



# Cat Watch

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



## INSIDE

### Pet Ownership's Economic Impact 2

It saves billions annually in healthcare costs because of fewer doctor visits.

### Assessing a Kitten for Adoption 3

You'll want playfulness, a curious nature and acceptance of your handling him.

### Indoor Cats Aren't Safe From Fleas 5

When they feed, their saliva deposited into the skin has 20 potential allergens.

### Ask Elizabeth 8

It's not necessary to restrict the intake of sodium in cases of hypertension.

## IN THE NEWS ...

### Study Reveals Bacterial Species in Gum Disease

Researchers at the Waltham Centre for Pet Nutrition in the U.K. have, for the first time, identified the bacteria associated with feline periodontitis. This condition, characterized by inflammation of the gums and other tissues, is estimated to affect two-thirds of cats over 3 years of age, causing pain, difficulty eating and tooth loss.

The scientists say their findings, recently published in *PLOS One*, are a pivotal step in developing interventions such as oral health and dietary products. Working with veterinary dentists at the Harvard-affiliated Forsyth Institute in Boston, they used DNA techniques to find 267 bacterial species in plaque that they obtained from 92 cats with both healthy gums and mild periodontitis.

The studies also revealed that the bacterial species in feline plaque were more similar to those in canine plaque than those found in human plaque. ♦

## Inhalant Allergies Target the Skin

*Sneezing and watery eyes can result, but sufferers will more often develop itching, hair loss, sores and infections*

Your cat is scratching, licking away sections of fur. His head, neck and ears itch. With the arrival of spring, you might suspect a flea infestation, but more likely allergies to airborne substances could be to blame. The usual suspects — pollens, molds and dust mites — can cause inflammation of the skin called feline atopic dermatitis (AD).

What starts as a seasonal allergy can become a year-round condition, resulting in intense itching, self-induced



Himalayans were over-represented in a Cornell study.

hair loss, sores and infections. Like hay fever in humans, AD can cause sneezing, watery eyes and ear infections in cats, "But the skin is always the main target," says dermatologist William H. Miller, VMD, Medical Director of the Cornell University Hospital.

**Unclear Origin.** "In dogs, AD is a contact dermatitis, where the allergen binds to the skin and triggers the allergic reaction. Since cats are, in general, hairier than dogs, the contact route of exposure

*(continued on page 4)*

## Heart Disease's Often Undetected Signs

*Weakness, rapid breathing, weight loss and lack of grooming can indicate hypertrophic cardiomyopathy*

All cats face the risk of heart disease, from domestic shorthairs to prized rare breeds, but the signs can remain undetected for years before resulting in diminished or total loss of cardiac function. The challenge for owners is to be alert to subtle changes in their cats.

"Open-mouthed and/or rapid breathing, lethargy, weakness, unkempt appearance, anorexia and weight loss are all potential indicators of heart disease," says cardiologist Bruce Kornreich, DVM, Ph.D., ACVIM, Associate Director of the Feline Health Center at Cornell University College of Veterinary

Medicine. "Although these signs may be caused by other conditions, owners should contact the cat's veterinarian immediately if any of them are observed."

**Check Breathing.** Given that cats often reduce their activity level when ill, it may be difficult to determine if their breathing is labored. The best time is to check is when they're at rest or sleeping. (See sidebar on Page 6.)

By far the most common heart disease in cats is hypertrophic cardiomyopathy (HCM), which can be life threatening to both cats and humans. "It affects up to

*(continued on page 6)*

# CatWatch

## EDITOR IN CHIEF

**Bruce G. Kornreich, DVM, Ph.D.,**  
Dipl ACVIM

## EDITOR

**Betty Liddick**

## ART DIRECTOR

**Mary Francis McGavic**

## ADVISORY BOARD

**James A. Flanders, DVM, Dipl**  
ACVS, Associate Professor,  
Clinical Sciences

**Margaret C. McEntee, DVM,**  
Dipl ACVIM, DACVR,  
Professor of Oncology

**William H. Miller, Jr., VMD, Dipl**  
ACVD, Professor, Clinical Sciences

**Pamela J. Perry, DVM, Ph.D.**  
Lecturer, Clinical Sciences,  
ACVB Behavior Resident



**Cornell University**  
College of  
Veterinary Medicine

For information on your cat's health,  
visit the Cornell University College of  
Veterinary Medicine, Cornell Feline  
Health Center website at  
[www.vet.cornell.edu/fhc/](http://www.vet.cornell.edu/fhc/).



