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**PRESIDENT'S MESSAGE**

**W**e are running as fast as we can to catch up to 2021. Year 2020 has been quite the year of multiple once in a lifetime happenings. You may notice that this *Westie Wellness* issue combines summer and fall/winter issues to make this happen. The next issue will be Spring 2021.



*Bebe Pinter*

The Annual Board Meeting of the Westie Foundation of America, Inc. (WFA) was held on October 11, 2020, via Zoom. The Board of Directors enjoyed the visual experience but missed meeting in person. Initially, we spent time catching up on personal news, and then Allison gave us an overview of the new website that will become live in a couple of months. There was discussion about current research studies underway, the scholarship program, and the 2021 budget was approved.

I am delighted to announce that the board approved the slate of nominees for officers, board of directors and Advisory Council, effective January 1, 2021. Donna Hegstrom, Loraine Lennon and Dr. Bob McCaskill were approved to join the board with Donna serving as secretary. Officers re-elected include: President-Bebe Pinter, Vice President Communications-Teresa Barnes, Vice President Fundraising-Marianne Jacobs, Vice President Health-Kay McGuire, DVM, Treasurer-Gary Sackett, and Donor Manager-Jim McCain. In addition, Bernadette (Boo) Garry, Pat Logan-Hale, Stewart Miller, Jared Sporleder, and Beverly Thompson were elected to join the Advisory Council. Congratulations! Their names will be included in the appropriate sections on page 20 starting with the Spring 2021 issue. The board welcomes your participation. I wish to sincerely thank Susie Stone for serving as secretary for several years. She has done an outstandingly stellar job and will continue serving on the WFA Board.

In this issue, our own Dr. Valerie Fadok does not disappoint with her article “Atopic Dermatitis: Westies are Special in Their Version of This Disease”. She says, “... different breeds express different atopy genes, have subtly different clinical signs, and may respond differently to treatments.” Then, she defines studies that may well show “atopic dermatitis as a syndrome rather than one disease”.

*(Continued on page 2)*

(President continued from page 1)

Are you familiar with Bartonella? “Bartonella The Major Threat You’ve Never Heard Of” by Sue M. Copeland describes a bacteria that is not well known; on the other hand, it is a real danger to dogs as well as humans. Read to learn (1) The ABC’s of Bartonella, (2) Under the Radar and (3) Prevention: Your Best Bet. According to Copeland, the danger lies in the fact that the bacteria hide in red blood cells and cells of blood-vessel walls to avoid the body’s immune system. Therefore, it usually avoids detection through blood tests.



Adrenal cancer in dogs is a silent and rare occurrence. Linda Hunt participated in a Q & A with WFA’s Teresa Barnes to inform our readers about this disease. The WFA sends condolences to Linda and her family in the loss of her incredibly special boy Cooper.

“Financial Report—Fiscal Year 2019”—Once again, we are proud that Program Services represents a robust 89% (5% increase from 2018) while Management (5%) and Fundraising (6%) are closely monitored. We are enormously proud of our Investment subcommittee’s members who closely monitor the investment portfolio to ensure it complies with the Investment Policy.

COVID-19 has had an impact on the world. We know that our Westies help us cope. Teresa Barnes described how Westies have helped seven of our directors in her article “Staying Home, Snuggling Westies”.

Check out two Research Progress Report Summaries: (1) “Molecular Epidemiology of Methicillin-resistant Staphylococcus Pseudintermedius in the United States” and (2) “Discovery of Novel Biomarkers of Canine Atopic Dermatitis through Lipid Profiling”. Progress reports are posted to our website.

Thank you for your continued involvement and support of the WFA but most of all, your love of Westies!

*Bebe Pinter*

The opinions expressed in the articles herein are those of the authors and not necessarily of the editor or the Officers or Directors of the Westie Foundation of America, Inc. (WFA). The WFA does not sell, endorse or promote products or services discussed in the newsletter.

# On The Health Front

By Kay McGuire, DVM, MS

This has unquestionably been a year we will remember. While our daily life essentially has been closed, obviously our sponsored research has also been stalled. Our grant process for 2020 had approved \$65,000 for research as of March 2020 with money left for upcoming opportunities. This spring, we will determine which health issue studies to focus WFA 2021 grant funds.

You might remember that the Westie Foundation (WFA)

made the introduction of human pulmonologist, Dr. Natali Kaminski from Yale University and Dr. Elizabeth Rozanski, a criticalist at Tufts College of Veterinary Medicine. Dr. Kaminski had found a thyroid like hormone that seemed to halt pulmonary fibrosis and even improve the symptoms in mice with induced fibrotic disease. The WFA brought these two individuals together to determine if this hormone might have an effect on Westies with naturally occurring pulmonary fibrosis. A study was undertaken at Tufts treating patient Westies to evaluate the effect

of Sobetirome on their fibrotic disease. This work is still ongoing at Tufts; however, it has inspired testing Sobetirome in human patients with COVID that developed fibrotic lung disease. Please see the press release from Tufts University concerning the Westie study. <https://now.tufts.edu/articles/terriers-test-therapy-lung-disease>

Thanks to past WFA's officer Daphne Gentry's bequest, the WFA awarded a \$5000 scholarship through the Canine Health Foundation's Fellowship program in 2020 to Dr. Lopamudra Kher. Her work at the University of Florida started in January

with her mentor Dr. Dominico Santoro. Dr. Kher has a DVM from Mumbai Veterinary College, a Bachelor of Veterinary Science and Animal Husbandry degree (Mumbai), a Master's in Veterinary Parasitology (Mumbai), a Master's in Small Animal Clinical Sciences (UFL) and is currently pursuing her PhD in Small Animal Clinical Sciences. We are excited that Dr. Kher is actually working on one of our supported grants on atopic dermatitis. Thank you, Board member Susie

Stone, Scholarship Committee chair; for helping in this project. This is our third year to award a scholarship to a candidate in the Veterinary field, something we are hoping to continue and possibly expand.

One of the most exciting events of this past year is the building of our new WFA website. We will be launching our informative site which has been developed by a company specializing in non-profit corporations. Once launched, we look forward to your feedback on

ease of use in finding everything you may need. We will be announcing the launch on our Facebook page.

By the time this newsletter has gone to press and been mailed, we wish that most of our readers will have had the opportunity to obtain the COVID-19 vaccine. Everyone is anxious for his/her life to return to some semblance of normalcy. I pray that we will reach this time soon, that we get to return to events with our dogs, that our research can move forward, and that new discoveries will be made to improve the health of the Westies we love.







## Atopic Dermatitis: Westies are Special in Their Version of This Disease

By Valerie A. Fadok, DVM, PhD, Diplomate, ACVD

**W**e all know West Highland White Terriers are special! When we talk about their potential medical problems, atopic dermatitis always comes up. Atopic dermatitis is complicated; there are definitely genetic components, but environment plays a role as well. This chronic and incurable inflammatory disease affects many breeds and we have tended to think of it as one disease. In recent years, however, we are learning that different breeds express different atopy genes, have subtly different clinical signs, and may respond differently to treatments. In human atopic dermatitis, distinct phenotypes and endotypes are recognized, dependent on age and ethnic origin. Phenotype refers to the clinical expression of the disease and endotype refers to the immunologic mechanisms that underlie the inflammation that is seen. In this article, we will review some of the information recently published about the Westie version of atopic dermatitis. The hope is that understanding these differences will lead to better diagnostic tests and better treatments. Perhaps the age of personalized medicine is not that far away for Westies!

