous fluids (along with a needle and drip set) for emergencies. Only do this if you feel comfortable giving fluids and have been trained by your veterinarian or veterinary technician.

Ideally, you should have two first-aid kits. Keep one at home in an accessible place and then a second one in your car or RV. That way you are always prepared if your cat needs help. ■

You Should Know

Feline vital signs

- ▶ Capillary Refill Time: less than 2 seconds
- ▶ Heart Rate: 140 to 220 beats per minute
- ▶ Mucous Membranes: Pink and moist
- ▶ Respiratory Rate: 24 to 40 breaths per minute
- ▶ Temperature: 100.5° to 102.5° F

A home first-aid kit is only as good as the tools inside it and your ability to use them properly.



sermovik | Deposit Photos

Is That Cat Angry or Frightened?

Either way, it's best to let him calm down

Your cat is tense and clearly unhappy, but you aren't quite sure what he's feeling. Here are some tips for decoding his body language.

Aggression

A cat exhibiting aggression is unhappy with his current situation and willing to resolve it—violently. “An aggressive cat walks with his head slightly lowered and his back legs straightened (on tiptoes) so that the back slants downward from rump to head,” says Dr. Pamela J. Perry, DVM, PhD, behavior resident at the New York State College of Veterinary Medicine at Cornell University. “His pupils may be constricted, and his ears are typically erect but rotated so that the openings are

facing toward the back.” His body is tense and oriented toward the perceived threat, often leaning a little forward.

Aggressive cats often growl. Cat growls don't rumble quite like a dog growl, but rather sound like a low sustained yowl. This is a warning sound telling anyone nearby to back off.

Fear

“A frightened cat is usually crouched, has dilated pupils, and with ears flattened to his/her head,” says Dr. Perry. “In addition, a fearful cat's feet (if the cat is standing) are close together under her body so that it looks like the front feet are retreating while the hind feet are approaching. The ‘Halloween cat’ is also a fearful cat, but

one who may become aggressive if the threat does not retreat.” Cats who are scared usually look like they are trying to shrink away from whatever is bothering them, and keep their whiskers and tails close to their bodies. If possible they will try to hide.

Dr. Perry adds, “A frightened cat also may make a lot of noise—hissing and spitting.” While at first it may seem counterintuitive that a frightened cat would make a lot of noise (shouldn't he be trying to hide?) this is the feline equivalent of bluffing. By making loud noises, the cat is trying to convince whatever is scaring him that he is too tough to take on. He doesn't really want to fight.

What to Do

“It is important to wait until the cat is no longer aroused before attempting to interact with him, [or] the owner may be bitten or scratched,” advises Dr. Perry. A fearful cat that is pushed too much may lash out defensively. “Cats take time and patience, especially when they are fearful or aggressive. It is best for everyone to allow the cat enough time to calm down (which may be hours) before engaging in any interaction with him or her. Owners should avoid confronting a fearful and/or aggressive cat or using verbal or physical punishment.” Punishing the cat just exacerbates the situation.

For a cat who is displaying aggression, try to alleviate the situation by walking away/ignoring him or by distracting him. Some possible distractions include tossing a toy or empty plastic bottle near (but not at) him to redirect his focus, or making a loud, strange sound. Never reward an aggressive cat with treats until he is calm and relaxed, and keep your hands away from him to prevent a pounce. The Cornell Feline Health Center has excellent information on the types of feline aggression and some strategies for preventing and resolving aggression: <http://bit.ly/felinecenter>

“With a fearful cat, the owner should identify what causes the fear and avoid the trigger as much as possible,” says Dr. Perry. “If the cat is fearful of people, for example, allow the cat to retreat to a safe area when someone comes to visit.” Let your cat choose when to approach something/someone new and “scary” rather than forcing an introduction. Speak to him in a calm voice, and avoid staring at him directly or making sudden movements toward him. ■

Test Your Skill

Are these cats angry or frightened?

See the answers on p 8.



A



C



B



D



E

Cats Are Resistant to Lyme Disease

Misinformation abounds about why, however

Q Recently, my dog was diagnosed with Lyme disease. When I asked my vet about checking my cats, he said that cats did not get Lyme because of how they groom themselves. I have read several accounts of pet parents looking for help because their cat contracted Lyme. Can you please clear up this quandary and list symptoms?

A Thanks for getting in touch about this important disease that appears to be increasing in frequency in both people and dogs. This is largely due to climate change that has increased the range of the ticks that transmit it, the growth of deer populations, and increased exposure of people and dogs to ticks as land development progresses.