**B**  
**Belvoir**

*CatWatch*\* (ISSN: 1095-9092)  
is published monthly  
for \$39 per year by  
Belvoir Media Group,  
LLC, 535 Connecticut  
Ave., Norwalk, CT 06854-  
1713. Robert Englander,

Chairman and CEO; Timothy H. Cole,  
Executive Vice President, Editorial  
Director; Philip L. Penny, Chief  
Operating Officer; Greg King, Executive  
Vice President, Marketing Director; Ron  
Goldberg, Chief Financial Officer; Tom  
Canfield, Vice President, Circulation.  
©2016 Belvoir Media Group, LLC.

Postmaster: Send address corrections  
to *CatWatch*, P.O. Box 8535, Big Sandy,  
TX 75755-8535.

**For Customer Service**  
or **Subscription information**, visit  
[www.catwatchnewsletter.com/cs](http://www.catwatchnewsletter.com/cs)  
or call toll free: 800-829-8893.

Express written permission is  
required to reproduce, in any  
manner, the contents of this issue,  
either in full or in part. For more  
information, write to Permissions,  
*CatWatch*, 535 Connecticut Ave.,  
Norwalk, Connecticut 06854-1713.

## SHORT TAKES

### Pet Ownership Saves 'Billions' in Healthcare

Studies on the benefits of pet ownership usually focus on the physical, social and psychological. Now a research group has calculated its economic impact. Ownership results in fewer medical visits for a savings of \$11.7 billion in annual healthcare costs, according to the Human-Animal Bond Research Initiative Foundation (HABRI).

Two economists from George Mason University did the analysis based on 132.8 million U.S. pet owners' having 0.6 percent fewer yearly doctor visits than people without pets. They figured an average cost per visit at \$139.

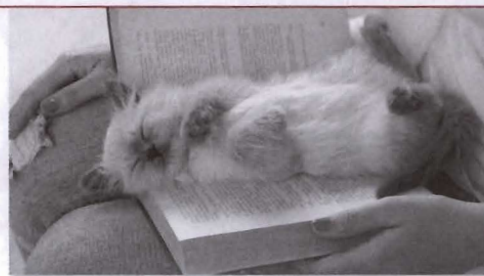
"There was abundant research to show that pets have a positive effect on our health, but this is the first time that anyone has looked at the impact on the U.S. healthcare system," says study co-author Terry L. Clower, Ph.D., Northern Virginia Chair and Professor of Public Policy at George Mason University's School of Policy, Government and International Affairs.

The foundation, founded by Petco, the animal health company Zoetis and the American Pet Products Association, maintains what it describes as the world's largest online library of human-animal bond information at [www.habri.org](http://www.habri.org).

### The Feline Perspective

Designating veterinary clinics as Cat Friendly Practices (CFP) is paying dividends, with 79 percent of them reporting an increase in feline visits and 71 percent receiving positive feedback from clients.

These were among the findings of a survey by the American Association of Feline Practitioners. It created the program four years ago to provide clinics tools "to integrate a feline perspective" into their physical environment and the delivery of medical care. To date, the association has approved 951 practices as CFPs, and 635 more are completing requirements for designation.



Bigstock

**Research has shown the delights of pet ownership** can benefit well-being and save on health-care costs.

Among other goals, Cat Friendly Practices seek to educate clinics about feline patients' unique needs and to decrease stress by handling cats in a "gentle, empathetic and caring manner." One recommendation: Have separate waiting rooms for cats. To learn more about CFP, visit: [www.catvets.com/cfp](http://www.catvets.com/cfp). The sections for cat owners include a booklet, "Getting Your Cat to the Veterinarian," with steps on successfully introducing him to the dreaded carrier for the ride.

### Farewell to 'Fluffy'

In searching its database of more than a half million insured pets, Nationwide found that the most popular name for cats in 2015 was the same as the previous year: Bella, followed by Max.

Bella has been the most popular name since the series of "Twilight" movies featuring Bella the vampire began a decade ago, the pet insurance company says, adding that data show the next generation of owners is using different methods and references to name their pets.

One example: Though it didn't make the top 10, the name Leo showed the largest growth in popularity and was nearly 10 times more common among millennial kittens — those owned by teen-agers and twenty somethings. In fact, Leonardo DiCATprio won Nationwide's competition for the Wackiest Cat Name of 2015. The very relatable name Edward Scissor Paws was deep in the list of 50 nonconventional names.