One of the first published papers on breed differences in disease expression was published in 2010 by a group of veterinary dermatologists in Switzerland and United Kingdom.<sup>1</sup> Unlike other breeds, at least half of Westies and Shar-peis showed disease expression along their backs. This is important, because we tend to think of this disease as distributed on the bottom half of the body – armpits, groin, neck, feet. In fact, veterinarians are often trained to consider itch and inflammation along the back as being due to flea allergy. While we will continue to recommend excellent flea control for atopic Westies and all dogs, we now know that even with good flea control on board, Westies may have itchy backs! For Westies the disease is just more generalized. Two additional significant findings for Westies were the tendency to develop oily skin (seborrhea) and recurrent yeast infections. Westies can become allergic to the yeast itself, leading to intense itch, inflammation, and thickening of the skin.

This year, a group of dermatologists published a 2 part review of atopic dermatitis restricted to Westies. In the first paper, they discussed what happened in the first 3 years of life.<sup>2</sup> Seventeen breeders agreed to participate in the study, which was carried out in Switzerland and in the USA. Twenty litters with 108 puppies were enrolled in the study and 90 pups completed the 3 year study. This is a remarkable participation rate, and just shows how devoted Westie breeders and owners are to their dogs. An astonishing 52% (47/90) of these dogs were diagnosed with atopic dermatitis by 3 years of age. Of these dogs, more than half (60%) had gastrointestinal signs suggestive of concomitant food allergy. Around 12-13% of these affected dogs also had signs similar to human hay fever: conjunctivitis (inflammation of the mucus membranes of the eye) and rhinitis (inflammation of the nasal mucus membranes). A very important finding was that ½ of the atopic dogs starting showing signs when they were 6 months of age, and ¾ of the dogs had signs at one year of age. The observation of early onset of this disease is very important when we think about changing the long term outcome. We want to make the diagnosis early to prevent the disease from progressing to a more chronic form which is harder to treat. The dogs in this study developed progressive disease; these observations suggest that the earlier we intervene, the better our chances of preventing chronic changes. The numbers can get confusing, but 33/47 dogs had nonseasonal signs and they were put on an elimination diet to see if they had food allergy. Of these nonseasonal itchers, 11 dogs (33%) had food allergy. Ten dogs out of 47 underwent allergy immunotherapy, with success reported in 5. These results are disappointing to me because how success was defined was not reported. I am a veterinary dermatologist, and to me, the best definition of success is reduction of medication over time. This is a chronic disease and my heartfelt recommendation to anyone with a young atopic dog is to consider allergy immunotherapy. But more importantly, if your Westie puppy shows clinical signs of gastrointestinal disease early in life, consider a food

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trial. In the study we are discussing, some of the dogs who responded to a diet trial did not progress to more extensive disease. It is best, given what we know, to try to do what we can to prevent progression of this disease. Hopefully we will learn how to do this more effectively as research progresses.

In the second study from this group, genetic and environmental factors associated with atopic dermatitis in Westies were examined.<sup>3</sup> Specifically, risk factors for developing disease and estimating heritability were addressed. We learned from this study that genetic factors, especially from the dam, had a big influence on development of disease. Environmental risk factors included exposure to house dust mite (which is ubiquitous) as well as hygiene level (based on intensive cleaning of bedding for the pups and general home cleanliness). As has been observed for humans, being too clean is a problem! The numbers in this study were too low for statistical significance, but we do know that a mammalian immune system needs some stimulation early in life to develop properly! We don't want our puppies to live in squalor, but too much cleanliness may not be next to godliness 😊. Interestingly, birth by C-section was found to be a risk factor for Westies,

as it is for humans. Why would this be? Well, in humans, passage through the birth canal exposes pups to important bacteria that help the immune system develop properly. We lack hard data for dogs but we are learning more every day about the importance of the microbiota (e.g. bacteria and fungi in the vagina, gut, skin) in the formation of the immune system. Obviously, if a dog needs a C-section, they should have one, but hopefully in future, we will learn how to provide the missing "bugs" to these dogs. It is

well documented now that allergic people and dogs have microbial dysbiosis, a term that means the usual flora of the skin and the gut are abnormal. We know that our Westies are prone not only to *Malassezia* infections of the skin, but to staphylococcal infections as well. Increases in staphylococci on the skin are part of this dysbiosis.

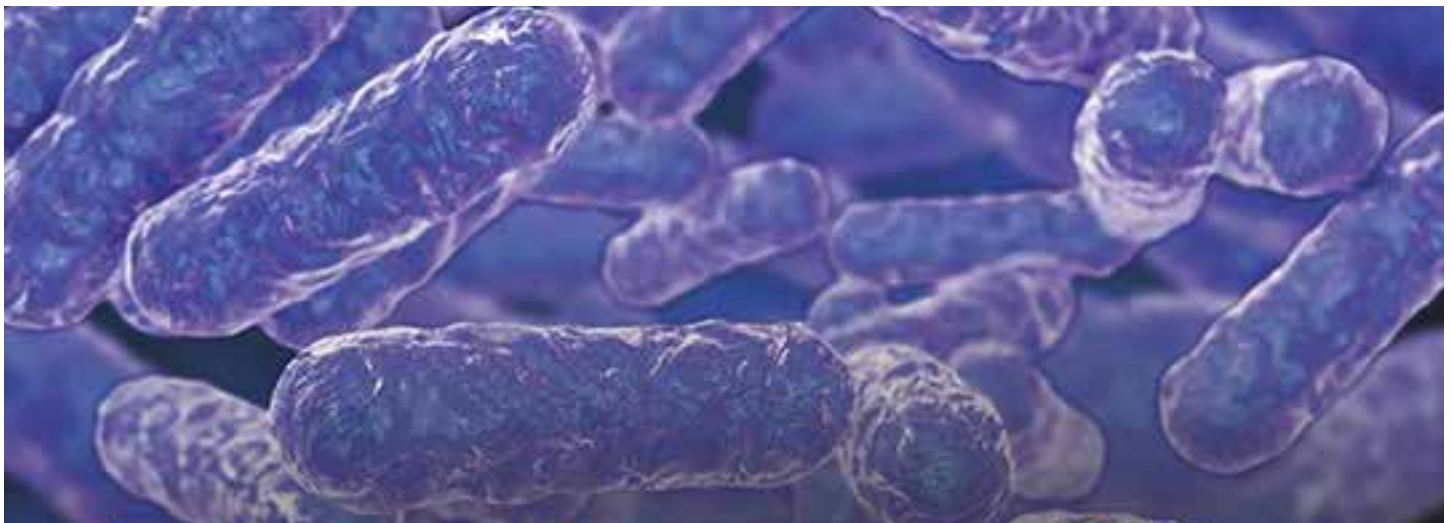
A number of genomic studies have been completed for dogs, and many of them include Westies. But two papers have been devoted exclusively to Westies. These papers

are important, because we have learned that the best way to identify important atopic genes is to restrict the genetic study to one breed from one geographic area. For a study published last year, all samples were obtained from Westies in the United States.<sup>4</sup> There were 96 atopic Westies and 87 healthy Westies. Many of these dogs were recruited through the Westie Club of America, indicating again how devoted Westie breeders and owners are to improving the health of these great little dogs. For this analysis, the investigators chose to use a genome wide association study (GWAS). By comparing affected to normal Westies, they hoped to find genetic differences that could help us understand this disease better. They found a large



portion of DNA on canine chromosome 3, containing 37 different genes, that was different in atopic Westies compared to healthy Westies. One gene, in particular, was intriguing to these authors. This gene, called F2R, had a mutation seen in atopic Westies but not in normal Westies. Furthermore, this gene is abnormal in other atopic breeds as well. It is involved in regulation of inflammation. There are many other potential genes in that part of chromosome 3, which will provide lots of research for the future. Interestingly, in an earlier study,

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# Bartonella

## The Major Threat You've Never Heard Of

BY SUE M. COPELAND

This “stealth” bacteria is an emerging danger to your dog - and you. It also may be linked to the common canine cancer, hemangiosarcoma.