Lyme disease, caused by infection by the bacteria *Borrelia burgdorferi*, is the most commonly diagnosed vector-borne disease in people in the United States, and it is probably true that numbers of infections are higher than are verified (many cases go unreported).

Lyme disease usually affects the joints, kidneys, heart and, in rare cases, the central nervous system in people and dogs that are infected if they are not appropriately treated. Signs of Lyme disease in dogs include lameness, lethargy, loss of appetite, weakness, increased or decreased urine production, and swelling of the joints.

For reasons that are not clear, there is no evidence that infection with *Borrelia burgdorferi* causes disease in cats. While there has been speculation that this

may be due to cats' fastidious grooming and rapid removal of ticks before they can transmit the disease, cats have been shown to produce antibodies to the bacteria that causes Lyme disease in both experimental and real-world situations, and yet these cats do not appear to develop disease. This finding suggests that cats' resistance to Lyme disease is not due to their rapid removal of ticks, as the development of antibodies against *B. burgdorferi* suggests that cats do become infected (i.e. their immune system is exposed to the bacteria), but for some unknown reason, they do not seem to develop any ill-effects of this infection.

Although cats do not seem to be negatively affected by *B. burgdorferi* infection, there are significant and potentially fatal diseases that can be transmitted to cats by ticks. Among these are hemobartonellosis (aka feline infectious anemia), tularemia, babesiosis, and cytauxzoonosis. The first two are caused by bacterial infections, and the latter by protozoal infections. Appropriate diagnosis, treatment, and supportive care are necessary for the most favorable outcomes.

Cats are unique in so many ways, and their resistance to Lyme disease is another of these distinctive characteristics of our feline friends. As you can see, though, there is still enough concern for tick-borne diseases in cats to recommend that owners pay careful attention to tick prevention in cats.



Tick prevention remains important in cats, outdoors and indoors.

There are effective tick preventatives. A discussion with your veterinarian is the best way to decide what is best for you.

I hope this is helpful. If we become aware of any research that suggests that cats may, in fact, be susceptible to Lyme disease, we will most certainly make this known to our readers.

All my best,
Elizabeth

Cats on page 7 answers

A - Frightened. Ears are facing back but aren't flattened. The pupils are dilated.

B - Frightened. Classic "Halloween cat" pose.

C - Frightened. Pupils aren't dilated, ears are up but turned slightly back. However, his tail is close to his body and he's crouched.

D - Aggressive. And confident about it.

E - Aggressive. Classic pose. Head lowered. Constricted pupils. Slight downward stance.

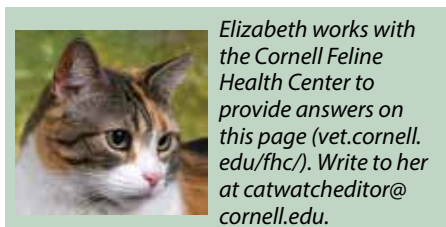
© HAPPENING NOW...

Pet Limits - The Akron Beacon Journal reports that the Canton City (Ohio) Council approved an amendment to the city's ordinance limiting residents to owning five dogs and/or cats. A lawsuit is underway. (www.ohio.com)

Cats Movie - Vulture magazine says the movie adaption of the musical *Cats* is underway. Actor Idris Elba plays Macavity the Mystery Cat, basing his performance in the movie on actor Jack Nicholson. Taylor Swift has apparently accepted the role of Bombalurina (a female cat) and allegedly went to "cat school" for her role. Also in the cast are

James Codin, Jennifer Hudson, Judi Dench, Rebel Wilson, and Jason Derulo. Set to release in December. (www.vulture.com)

New Species - According to SmartBrief, a "cat-like fox" new species has been identified in France. It's larger than a domestic cat with "highly developed" canine teeth, large ears, and a ringed tail with a black tip." More than a dozen have been found on the French island of Corsica, and DNA analysis suggests it may be distinct from the European wildcat and the African forest cat. (www.smartbrief.com) ■



Elizabeth works with the Cornell Feline Health Center to provide answers on this page (vet.cornell.edu/fhc/). Write to her at catwatcheditor@cornell.edu.

Coming Up ...

- ▶ Congestive Heart Failure
- ▶ The Value of a DNA Test In Your Cat
- ▶ Anemia in Cats
- ▶ What's Up With Cat Cafes?