The other most common names of 2015 in descending order: Oliver, Chloe, Lucy, Lily, Charlie, Sophie, Tiger and Shadow. Not a Fluffy among them. ♦

# Assess That Cute Kitten Before Adoption

*You'll want playfulness, a clean coat, curious nature and easy acceptance of your handling him*

Come spring and fall, animal shelters across the country are flooded with newborn kittens often in need of round-the-clock care to help them survive, thrive and eventually be adopted. As adorable as shelter kittens may appear, how can you tell if they're healthy?

For starters, be patient. Wait to adopt until a kitten is at least 8 weeks old or better yet between 10 and 12 weeks old. "This age allows for the queen [the mother cat] to teach her kittens and allows the siblings to grow together and play so that they develop social skills and hunting skills," says Holly Putnam, DVM, a faculty clinician in Maddie's Shelter Medicine Program at Cornell University College of Veterinary Medicine.

**Wait for Weaning.** By 8 weeks, most kittens have been weaned. They're usually healthy enough to be spayed or neutered, and to receive the initial rounds of deworming and vaccinations against

infectious diseases to bolster their developing immune systems.

The next step is an assessment of the kitten you're considering, says Leni Kaplan, DVM, MS, a lecturer in the Community Practice Service at Cornell. While shelter staff veterinarians routinely conduct exams of adoptable kittens, it can be easy in the rush of kitten season for signs to be overlooked or to develop after an exam.

Observe the kitten you want to adopt to make sure that he:

- ◆ Is not too thin for his age. "Poor weight gain may be a sign of underlying health problems," Dr. Kaplan says. "Healthy kittens provided with good nutrition should gain weight as they grow."
- ◆ Is free of parasites — no fleas, ticks, lice or tapeworms.
- ◆ Has a clean, well-groomed coat. A dirty or matted coat could indicate



Bigstock

Healthy kittens are parasite-free and show no signs of respiratory disease such as watery eyes.

that illness is preventing him from grooming himself.

- ◆ Shows no signs of a runny nose, watery eyes or sneezing. These could be signs of upper respiratory disease, which commonly affects shelter cats.
- ◆ Displays a playful curiosity and desire to interact with you. If he's lethargic, he could have a virus, parasites or another health problem.

Be alert to other warning signs, such as diarrhea in the litter box or shelter cage and a full bowl of untouched food in the cage. "They could indicate an underlying illness, nausea, oral pain or dental problems," Dr. Kaplan says.

Spend time observing a group of kittens before interacting with them. "Watching the kittens will give you an idea of their temperaments," says Dr. Kaplan. "Are they wide-eyed and curious? Ears perked? Sociable and playing?"

When you pick up a kitten, take note of his response to being handled. Ideal adoption candidates are relaxed and will purr and even snuggle with you. Kittens who lack adequate socialization may extend their claws, struggle to wrestle free and even yowl.

"Nervous, feral, poorly socialized or very independent cats and kittens may have squinty eyes, flattened ears and may not be receptive to being social," Dr. Kaplan adds.

*(continued on page 7)*

## THE REASONS FOR KITTEN SEASONS

Shelters have the greatest influx of kittens between the spring and fall — really three seasons — for these simple reasons: available light and cats' robust reproductive systems:

Female cats are classified as polyestrous and seasonal breeders. This means that they normally come into estrous cycles, making them receptive to mating, when there are 14 to 16 hours of natural or artificial light daily.

- ◆ Cats in North America typically cycle between mid-January and mid-October. The gestation period for a cat is about 60 days. So if a cat becomes pregnant in January or February, she will give birth to a litter of kittens in the spring. If she gets pregnant in the early summer, she will deliver her next litter in the fall.
- ◆ An unspayed female cat is capable of having up to three litters each year.

"Cats can go back into heat as early as one week after giving birth and they will cycle repeatedly throughout the long daylight periods," says Holly Putnam, DVM, at Cornell. "Kitten season has a significant impact on animal shelters. Many of these kittens are orphaned and require utilization of resources such as bottle feeding, medications and care by shelter staff or by foster volunteers."

**ALLERGIES...** (continued from cover)

doesn't explain their disease entirely," Dr. Miller says, adding that cats' grooming pollen off their skin and inhaling allergens also have to be considered.

While an estimated 10 to 30 percent of dogs suffer from atopy, the incidence in cats is unknown. In his five-year study of 194 feline dermatology patients, Dr. Miller found atopic dermatitis in 14 percent of cats.