*Bartonella* is a stealth pathogen: it hides inside red blood cells and the cells of blood-vessel walls. Once there, it eludes the body's immune system, and often dodges detection by standard diagnostic blood tests.

above photo ©North Carolina State University

“Tell my veterinary students that, unless another infectious disease comes along that we don't yet know about, such as covid-19 did in humans, *Bartonella* will cause them more problems in their careers than anything else.”

That quote is from Edward Breitschwerdt, DVM, DACVIM, Melanie S. Steele Professor of Medicine and Infectious Disease at North Carolina State University (NCSU) College of Veterinary Medicine. He's been studying the bacteria for 30 years.

“Wait, what?” you ask. “What the heck is *Bartonella*?”

It's an emerging threat that research is showing can be associated with potentially fatal conditions in your dog—and you.

Dr. Breitschwerdt should know: the bacteria infected his father 12 years ago. “If it didn't directly cause his death,” he explains, “it certainly *helped* cause it.” (See, “It's Personal,” at page ???.)

### THE ABC'S OF *BARTONELLA*

**What it is:** A Gram-negative bacteria that causes a disease called Bartonellosis. An ancient pathogen, it has existed for thousands of years. Yet prior to 1990, there was only one named *Bartonella* species. Thanks to research by Dr. Breitschwerdt and others, there now are 40 named species, of which 17 have been associated with an expanding spectrum of disease in dogs and humans, as well as other mammals.

The bacteria lives inside blood cells and is transmitted by carriers, known as vectors, which include fleas, lice, and sand flies; *Bartonella* DNA has also been found in ticks. These vectors are found on and around such animals as dogs, cats, coyotes, raccoons, cows, foxes, horses, rodents, and bats. Bartonellosis is a zoonotic disease, meaning it can be transmitted from your pets or other mammals, to humans.

**Why it's a threat:** *Bartonella* is a stealth pathogen, meaning it hides inside red blood cells and the cells of bloodwalls. There,



## BARTONELLA – THE MAJOR THREAT YOU’VE NEVER HEARD OF

it eludes the body’s immune system—and, often, detection by standard diagnostic blood tests. (More about that, below.)

It can infect multiple areas in your dog’s body, such as his cardiovascular, neurological, and skeletal systems, plus, potentially his digestive system. That means your dog may develop a heart issue (such as endocarditis, an inflammation of the heart’s valves and inner lining), neurological issues (such as seizures, weakness, or paralysis), or vomiting, diarrhea, and pancreatitis-like signs.

In Dr. Breitschwerdt’s AKC Canine Health Foundation-funded research (CHF; [akcchf.org](http://akcchf.org)), *Bartonella* has also potentially been linked to hemangiosarcoma, a deadly canine cancer. (See, “The ‘Hemangio’ Connection,” at page ???.)

“The varied presentation of symptoms reported in dogs with Bartonellosis is problematic for your veterinarian,” he says. (His research team discovered the world’s first identification of *Bartonella* in a dog in 1993). “Your dog may display a variety of signs from limping, to unexplained weight loss, to cancer. Or, you may say, ‘My dog just isn’t acting right.’ Diagnostically, these problems can be caused by lots of diseases. They also can be caused by *Bartonella*.”

In humans, *Bartonella* is the bacteria that causes Cat Scratch Disease (CSD, also known as Cat Scratch Fever), which is characterized by fever, swollen lymph nodes, fatigue, headache, and general malaise. Recent research has shown that *Bartonella* can also cause chronic infections in humans which, over time, can damage multiple organ systems, just as the bacteria does in dogs.

“If you were to pull out current medical textbooks, they’d state that *Bartonella* is essentially two things: an infection in immunocompromised individuals, such as AIDS patients or transplant recipients,” says Dr. Breitschwerdt. “Or, an infection that’s transmitted by cats, which is Cat Scratch Disease. If our research holds up, which it’s been doing world-wide, when combined, immunocompromise-linked disease and CSD will be just the tip of the iceberg.”

“That’s because there’s good evidence *Bartonella* affects the human nervous system, the cardiovascular system, and the skeletal system, particularly joints, causing rheumatologic symptoms,” he continues. “Immunologically, as with covid-19—the disease caused by the novel coronavirus—*Bartonella* can affect different people in very different ways.”

Adds Dr. Breitschwerdt, “Not only are dogs our best friends, but naturally infected dogs continue to provide important comparative medical insights that have enhanced our understanding of human Bartonellosis.”



Multiple areas of your dog’s body can be infected with *Bartonella*. These include his cardiovascular, neurological, and skeletal systems. In Dr. Breitschwerdt’s AKC Canine Health Foundation-funded research, the bacteria has also potentially been linked to the deadly cancer hemangiosarcoma.



### EDWARD B. BREITSCHWERDT, DVM, DACVIM (Small Animal Internal Medicine)

Dr. Breitschwerdt is the Melanie S. Steele Professor of Medicine and Infectious Disease at North Carolina State University (NCSU) College of Veterinary Medicine. He is also an adjunct professor of medicine at Duke University Medical Center, and a Diplomate of the American College of Veterinary Internal Medicine (ACVIM).

He directs the Intracellular Pathogens Research Laboratory in the Comparative Medicine Institute at NCSU, co-directs the Vector Borne Diseases Diagnostic Laboratory, and is the director of the NCSU-CVM Biosafety Level 3 Laboratory. A DVM graduate of the University of Georgia, he completed an internship and residency in Internal Medicine at the University of Missouri. Dr. Breitschwerdt’s clinical interests include infectious disease, immunology, and nephrology. His research group has contributed to research in the areas of animal and human bartonellosis. Dr. Breitschwerdt is a strong proponent of a One Health approach to the understanding, control, and prevention of infectious diseases in animals and humans.

He has authored numerous book chapters and proceedings, and published more than 400 manuscripts in peer-reviewed scientific journals. His long list of prestigious awards includes the AKC Canine Health Foundation Asa Mays, DVM Excellence in Canine Health Research Award.



## BARTONELLA – THE MAJOR THREAT YOU’VE NEVER HEARD OF



Dr. Breitschwerdt recommends rigorous pest control to help prevent Bartonellosis. “Practice flea and tick control year-round,” he says. “Do it, literally, 365 days a year. Don’t let up.” That’s because vectors can transmit Bartonella and other pathogens to your pets and to your family.

### UNDER THE RADAR

“If you were going to design the perfect pathogen to hide under the radar, *Bartonella* would be a good model,” he says.

Compare it, for example, to covid-19, which he describes as a “frontal pathogen,” meaning the virus immediately attacks and tries to overwhelm its victim’s immune system. That way, it can cause rapid spread through respiratory secretions.

“Say you get exposed to someone who’s infected with covid-19,” explains Dr. Breitschwerdt. “Within days, you’re a highly contagious, non-symptomatic carrier at the least, or you become ill. The disease progression may make you mildly ill, or if it’s severe, you could end up on a ventilator, and perhaps even die.”

“With *Bartonella*,” he says, “you can literally be infected when you’re 15 years old by being bitten by a tick or scratched by a flea-infested cat. But you may not develop disease until five or 10 years down the road—if ever. As a stealth pathogen, *Bartonella* doesn’t severely suppress you or your dog’s immune system. But if the immune system does get stressed, that may allow the bacteria to proliferate, resulting in disease.”

Ironically, whereas cats carry high loads of the bacteria while rarely getting sick, dogs and humans, even those showing signs of infection, don’t. In fact, infected dogs and humans have a *Bartonella* blood-bacteria level between 100 and 1,000 times lower than what is typically found in feline carriers.

That makes diagnostic detection difficult, especially with standard blood cultures. Bacterial growth from cultures can take

### IT’S PERSONAL

“My father’s death still motivates me to better understand *Bartonella*,” says Dr. Breitschwerdt. He thinks his father, who was found to harbor three species of the bacteria in his blood, was infected over a matter of years.