Diagnosis presents a challenge. Because atopy and food allergy signs are similar, "the only real way to prove that an animal has AD is to make sure he doesn't have a food allergy, and that involves strict dietary manipulation," says Dr. Miller. That can be difficult because cats often resist changes in diet. "However, by carefully reviewing the patient's history and the patient himself, we typically know whether the cat has AD or a food allergy."

Allergies are caused by the body's immune system overreacting to triggering substances called allergens. This usually leads to atopic dermatitis, with some pets with severe allergies requiring lifelong treatment. Four main skin reactions characterize AD in cats:

- ◆ Facial pruritus (itching) and traumatic alopecia (fur loss) in which



William H. Miller, VMD, Cornell

**An early case of atopic dermatitis** on the left shows initial hair loss when a cat starts itching at normal skin and creates lesions, while a chronic case on the right shows the more severe and painful signs.

the cat starts itching at normal skin and creates the lesions we see, Dr. Miller says.

- ◆ Miliary dermatitis and eosinophilic granuloma complex. "In these, lesions appear spontaneously and then the cat responds to them. To make it more challenging, some cats have multiple forms all at one time."

Asthma caused by allergies to inhaled environmental allergens is a different condition, affecting up to five percent of cats, says University of Missouri researcher Carol Norris Reinero, DVM, Ph.D. Signs include coughing, wheezing and difficulty breathing. "Feline asthma is a common disease often mistaken for other respiratory diseases, but it is truly an allergic

reaction to something in the environment that is innocuous to others," she says.

Owners should consult a veterinarian whenever respiratory or skin reactions occur. "Atopic dermatitis is forever," Dr. Miller says. "Many cats are easily managed with relatively safe medications. But some can continue to worsen each year and require a very intense management regime."

A detailed medical history, physical exam and restricted diet can eliminate food, fleas and diseases as the reason for a cat's dermatitis. Identifying specific environmental allergens involves allergy testing. "Allergy testing isn't foolproof," Dr. Miller says. Allergy tests show that a cat has antibodies to specific substances, which means only that he has been exposed and reacted to ragweed or dust mites, for example.

**Blood and Skin Tests.** Antibodies are detected two ways: in the blood with blood or serologic allergy testing or on the surface of mast cells (white blood cells found in connective tissue) by intradermal skin testing. Many factors affect the accuracy of both allergy tests, so testing is recommended only if specific-allergen desensitization treatment is planned.

"We usually allergy test animals only for environmental allergies when avoidance and medical management don't provide satisfactory results," says Dr. Miller. "There is no real benefit to testing unless you are going to use Allergen-Specific Immunotherapy (ASIT)."

(continued on the bottom of page 5)

**DUST AND DUST MITES RANKED HIGH AMONG ALLERGENS**

Some cats are genetically predisposed to allergic atopic dermatitis, although no age or sex seems especially at risk. Abyssinians, Himalayans and Persians were over-represented among feline cases analyzed by dermatologist William Miller, VMD, at Cornell in his study "Feline Atopic Dermatitis: A Retrospective Study of 194 Cases 1988-2003," published in the *Japanese Journal of Veterinary Dermatology* in 2013. Almost 78 percent of the patients were domestic shorthair cats. In other findings:

- ◆ 62 percent of the patients had skin reactions year-round.
- ◆ 92 percent of those with non-seasonal allergies developed worse symptoms seasonally.
- ◆ 42 percent of the cats were allergic to dust and dust mites.
- ◆ Nine of the 10 most common positive allergen reactions were to molds and pollens.
- ◆ Medical management was successful for almost 79 percent of the cats.

# Indoor Cats Aren't Safe From Flea Bites

*Their saliva contains 20 potential allergens*

Although high temperatures and humidity are most favorable to the cat flea from June to August, it breeds in the U.S. year-round. *Ctenocephalides felis* is an intriguing little insect — no more than an eighth of an inch long but capable of jumping eight inches. A female can lay 50 eggs a day on its host. But here's where intrigue can turn into irritation and beyond:

"Flea saliva, deposited into the skin when fleas feed on cats, contains more than 20 irritating, potentially allergenic substances," says dermatologist William H. Miller, VMD, Medical Director of the Cornell University Hospital for Animals.

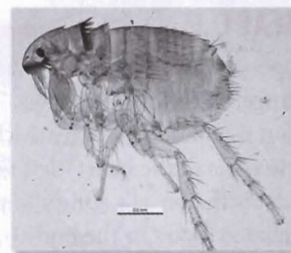
Indoor cats are not immune to infestation. Fleas can arrive indoors on clothes, on dogs or other cats. Their life

cycle, occurring over several weeks to months, encompasses egg, larva, pupa and finally an adult with the sole mission of seeking a warm-blooded host — your cat.

That's when trouble begins. "The flea's bite causes a red papule — a small bump sort of like a mosquito bite in a person," Dr. Miller says. "If the cat had only one flea, the animal and owner wouldn't even notice it. However, fleas rarely occur alone. As a group, fleas can inflict numerous itchy bites. And if the animal is allergic to flea saliva, the bite wound is bigger, angrier and itchier."

Complications can arise from the bites when the cat tries to soothe the itching by scratching, licking, chewing or rubbing. Serious scratching can damage

Cat fleas are difficult to see on hair coats, though their waste may be evident as tiny black dots.



Parasite and Diseases Image Library, Australia/CDC

the surrounding skin, and it can become infected. "In debilitated animals or those with chronic untreated allergies, this secondary infection can seriously damage the skin and cause systemic problems," Dr. Miller says.

Fleas are also a vector for tapeworms and various bacterial pathogens like *Bartonella*, Dr. Miller points out.

Treatment for flea allergies can involve steroids, antihistamines and newer anti-allergic medications. ♦

## ALLERGIES... (continued from page 4)

Immunotherapy, administered orally or by vaccine, uses individually-tailored allergen mixtures to desensitize the immune system not to overreact to those substances. The therapy is successful in 50 to 75 percent of cases. In Dr. Miller's retrospective study, about 90 percent of the allergic cats treated with ASIT improved.

The first step in managing feline AD is to eliminate or reduce known al-

lergens in the cat's environment. (See sidebar below.) Medical options include fatty acid supplements, topical and oral steroids, antihistamines and the immunosuppressant drug cyclosporine A. Antibiotics and antifungal drugs treat secondary skin infections.

Anti-inflammatories, including glucocorticoids like prednisolone, are often prescribed. Cats generally have few adverse reactions to long-term steroid use, but

these can include increased thirst and urination and a weakened immune system.

Dr. Miller prescribes ASIT frequently because Cornell primarily treats severe cases of year-round AD. Animals with milder or seasonal atopy may benefit from antihistamines or supplements with balanced omega-3 and omega-6 fatty acids.

The complex mechanisms that cause AD in cats and dogs are unclear, but in humans, itching is often triggered by histamine, a chemical produced by mast cells as an immune response. Antihistamines, such as chlorpheniramine and cetirizine, are considered more effective for AD in cats than in dogs and safe if doses are small enough. "Antihistamine overdose can cause hyper-excitability in cats, which can be detrimental if the cat has heart disease or another internal disorder," says Dr. Miller.

Current research on new therapies focuses mostly on dogs but, "As the science of allergy in animals advances," Dr. Miller says, "new treatments for the atopic cat will become available." ♦

## FOUR SIMPLE PREVENTIVES

It's impossible to prevent environmental allergies from developing, but you can lessen your cat's allergen load. "Exposure minimization, such as avoiding fields of goldenrod if the pet is allergic to it, can obviously help but is by no means enough," says dermatologist William H. Miller, VMD, at Cornell.

Other tactics that may help:

- ◆ Close the windows to limit exposure in seasons when trees, grass and weeds pollinate.
- ◆ Vacuum regularly using a HEPA filter.
- ◆ Use dust- and mite- proof cases on your mattresses and pillows if your cat sleeps with you. Wash bed linens regularly with hot water.
- ◆ Control the humidity in the home to prevent mold and mildew growth.

## MEDICINE

**HEART...** (continued from cover)

2 percent of all cats over a broad age range,” Dr. Kornreich says. “The condition is characterized by thickening of the walls of the heart’s left ventricle and affects the heart’s ability to pump oxygenated blood to the body.”

The ventricles are the two lower, muscular heart chambers that provide most of the energy to pump blood. Hypertrophy and high blood pressure can also cause thickened ventricles, so it’s important to rule these out before arriving at a diagnosis of HCM. Whatever the cause of the thickening, “A stiffened chamber usually cannot relax appropriately between contractions, which affects the ability of the ventricle to fill between contractions, decreasing the amount of blood ejected per contraction” says Dr. Kornreich.

“This raises the heart rate because the heart needs to beat more times to main-

tain a normal cardiac output. This rapid heart rate leads to increased oxygen consumption by the heart muscle, which can result in the death of heart cells and worsening cardiac function.”