“I think Dad got one species from his barn cat, another likely came from a groundhog he’d relocated, and the third may have come from a blood transfusion. Those findings are based on DNA of three different *Bartonella* species we found in his blood,” he says.

Looking back, he suspects Bartonellosis caused his father to have neurological signs, which led him to fall and break his hip. “Following hip surgery,” he recalls, “he had one odd complication after another. When he got a form of esophagitis that typically only happens in people with AIDS or cancer, I wondered about an underlying cause—I was pretty sure my 86-year-old dad didn’t have AIDS. And he’d been screened for cancer.”

Dr. Breitschwerdt didn’t immediately suspect *Bartonella*.

He’d just begun studying that bacteria in humans, so his first thought was a recurrence of the tick-borne disease caused by Ehrlichia; his father had been sickened by it in the past. That bacteria, like *Bartonella*, can present in a variety of ways. His father’s neurologist agreed to provide him a blood sample for testing.

Back at his NCSU lab, Dr. Breitschwerdt’s research team tested the blood. The findings startled him: It was PCR-negative for Ehrlichia, but positive for *Bartonella*. He immediately called his father’s doctors.

“They started Dad on a rigorous regimen of intravenous antibiotics. He improved to the point that he could go home,” he says. “Unfortunately, what I know now, that I didn’t know then, is that eliminating *Bartonella* is hard to do. Dad relapsed several weeks after he got home.” Despite further antibiotic treatment, he died.

“We share our world with vectors and mammals that can transmit or harbor *Bartonella*. Based on evolving research, many people may not get through life without being exposed to one or more of *Bartonella* species,” he says. “That’s what keeps me up at night. And that’s why I believe we need a vaccine to protect our pets—and potentially, their owners.”



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20 to 40 days rather than the typical two to three days. And, despite infecting red blood cells, *Bartonella* isn’t visible on blood smears. Serology antibody testing in dogs and humans is also problematic, since these stealth bacteria can persist without causing a measurable antibody response. As a result, diagnostic test results are often negative, even when infection is present. (Improved testing for *Bartonella* infection is a research area currently funded by CHF.)

Polymerase chain reaction (PCR) is a more accurate diagnostic method for *Bartonella* than standard blood tests. PCR is a molecular technique used to detect specific genetic material of a pathogen (virus, bacteria, or other) in the blood. Analysis of tissue and bodily fluids using PCR can help detect *Bartonella*, plus identify distinct genotypes among *Bartonella* species.

As with detection, treatment can be a challenge: Once inside a victim’s bloodstream, the bacteria can invade a variety of cells. “So far,” says Dr. Breitschwerdt, “*Bartonella* has been able to invade and live within nearly every cell in your body that an investigator has looked at. That makes it unique, because it can invade so many cells without causing substantial damage, or alerting the immune system.”

In fact, a cell infected with the bacteria actually lives longer than an uninfected cell, because the organism protects that cell, its “cellular house,” from dying. That way, it doesn’t have to find another cellular house. “On an evolutionary basis,” he explains, “*Bartonella* found a way to decrease programmed cell death.”

In other words, this pathogen can be tough to kill. “*Bartonella* is like a bad guy in a movie—a really smart bad guy. This is not a dumb bacteria,” says Dr. Breitschwerdt.

Bartonellosis in dogs, cats, and humans is generally treated with such antibiotics as doxycycline, amoxicillin, enrofloxacin, or rifampin, given for a long duration (such as four to six weeks) to reduce the bacteria load. According to the Centers For Disease Control and Prevention (CDC; [cdc.gov](http://cdc.gov)), the ability of any antibiotic or antibiotic combination to completely clear the bacteria from the bloodstream hasn’t been established.

The treatment challenge, plus the fact that *Bartonella* may be linked to cancer, caused Dr. Breitschwerdt to refocus his research. “I’ve gone from asking how some dogs and people get infected, and why only some get sick from it, to how to prevent people and dogs from getting infected in the first place,” he says. “If we can learn how to prevent the infection, such as with a vaccine, the ‘why’ questions become less important.”

### PREVENTION: YOUR BEST BET

Use these suggestions from Dr. Breitschwerdt to help keep your pets, and your family, safe.

- “Practice flea and tick control year-round,” he says. “Do it, literally, 365 days a year. Don’t let up. These vectors can transmit pathogens such as *Bartonella* to your pets, and to you. Fleas also cause allergies in your dog, which can make him itch. And, they can transmit tapeworms and other parasites.”

Consult your veterinarian for the best vector-control program for your pets. Don’t forget yourself: If you live in an area that has ticks and other biting insects, use topical insect repellants when you go outside.

- Talk to your veterinarian about *Bartonella*. “Our dogs are the best sentinels for understanding human Bartonellosis,” says Dr. Breitschwerdt. “Veterinary workers are the best sentinels for understanding what *Bartonella* is doing in dogs.”

- Donate to the AKC Canine Health Foundation ([akcchg.org](http://akcchg.org)), to help fund more research on *Bartonella*, including for a vaccine. “Before the covid-19 pandemic, our research had finally caused people to recognize it was important to pay attention to this genus of bacteria,” Dr. Breitschwerdt says. “It’s a scary family of organisms. Unfortunately, pharmaceutical companies don’t start to develop vaccines unless there’s pressure from society. Clearly the bacteria causes endocarditis and other insidious disease in dogs and humans. We control rabies in humans, dogs, and cats by vaccinating our pets. My goal is to work toward a *Bartonella* vaccine. That way your pets are safe and protected—and can’t serve as a source of transmission to you or your family.”



Says CHF’s Dr. Mary O. Smith, “Dr. Breitschwerdt’s groundbreaking studies are just one example of the close link between canine and human health. His work to understand the mechanisms by which *Bartonella* causes disease in multiple organ systems in dogs is also providing key insights into the cause of human diseases.”

# BARTONELLA – THE MAJOR THREAT YOU’VE NEVER HEARD OF

## THE “HEMANGIO” CONNECTION

In 2018, the AKC Canine Health Foundation (CHF; [akcchf.org](http://akcchf.org)) launched its Hemangiosarcoma (HSA) Research Initiative to learn more about this aggressive, deadly cancer in dogs. Since 1995, CHF has provided \$4.1 million in funding to support 28 grants that study HSA, in an effort to understand its causes, and improve early diagnostic and treatment protocols.

In recent CHF-funded research, Dr. Breitschwerdt and his team at North Carolina State University found a high prevalence of *Bartonella* in tumors and tissue samples from 110 dogs with HSA, using PCR analysis. A total of 73 percent of the tissue samples were positive for *Bartonella* DNA. None of the blood samples were found to be positive using the same PCR techniques. That indicates whole blood samples don’t reliably reflect the pathogen’s presence, according to Dr. Breitschwerdt. The research, he says, further supports another potential connection between persistent infection or inflammation, bacteria, and some types of cancer.

Like *Bartonella*, HSA is a stealth invader, most often involving blood vessels in the spleen, heart, or skin. As the cancer grows, it can go undetected, so can be at an advanced stage when discovered. For more information on the *Bartonella*-HSA connection, please go to, “The Link Between Hemangiosarcoma & Bartonella,” at <https://www.akcchf.org/educational-resources/library/articles/Golden-Update-Summer-2020-Hemangio-Bartonella.pdf>.

Dr. Breitschwerdt is currently the principal investigator on several CHF grants:

- Grant 02550: The Role of *Bartonella* spp. Exposure and Cardiac Genetic Variation on the Clinical Expression of Arrhythmogenic Right Ventricular Cardiomyopathy in the Boxer Dog
- Grant 02519: Prevalence of *Bartonella* spp. Infection in Dogs with Cardiac and Splenic Hemangiosarcomas within and between Geographic Locations
- Grant 02787-E: 2020 Clinician-Scientist Fellowship
- Grant 02819: Identification of *Bartonella henselae* *In Vivo* Induced Antigens for Development of a Reliable Serodiagnostic Assay for Canine Bartonellosis

To learn more, please visit [www.akcchf.org/ticks](http://www.akcchf.org/ticks).