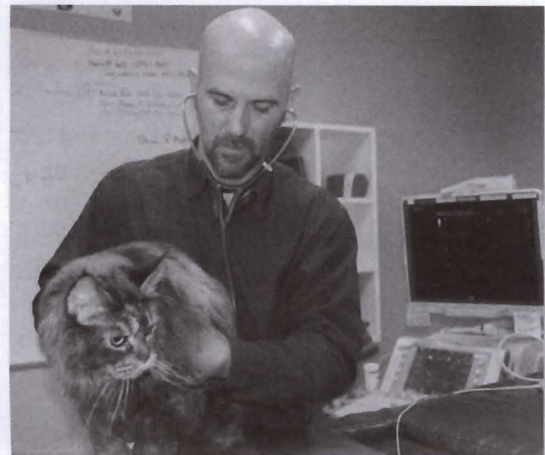
HCM is often accompanied by fluid accumulation either in the lungs or the pleural space, which is within the chest cavity and surrounds the lungs.

Some breeds are more predisposed to HCM than others. “It is an inherited condition in Maine Coon, American Shorthair and Ragdoll cats,” Dr. Kornreich says. “HCM is likely the result of a genetic mutation or series of mutations, although how these mutations cause the thickening of the ventricle walls is still unknown.”

**Genetic Screening.** These mutations serve as the basis of screening tests for hypertrophic cardiomyopathy, although the results of these tests must be interpreted carefully. Despite this limitation, genetic screening may be helpful in refining breeding programs to minimize the incidence of HCM in cats, Dr. Kornreich says.



**Echocardiography, which uses sound waves to produce images of the heart beating and pumping blood, is the gold standard for the diagnosis of HCM, says cardiologist, Bruce G. Kornreich, DVM, Ph.D., ACVIM, demonstrating its use to veterinary students.**



**Cardiologist Bruce G. Kornreich, DVM, Ph.D., ACVIM, examines a Maine Coon, a breed prone to HCM.**

**DIY RESPIRATORY MONITORING**

Make sure your cat has annual checkups — twice yearly after the age of 7 — with the veterinarian listening carefully to his heart and lungs with a stethoscope. While this won’t detect all feline heart diseases, it’s the most cost-effective approach to screening cats for heart disease.

You can also monitor your cat’s resting respiratory rate at home. When he’s sleeping or sitting quietly, count the number of breaths taken in 15 seconds and multiply that number by four. “A cat’s resting respiratory rate should be 35 breaths per minute or lower,” Dr. Kornreich says. After several measurements, if the number is over 35 breaths per minute, a veterinary exam is in order.

The first step toward diagnosis is to share your cat’s history with a veterinarian. He or she will want to know whether your cat has had other diseases that may produce similar symptoms, including asthma, cancer or heartworm disease. Chest radiographs (X-rays) can reveal diseases such as asthma, cancer or pneumonia that the owner might not be aware of. Radiographs might also show an enlarged heart, along with evidence of fluid accumulation, such as enlarged vessels, fluid filled lungs or fluid in the pleural space.

A very important test in the diagnosis of heart disease is echocardiography, which provides vital information about the structure and function of the heart. “This is the gold standard for the diagnosis of HCM,” Dr. Kornreich says.

Upon examination, cats with heart disease may have an arrhythmia or a heart murmur. “The heart is caused to pump by a very specific series of electrical impulses,” Dr. Kornreich says. “An arrhythmia refers to any change from the normal rate and sequence of electrical impulses. The impulses may happen too rapidly, too slowly or erratically. This causes the heart to beat abnormally, and when the heart doesn’t beat properly, it can’t pump blood effectively. Then the lungs, brain and other organs may be deprived of sufficient amounts of oxygenated blood and may shut down or be damaged.”

## A NEW TEACHING TOOL IN THE CLASSROOM: A ROBOTIC CAT SIMULATES EMERGENCIES

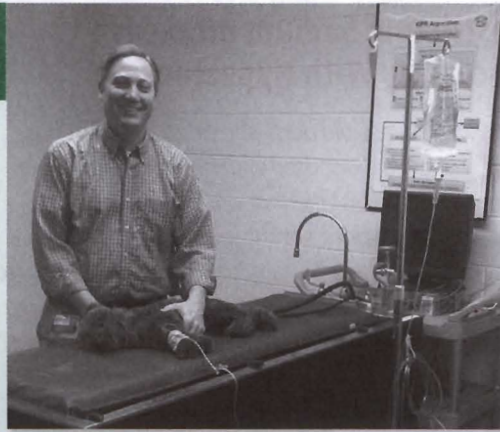
Daniel J. Fletcher, Ph.D., DVM, ACVECC, Assistant Professor of Emergency and Critical Care at Cornell, created his first robotic cat in 2009, using parts from a human rescue mannequin and a realistic looking model of a cat. The goal was to train veterinary students in medical emergencies.