“The AKC Canine Health Foundation is dedicated to supporting humane research that improves the lives of dogs worldwide, and positively impacts the lives of their people,” says Dr. Smith. “Dr. Breitschwerdt’s groundbreaking studies are just one example of the close link between canine and human health. His work to understand the mechanisms by which *Bartonella* causes disease in multiple organ systems in dogs is also providing key insights into the cause of human diseases.”

“The recent advent of SARS CoV-2 (covid-19) has been a reminder that while we await a vaccine, there are other strategies we can use to reduce infectious disease risks,” says Mary O. Smith, BVM&S, PhD, DACVIM (Neurology), Vice Chairman of CHF’s Board of Directors and Chairman of its Scientific Review Committee. “For covid-19, those strategies include social distancing and wearing a facial mask. For *Bartonella* and other vector-borne diseases, strategies are aimed at avoiding vectors. Talk to your veterinarian about effective flea, tick, and other external parasite control that works in your area. Remember to use products and physical barriers (such as screens) that protect both your dogs and you.”

The bottom line: “*Bartonella* has been documented in cats that were buried with the Egyptian Pharaohs,” says Dr. Breitschwerdt. “So we know the organism was around at least 3,000 to 4,000 years ago—and cohabitating with people and their pets. It’s not a new bacteria. But it’s one that’s so good at flying under the radar, both human and veterinary medicine missed its existence for a long time. It will continue to complicate the lives of veterinarians and physicians—and their patients—until we find a way to prevent it.”



Dr. Breitschwerdt recommends rigorous pest control to help prevent Bartonellosis. “Practice flea and tick control year-round,” he says. “Do it, literally, 365 days a year. Don’t let up.” That’s because vectors can transmit *Bartonella* and other pathogens to your pets and to your family.



# Rare Cancer and Cooper

By Linda Hunt and Teresa Barnes

**WFA** spoke with Westie owner Linda Hunt about her beloved Westie, Cooper, who faced a rare kind of cancer and what she and her husband, Craig, went through trying to help him.

**WFA:** Tell us about Cooper.

**LINDA:** Cooper was my Westie and my best friend. He was a happy, funny, active eight-year-old dog.

**WFA:** How did you know Cooper was sick?

**LINDA:** I noticed a lump on his left shoulder on October 8, 2020. It was about the size of a pea. I was concerned so I took him to our veterinarian who performed a Fine Needle Aspirate (FNA). The test was inconclusive and I was told to keep an eye on it until Thanksgiving.

**WFA:** So, you were prepared to watch the lump for almost two months?

**LINDA:** I watched it like a hawk for days and weeks and prayed it would disappear on its own. It didn't and I grew increasingly uncomfortable at the prospect of waiting until the end of November to find out more.

**WFA:** What did you do to speed things up?

**LINDA:** I contacted the veterinarian and asked for the lump to be removed and biopsied. Before the scheduled procedure, and after his bloodwork was drawn, I had Cooper groomed. With his shorter hair, I discovered a second lump on his left flank. I somehow knew we were in trouble, but I had no idea how much.

**WFA:** What did the bloodwork results show?

**LINDA:** It showed his platelet count was so low that he was in danger of bleeding out. So, we got him to the veterinary

emergency room quickly where they took Cooper from us and told us to go home and await results of an ultrasound.

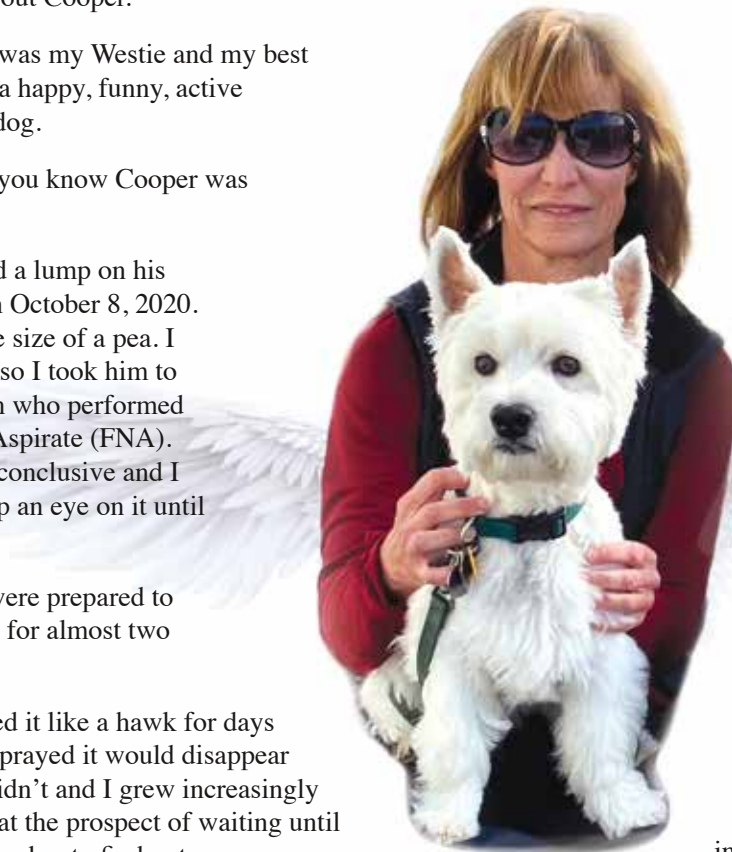
**WFA:** That must have been tough to leave him.

**LINDA:** It was agony and we were frantic. Finally, on November 21<sup>st</sup>, the veterinarian called with the pre-op blood test results. His platelet count was low. An emergency room veterinarian, one we had never met in person because of COVID, diagnosed our Cooper with a rare and inoperable metastatic adrenal cancer - pheochromocytoma. We were told it had invaded his caudal vena cava and had spread to his lymph nodes, spleen and possibly his bone marrow. His prognosis was grim.

**WFA:** How incredibly painful for you both. [background on Cooper's cancer: The Merck Veterinary Manual defines pheochromocytoma as rare tumors that occur in multiple species, but most commonly in dogs. The tumors originate in the adrenal medulla and can be challenging to diagnose. According to a Veterinary Pathology journal article from 2015 by Edmondson et al, pheochromocytoma is the most common tumor of the adrenal medulla in dogs. This cancer is often associated with cardiovascular disease. The most common symptoms include weight loss, anorexia, depression, weakness, and occasional collapse. Shortness of breath, tachycardia and hypertension is common with the condition.]

**WFA:** This cancer is so rare, did you seek a second opinion?

**LINDA:** We took him to PennVet Hospital in Philadelphia, one of the best vet hospitals in the country. He was seen by a team of doctors from oncology, surgery and internal medicine – all brilliant and all concluded it was just too late. They explained that adrenal cancer in dogs is extremely silent and exceedingly rare. In their words, it was “very bad luck”.



Linda and Cooper

(Continued on page 12)



(Rare Cancer and Cooper continued from page 11)

**WFA:** Was Cooper in pain?

**LINDA:** Thankfully, they said it tends to be asymptomatic, so Cooper wasn't suffering. Most cases are found incidentally, like his was. Furthermore, they had never seen it metastasize to the skin the way it had on Cooper. The lumps were the only clue I got. My amazing boy had fought it for who knows how long (they couldn't pinpoint when it started or explain why it happened) with not a complaint or change of any kind. He was the same active, squirrel chasing, food begging, loving and perfect Cooper he'd always been.

**WFA:** What were your treatment options?

**LINDA:** They told us that in some cases, surgery was an option, but it is a very risky procedure and serious post-op complications are common. 13 days after his diagnosis, it became obvious that he was indeed very sick and he declined

rapidly. I've never seen anything like it in my life and it has left me traumatized.