Robo Fluffy and a canine version named Robo Jerry were believed to be the first of their kind. Fluffy is equipped with technology that produces heart and lung sounds that can be heard with a stethoscope, and electronic hardware and software capable of simulating lung diseases, shock, cardiac arrest and other conditions, such as arrhythmias.

"Students can listen to the heart sounds, see the chest move, view an EKG and feel pulses," Dr. Fletcher says. "When realistic cardiac emergencies are simulated in our lab, students can better learn how to handle them. Stabilization of the patient within the first five minutes can help save a cat's life."

Funded by a grant from the Triad Foundation, the team is now working on new "innards" for the robo cat and dog, creating open-source hardware and software that anyone can use. In addition to a degree in veterinary medicine, Dr. Fletcher has a doctorate in bioengineering and bachelor's degree in electrical engineering.

"For about \$2,000, any school will be able to have its own robo cat," he says. "The software will also be shared with anyone who wants it in the hopes that others will add functionality and share it back. Ultimately, it's about providing the best training possible for our future veterinarians and veterinary technicians."



With Robo Fluffy, students can listen to heart sounds, see the chest move and check the pulse, says its creator Daniel J. Fletcher, Ph.D., DVM, ACVECC, who also holds a doctorate in bioengineering and bachelor's degree in electrical engineering.

The causes of arrhythmia are many and varied. "We know relatively little about the cat's genetic predisposition to arrhythmia," Dr. Kornreich says. "In cats, arrhythmias are commonly seen secondary to other diseases such as hypertrophic cardiomyopathy."

Cats with arrhythmias may need a 24-hour electrocardiogram, obtained via a device called a Holter monitor, to characterize their frequency and severity.

Nearly 20 percent of all normal adult cats have a heart murmur, which results from turbulent flow of blood through the heart. "A murmur is not a diagnosis in itself, although it may prompt a veterinarian to recommend additional diagnostic tests, including echocardiography and thoracic radiographs (X-rays)," Dr. Kornreich says.

Cats in congestive heart failure who demonstrate respiratory distress usually require drug therapy to decrease congestion and will often benefit from being placed in an oxygen-enriched environment. They may also be prescribed medications to decrease the likelihood of blood clot formation, a potentially devastating consequence of heart disease in cats. ♦

## KITTEN... (continued from page 3)

Don't hesitate to interview shelter staff members about how they care for the kittens. After all, you're about to adopt a feline who may spend the next 12 to 20 years with you. Among the questions to ask:

- ◆ Has the kitten been handled, preferably for at least 15 minutes each day?
- ◆ Does the kitten approach people or stand away?
- ◆ What has been the behavior of the queen and the tom (the kitten's parents)?
- ◆ Does the kitten easily use the litter box?
- ◆ Has the kitten been adequately exposed to a wide range of people,

both adults and children? What has been the kitten's reaction?

Once you have decided on a kitten, invest the time to kitten-proof your home and obtain supplies before taking him home. Inspect each room and identify potential dangers. "Make sure kittens cannot get into any small spaces where they cannot be retrieved," says Dr. Kaplan. "Keep kittens away from electric and computer cords, and things that they may chew on or try to climb."

If you already have another cat, proceed with the introductions slowly. For

the first few days, keep the kitten separated in a bathroom or laundry room with all the needed amenities — and the food bowl away from the litter box. Allow your resident cat to sniff under the door. Then rub a damp cloth on your resident cat and rub that cloth on your kitten, then back on the resident cat. The exchange of scents will ease their familiarity. Make their first face-to-face meeting at mealtime.

After a week in his new home, take your kitten for a complete veterinary wellness exam, and you're off on your new life together. ♦



Elizabeth

Elizabeth is thankful for the assistance of **Bruce G. Kornreich, DVM, Ph.D., DACVIM**, Associate Director of the Cornell Feline Health Center, in providing the answer on this page.