**WFA:** It must have been incredibly difficult to say goodbye to Cooper.

**LINDA:** On Dec 7, at 9:00 a.m., our doorbell rang. I had called a home euthanasia service called Lap of Love and the vet arrived who would help us to somehow say goodbye. Cooper, ever the gentleman, even got up and greeted her, but then went right back into my arms, exhausted from the effort.

He left us peacefully that day, cradled in my arms, and was surrounded by his family who loved him so. It was only 16 days since we were told he was terminal. To see my husband and grown children sobbing uncontrollably was just so painful yet it was a true testament to how much Cooper was loved and how deeply he touched our family.

The WFA is dedicated to helping to improve Westie health and to uncover causes and treatments for rare cancers and other conditions. Please consider making a tax-deductible donation to help save Westies like Cooper.  
<https://www.facebook.com/groups/WestieFound.AmericaAuction>



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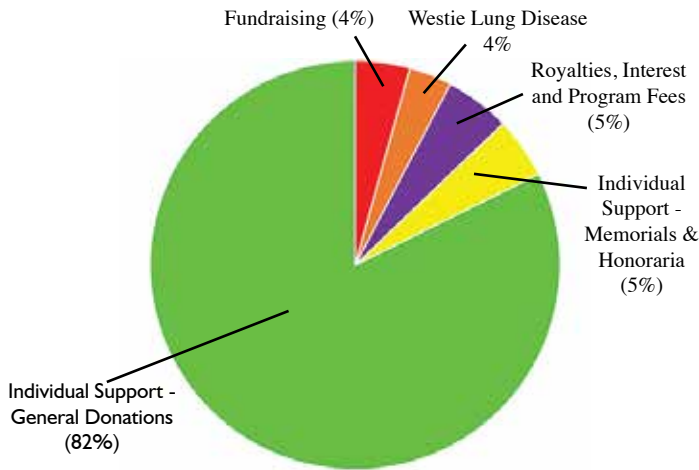
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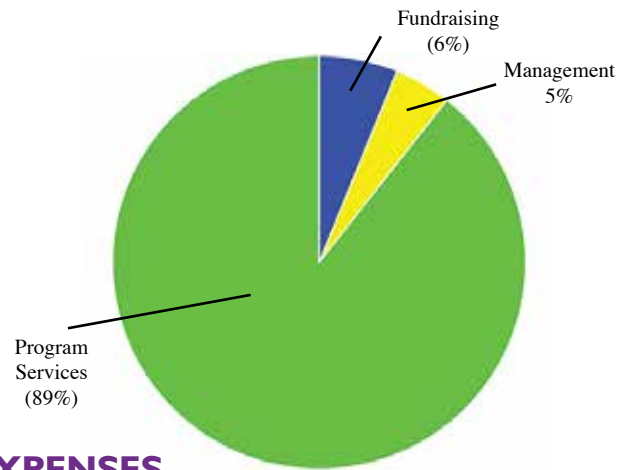
# Financial Report – Fiscal Year 2019

By Gary C. Sackett, Treasurer

**Revenue = \$361,510**



**Expenses = \$86,019**



## REVENUE

**Individual Support** Thanks to a generous legacy donation from a long-time Westie Foundation of America, INC (WFA) donor, revenue from individuals supporting the WFA’s mission in 2019 totaled \$315,130 (87.1%). An additional \$18,556 in royalties from Affiliate programs, Interest and *The Westie Health Book* sales (5.1%), \$15,606 from fundraising efforts including the Facebook and Montgomery County auctions (4.3%) and \$12,218 (3.5%) earmarked for a specific IPF study from a grass roots group of Westie owners.

## ASSETS

**Endowment Funds** All memorials and honoraria are added to the Donor Restricted Endowment Fund which now totals \$416,889. Through the legacies of Nancy Schoch and Daphne Gentry, we have significant funds dedicated to Pulmonary Fibrosis research and a veterinary scholarship. Our Donor Restricted Endowment Fund totals 37% of our assets. The income from these funds may be used to fund projects, but the principal is restricted by the Board of Directors and invested carefully to maintain principal while bringing a reasonable return. These are tracked monthly to ensure conformance with WFA investment policy.

**Unrestricted Funds** WFA has an unrestricted fund balance of \$715,688 (63% of our assets) including cash, CDs and Mutual Fund investments. This is used to fund management operations, fundraising and program services. In 2020, we have significantly increased our grant budget from \$30,000 in 2019 to over \$120,000 in 2020.

## LIABILITIES

**Future Projects** WFA retains liabilities of \$35,575 to fund the remainder of the Tufts University IPF study, the Winter edition of *Westie Wellness* and other ongoing activities.

## EXPENSES

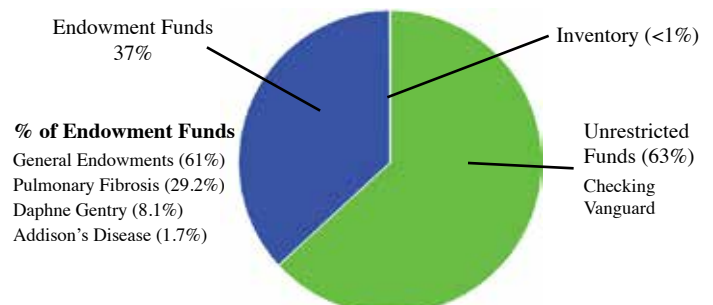
**Program Services** In 2019, WFA continued support of research and education related to diseases affecting the West Highland White Terrier and held health seminars at the Roving and National Specialties weekend.

**Research** Funds spent on research were almost all matched by funds from the AKC Canine Health Foundation and Morris Animal Foundation, com-pounding the benefits our Westies will receive. Grants addressed further Investigation into Atopic Dermatitis (2 grants of \$10,000 each) and a study of Methicillin-resistant Staphylococcus Pseudintermedius (\$10,000). We also funded the first half of a grant to Tufts University to study the efficacy of a human thyroid drug in treating canine IPF. In addition, the WFA awarded its 2nd veterinary scholarship in the amount of \$5000. The budget for research in 2020 is four times that of 2019.

**Education Expenses** included our website (\$79), the outstanding Westie Wellness (\$8,700), and our sponsored seminars (\$832).

**Management and Fundraising** These expenses were kept to a minimum (10.6% in 2019 vs 16% in 2018) by careful allocation of resources and the fact that all officers, directors, and committee members are unpaid volunteers.

**Assets = \$1,133,1786**



# Staying at Home, Snuggling Westies

By Teresa Barnes

With the worldwide pandemic has come an onslaught of stress, fear and anxiety. It seems almost no one has been immune to the emotional and psychological effects. As so many have been relegated to homes and home offices, those of us with Westies in our lives have re-discovered our love for our Westies as not only valued members of our families, but as our therapists.

Science seems to support the idea that pets help us to cope and to live better. The Centers for Disease Control and Prevention share on their website, <https://www.cdc.gov/>, some of the health benefits of having pets decreases in blood pressure, cholesterol levels, triglyceride levels and decreased feelings of loneliness. A recent study, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239397>, in the United Kingdom investigated links between mental health and loneliness and human-animal relationships and interactions and found that animal ownership seemed to reduce some of the most detrimental psychological effects of the COVID-19 lockdown.

Back in the summer, Banfield Pet Hospital surveyed 1,000 U.S. dog and cat owners regarding the way the shutdown itself has changed pet owner's attitudes about how they will care for their pets going forward with about half of the owners saying they plan to spend more quality time with their pets when they are home and 21 percent of them say they are planning to adjust their schedules to spend more time with their pets.

It comes as no surprise to the WFA that pets, and especially our Westies, have been a saving grace during the pandemic. We asked some members of our Board of Directors to share with us how their Westies have been by their sides during

this time. Please see their stories below written in their own words.

We would love to hear your stories, too! Please send your short personal story of you and your Westie during the pandemic. Word limit is 300 words. Send your story with a photo of you and/or your Westie(s) to: [president@westiefoundation.org](mailto:president@westiefoundation.org). WE MAY SHARE YOUR STORY ON FACEBOOK!



Patton



Dazzle

**Kay McGuire, DVM:** The year started out slightly stressed due to hurricane recovery in the Houston area and then COVID hit. One of the veterinary doctors in our clinic made the decision to retire which required me to extend my hours to full time. Since my business is considered "essential", we have continued to stay open throughout the pandemic except for a two-week period of time at the end of June.

COVID struck my clinic. Nine of my employees became sick with varying symptoms, and I was the last doctor to fall ill. I was tested for the virus on a Friday but before my results came back, my symptoms forced me to call an ambulance to take me to the hospital. I remained there for 7 days throughout the 4th of July holiday when we as a nation should have been celebrating our freedom.

We have been anything but free of this pandemic. I was quarantined and did not work for four weeks. During that period, I had a new litter of Westies to take care of – I had delivered them the day before I went into the hospital.

The dogs kept me sane, I'm not exactly the kind of person who can sit on my backside for that length of time. As I worried about the business and my staff, the dogs brought me joy during a bleak time. I was fortunate to be able to keep my staff of 13 working -- no one missed a paycheck.

(Continued on page 15)



(Staying Home, Snuggling Westies continued from page 14)

Our lives have changed and will be for a long period, but the Westies give me a reason to get up every day. I know anyone who is lucky enough to live with these funny, sweet, exuberant dogs feels the same.

**Stevann S. Wilson:** For the first time in my 36 years of marriage, my husband, John, and I began “officing” from home in January of 2020 - his office in one guest bedroom and mine in another. Little did we know what other life-changing challenges the pandemic had in store.

Over the last months, our three Westies have proven to be excellent legal assistants. I can almost always find one or more of them cuddled up on a fleece mat under my desk. They provide humor and moral support, and they work for treats. If only they could type! Taking breaks from my work to offer tummy rubs and trips to check out the back yard has truly helped to keep me sane.

**Anne Sanders:** Things have pretty quiet here in the Pacific Northwest. We are still in Phase 2 which is quite restricted as to the number of people that can gather for various activities. So, we spend a lot of time having conversations with the dogs, as well as each other.

Sil has been able to resume Scent Work/ Nosework training with a small group of five people. And he has been pursuing tracking with a few friends and students. Thank goodness the Westies provide some structure to our days. Some grooming, lots of petting and rubs, and their companionship has kept us sane and helped lower our blood pressure.

**Allison Platt:** I was in business for myself for 25 years until 2017, when I went to work for an engineering firm an hour’s drive away. In February, I sent my youngest, Izzy (bred by Linda Servin), to Tracy Tzaras to show. I planned to travel to Louisville for the Roving, hoping to see her win some points. I had my reservations before the pandemic started, but by the time the show was a week or so away, I had the regular flu and so thought it best to cancel my trip. I heard she won Winners Bitch on Friday, and then the entire show shut down right before the

Roving on Saturday. I left Izzy with Tracy for a while to see how long the pandemic would last and was wondering if I should bring her home when the first “pandemic show” was scheduled in Oklahoma in June. Other shows followed, and Izzy did very well, winning 5pts, 4 pts, and two more 5-point awards. The weekend she finished she won BOB, and then some GCH points. In two more weekends she had her GCH, and then she made her «triumphant return» to North Carolina. For the first time in my life in Westies, I never saw my dog show in person, and I will never forget what year she finished because all the handlers and judges wore masks in the pictures! After three months of working from home, I am back at work, but my company now allows me to work from home three days a week, and this works out perfectly both for me and the Westies.



Taffy Poo - the Good Witch



Izzy

**Naomi Brown:** It’s been an interesting 2020! I was out of work from March to June. In June, I went back to work for 3-days-a-week, but I secluded from the state troopers whom I worked with, in an office all by myself -- not fun but understandable since they are exposed to the public.

My Westies are thrilled to have me home, except maybe for the grooming. By June, I was running out of hair to strip! At the end of September, I was hospitalized for surgery and when I returned home, I was so grateful to have my Westies. They are such a comfort as I recuperate. Like everyone, I am looking forward to getting back to some normalcy.

**Mary Sahady:** The Pandemic: The governor of Massachusetts announced a *Declaration of Emergency* and our lives were turned upside down. It was the middle of March and my husband, Carl, and I were in Florida with plans to go to two Red Sox Training Games and a Corvette show, to mention a couple of fun things that would have been fun to do. Everything was cancelled.

(Continued on page 16)

(Staying Home, Snuggling Westies continued from page 15)



Naomi and Mary Westies on a couch

We contacted Southwest Airlines and headed back to Massachusetts hoping everything would be better in a short time. Both my husband and I are considered *essential personnel* under the definition set forth by the Governor, so, since March have had no time off. I am acting City Administrator in my town and am filling the shoes of several employees to keep the government open and preparing for social distancing and applying for small business grants, Carl is trying to keep his dry-cleaning business going.

We have done no (dog) breeding this year, as I can't leave the state without quarantining when I return, so I won't be attending Rebecca Cross's grooming seminar and the Montgomery meeting, which I look forward to each year, has been canceled. I only wish that for a day or two a week I could have worked remotely – but that's not happening. The city for which I work for is not prepared for remote work so every day, I get in the car and go to government center. My Westies and my Scottie have not experienced anything different in our routine except no trips to Florida. We are

thankful that the weather was great this summer and we enjoyed many weekends in the pool and going for long walks. We are also thankful we have our health. We are hoping to get to Florida for Thanksgiving but only time will tell. Let's hope and pray 2021 will be a better year.

**Gary Sackett:** Working from home has its challenges and rewards. Some of the challenges include less human interaction, more reliance on electronic communication and finding a quiet place to work free of most distractions.

I set up my workspace in our motorhome parked next to the house. One of the big rewards has been spending more time with our Westies.

In particular, our canine matriarch (CH Crown Royal's Princess Grace ROM) is up with me each morning.

When I say "let's go to work", Gracie heads for the backdoor and out to the motorhome.

After a little boost up, she settles under the dining table (where I work) and waits (sleeps) patiently until I am done. Every once in a while she will get up, stretch her legs, get some water, make sure I am still working (a tough supervisor) and head back to sleep. She is so funny; I am glad to have the opportunity to spend more time with her.



Gracie

In closing, the WFA continues to work for you and with you to improve the health of all Westies. But most of all, thank you for your love of Westies!

(Atopic Dermatitis continued from page 5)

Australian Westies were studied, and a different gene of interest was identified, called PTPN22.<sup>5</sup> This gene is involved in regulating immune responses.

Clearly, we are a long way away from understanding atopic dermatitis. But knowing that different breeds may have different genetic changes allows us to consider this disease as a syndrome rather than one disease. Further work should help us develop better diagnostic tools and better treatments.

## References:

1. Wilhem S et al. Breed-associated phenotypes in canine atopic dermatitis. *Vet Dermatol* 2010; 22:143-149.
2. Favrot C et al. Atopic dermatitis in West Highland white terriers-part I: natural history of atopic dermatitis in the first three years of life. *Vet Dermatol* 2020; 31:106-110.
3. Rostaher A et al. Atopic dermatitis in West Highland white terriers-part II: estimates of early life factors and heritability. *Vet Dermatol* 2020; 31:276-e66.
4. Agler CS et al. Genome-wide association analysis in West Highland White Terriers with atopic dermatitis. *Vet Immunol Immunopathol* 2019; 209:1-6.
5. Roque JB et al. PTPN22 polymorphisms may indicate a role for this gene in atopic dermatitis in West Highland white terriers. *BMC Research Notes* 2011; 4: article 571.