## Restricting Sodium Intake Isn't Necessary With Hypertension

**Q** My 10-year-old domestic shorthaired cat has just been diagnosed with high blood pressure during a visit to his veterinarian. I was shocked to learn this, as he does not show any signs of having a problem, and I am now very concerned about how to keep him healthy. I am working with his veterinarian to treat him, but should I be restricting his salt intake?

**A** Thank you for contacting us and for your obvious love of your boy. Your question regarding sodium restriction is an excellent one, particularly given the common recommendation by many human physicians that their patients decrease their sodium intake. Unlike in humans, there is no good evidence that restricting dietary sodium intake is effective at decreasing blood pressure in cats. In fact, extreme sodium restriction can have deleterious effects on cats.

For these reasons, the current consensus is that dietary restriction of sodium beyond what would normally be found in proprietary cat food is not recommended. Of course, owners should avoid extreme amounts of sodium in their cat's food, particularly if they have kidney disease, but other than that, no specific restriction of sodium is necessary in cats with hypertension.

Elevated blood pressure in the arteries of the body, called systemic hypertension, is a disease that is commonly diagnosed in cats, usually (approximately 80 percent of the time) in association with other diseases, such as kidney disease and hyperthyroidism.

When elevated blood pressure can be attributed to a coexisting condition or to the administration of drugs, it is termed secondary hypertension. In approximately 20 percent of cases of hypertension in cats, no other disease process or drug-associated cause is identified. These cases are classified as idiopathic hypertension.

It is important to realize that, as in humans, the measured blood pressure may be artificially elevated due to the anxiety associated with visits to the veterinarian (called white-coat syndrome

in humans). For this reason, it is essential that veterinary professionals strive to minimize stress in their feline patients when measuring blood pressure by following careful guidelines regarding handling of the cat, repeatability of measurement and interpretation of results.

In cases of secondary hypertension, the primary goal is to address the underlying disease process and/or refrain from administering pressure-elevating drugs. This often will result in a resolution of the disease. In some cases of secondary hypertension, the disease may persist in spite of appropriate management of the primary disease process and/or cessation of pressure-elevating drugs.

Regardless of the cause of hypertension, veterinarians will work to normalize blood pressure, either by addressing the primary problem with secondary hypertension (disease process or drugs) and/or by administering blood pressure-lowering drugs. Elevated blood pressure can lead to damage in the eyes, kidneys, brain and/or the heart, so normalization of blood pressure as quickly as possible is essential. In rare cases, elevation of blood pressure can be so extreme that emergency measures to decrease blood pressure acutely are undertaken.

I hope that this is helpful. You might also want to refer to the article on hypertension ("Why It's Called 'the Silent Killer'") in the December 2015 issue of *CatWatch*. I recommend that you work closely with your cat's veterinarian to figure out whether your kitty has any underlying diseases that may predispose to hypertension and to formulate an appropriate plan of action for addressing his high blood pressure. This may take some time and patience, but with diligent monitoring, treatment and follow up, most cats with hypertension can have their blood pressure controlled and can have an excellent quality of life.

—Sincerely, Elizabeth ❖

### PLEASE SHARE YOUR QUESTIONS

We welcome questions on health, medicine and behavior, but regret that we cannot comment on prior diagnoses and specific products. Please write *CatWatch* Editor, 535 Connecticut Ave., Norwalk, CT 06854-1713 or email [catwatcheditor@cornell.edu](mailto:catwatcheditor@cornell.edu).

### COMING UP ...

- ❖ SHY CATS
- ❖ STEM CELL THERAPY
- ❖ COMPOUNDED MEDICINE
- ❖ NUTRITION FOR HEALTHY COATS

### FOR MORE INFORMATION

Please visit the Cornell Feline Health Center's Health Topics page at [www.vet.cornell.edu/fhc/Health\\_Information/hypertension.cfm](http://www.vet.cornell.edu/fhc/Health_Information/hypertension.cfm).

#### CORRESPONDENCE

The Editor  
*CatWatch*<sup>®</sup>  
535 Connecticut Ave.  
Norwalk, CT 06854-1713  
[catwatcheditor@cornell.edu](mailto:catwatcheditor@cornell.edu)

#### SUBSCRIPTIONS

\$39 per year (U.S.) • \$49 per year (Canada)  
For subscription and customer service information, visit [www.catwatchnewsletter.com/cs](http://www.catwatchnewsletter.com/cs) or write to: *CatWatch*, P.O. Box 8535, Big Sandy, TX 75755-8535.  
**CALL TOLL FREE: 800-829-8893**