## RESEARCH PROGRESS REPORT SUMMARY

**Grant 02651:**

*Discovery of Novel Biomarkers of Canine Atopic Dermatitis through Lipid Profiling*

**Principal Investigator:**

*Harm HogenEsch, DVM, PhD*

**Research Institution:**

Purdue University

**Grant Amount:**

\$99,105

**Start Date:** 05/1/2019

**End Date:** 04/30/2021

**Progress Report:**

Mid-Year 2

**Report Due:**

10/31/2020

**Report Received:**

10/30/2020

*(The content of this report is not confidential and may be used in communications with your organization.)*

**Original Project Description:**

Canine atopic dermatitis (CAD) is a common allergic skin disease of dogs with a strong genetic basis. CAD can severely affect the health and well-being of dogs and current diagnosis of CAD requires time-consuming and expensive procedures for the owner. Furthermore, the molecular mechanisms underlying this condition are not well understood. Evidence from human studies suggests that several variants of atopic dermatitis (AD) exist with different mechanisms and responses to treatment. Therefore, new approaches to identify molecular markers that can help with better diagnosis and management are warranted. CAD and human AD are associated with changes in the composition of lipids in the epidermis which may precede the inflammation or result from the inflammation. The investigators will analyze the lipid composition of the epidermis and blood of healthy dogs in comparison to dogs with CAD using a novel analytical method developed by their interdisciplinary team. The results of this work could lead to new, minimally-invasive tests for the diagnosis of CAD and for the prediction and monitoring of the response of CAD patients to treatment.

**Publications:** None at this time.

**Presentations:** None at this time.

**Report to Grant Sponsor from Investigator:**

We enrolled 30 dogs with mild to moderate atopic dermatitis and 30 healthy control animals in the study. The dogs with atopic dermatitis were treated with either Apoquel® (n=17) or Cytopoint® (n=10), whereas one dog was switched from Apoquel® to Cytopoint®, one dog was treated with prednisone followed by Apoquel®, and one dog was treated with a topical shampoo. Both Apoquel® and Cytopoint® reduced the clinical severity of the skin lesions during 8 weeks of treatment. Skin swabs and blood samples were collected from the atopic and control dogs at Day 0, and from the atopic dogs at 4 and 8 weeks after initiation of treatment. Analysis of the lipid composition of the skin and blood samples by mass spectrometry showed significant differences between atopic and control dogs. In addition, nonlesional skin of atopic dogs had a different skin lipid profile from that of control dogs. Treatment changed the lipid composition both in the skin and the blood, however, there was marked variation in the direction and extent of the changes between individual dogs. This research suggests that atopic dermatitis is associated not only with changes in lipids in the skin but also systemic changes.

The Westie Foundation of America, Inc is a nonprofit corporation, recognized by the IRS as a 501 (C) (3) organization.

The mission of the foundation:

Lead, innovate and advance medical research to benefit the health and quality of life of West Highland White Terriers.

Lead, guide and advocate on behalf of Westies.

Develop and communicate to Westie owners, Westie breeders, veterinarians and others who share our challenges.

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## RESEARCH PROGRESS REPORT SUMMARY

**Grant 02597:**

*Molecular Epidemiology of Methicillin-resistant Staphylococcus pseudintermedius in the United States*

**Principal Investigator:**

Stephen Kania, PhD

**Research Institution:**

University of Tennessee

**Grant Amount:**

\$47,082

**Start Date:** 05/1/2019

**End Date:** 04/30/2021

**Progress Report:**

End-Year 1

**Report Due:**

4/30/2020

**Report Received:**

4/30/2020

*(The content of this report is not confidential and may be used in communications with your organization.)*

**Original Project Description:**

The bacterium *Staphylococcus pseudintermedius* is the most common cause of canine skin infections as well as other important canine diseases. Disfigurement caused by skin infections and treatment failures is an important problem. Resistance to antibiotics is becoming increasingly widespread with few or no antibiotic options left for some cases. Alternative therapeutic approaches being investigated include vaccines, small molecule virulence factor inhibitors and bacteriophage lytic enzymes. In order for new products to be effective against the broadest spectrum of wildtype bacterial strains as possible, it is important to determine which strains of *S. pseudintermedius* clinically predominate in the United States today. A genetic typing method for *S. pseudintermedius* was previously developed by the research team along with a survey of bacterial strains in the United States in which they sequenced the genomes of the most common strains. This analysis provided a snapshot of predominant strains and suggested a potential for emergence of new, highly antibiotic resistant organisms. Identifying the current strains in the US and sequencing their genomes will provide a basis for developing the next generation of treatments as well as important information about changes that occur in the bacterial population in response to selective pressures.

**Publications:** None at this time.

**Presentations:** None at this time.

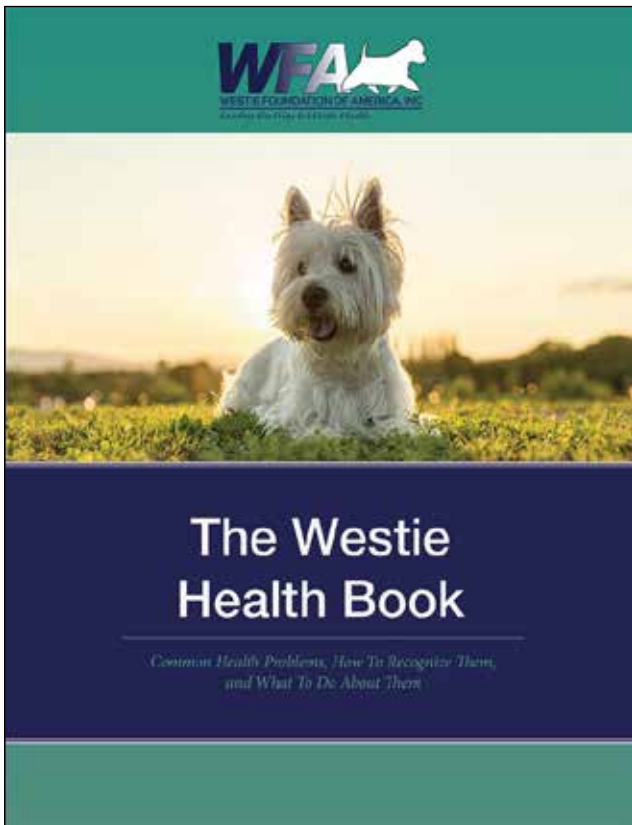
**Report to Grant Sponsor from Investigator:**

This project is designed to study the molecular epidemiology and characteristics of *Staphylococcus pseudintermedius* in the United States. This bacterium is the major cause of skin infections in dogs and has become widely resistant to antibiotics over the past 15 years. With data from about two-thirds of the samples we plan to collect, we have found widespread antibiotic resistance and emergence of new strains previously only associated with canine disease in other parts of the world. This information is important to understand the spread of antibiotic resistance and for the development of new strategies to treat and prevent this important disease.



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# PRINTED COPIES OF **THE WESTIE HEALTH BOOK** ARE NOW AVAILABLE!

A printed copy of THE WESTIE HEALTH BOOK provides an easily accessible reference to help ensure your Westie's health. There are up-to-date sections on Westie health, breeding, genetics, common diseases in Westies, complementary and alternative medicine, and sections on each of the health problems affecting our beloved breed, written by the foremost researchers and veterinarians who have the greatest knowledge of our breed.

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# Westie Cartoon Caption Contest

Create the winning caption for this Westie cartoon. Please send your caption to [bjpinter@msn.com](mailto:bjpinter@msn.com) before May 1, 2021. The winner will be announced in the next newsletter with their caption.

## Create a Caption for this Cartoon

*Copy of original watercolour by Ruth Sutcliffe, England*



## Winning Caption of Last Cartoon! Kerry Schultz



**“A BISCUIT IN THE PAW IS WORTH TWO IN THE CART.”**



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