WFA
WESTIE FOUNDATION OF AMERICA, INC
Leading the Way to Westie Health

Westie WELLNESS

Spring / Summer 2018

Questions? Comments? Suggestions?
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IN THIS ISSUE

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PRESIDENT'S MESSAGE

Bebe Pinter

As we each look at our lives and the contributions we each want to make in the lives of our dogs and our breed, we realize we have a limited amount of time to make a lasting impact on the legacies of our individual dogs. We have even less time when a Westie is chronically ill or has a terminal disease like Pulmonary Fibrosis or certain forms of cancer.

The board of the Westie Foundation of America (WFA) believes many factors impact paths to cures and treatments for diseases that affect our breed. A core component is having effective researchers who are highly regarded in their fields and are dedicated and determined to find answers. The WFA is becoming a greater player in the world of medical research to benefit all Westies.

This issue is worth a double read. We are delighted to include another chapter from our **The Westie Health Book** in this Spring/Summer issue of *The Westie Wellness* newsletter. "Tumors, Cancer, and Your Westie" by John Robertson, VMD, PhD. Subtopics include Introduction and Overview, Detecting and Diagnosing Tumors, Common Tumor Problems in Westies, Diagnosing Urinary Bladder Cancer in Dogs, Definitive Diagnosis and Options for Therapy, and Transitional Cell Carcinoma.

Please make note of the information on page 23 to order your personal copy of **The Westie Health Book**. It is an excellent resource for all Westie owners and veterinarians.

Take a little time to peruse the Donor pages. Without our dedicated donors, the WFA could not work to improve the health of all Westies. We thank them one and all and encourage you to become a donor. Please contact us at donormanager@westiefoundation.org or www.westiefoundation.org.

The *Daphne Gentry Scholarship* fund was established in memory of this wonderfully dedicated woman to help support the next generation of veterinary research professionals. It is my pleasure to announce Chie Tamamoto-Mochizuki, DVM as the first recipient of the *Daphne Gentry Scholarship*. All the details are included in our media release "Westie Foundation of America Awards First Veterinary Scholarship".

According to the "Financial Report—Fiscal Year 2017", expense ratios included Program Services 80%, Fundraising 9%, and Management 11% (well within the

(Continued on page 2)

(President's Message continued from page 1)

guidelines for a 501 (c) (3) organization). Program Services includes grants for research and education projects, such as the Westie Wellness newsletter and sponsored health seminars. Thanks to our donors for their loyal support and WFA board of directors for its effective fiscal management and creativity to leverage assets.

We are very excited about our project with Cornell University. "Solving Allergic Issues in Westies with a Little Help from Human Science" by Teresa Barnes, Vice President Communications, provides an insight to an important project the WFA is funding. Thank you to the West Highland White Terrier Club of New Zealand for its generous donation as well as many donors of the WFA who have made this grant possible.

The final article is one of survival, recovery, and leadership. Teresa Barnes wrote "Veterinarian Escaped Hurricane Harvey with Her Westies, Created Safe Haven for Others' Pets" so that you could follow the personal experience of Kay McGuire, DVM and her Westies as they dealt with Hurricane Harvey and its aftermath.

Don't forget about the WFA's annual Facebook auction August 17-19, 2018. Check out the details from Marianne Jacobs, Vice President Fundraising on page 15. Please consider donating items and bidding. Marianne can help you!

We need your help and encourage you to support our mission by becoming an annual WFA donor. We are an active board for a canine foundation that is making real progress to improve health in the Westie breed. You may contact Jim McCain, Donor Manager at donormanager@westiefounation.org or visit our website www.westiefoundation.org for assistance. In addition, I would be delighted to visit with you about what the WFA has accomplished and major projects and research underway.

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

Bebe Pinter

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 is to advance and support medical research to benefit the health and quality of life of West Highland White Terriers: and to further develop and communicate information regarding the health, care, breeding and quality of life of Westies to Westie owners, Westie breeders and veterinarians.

WFA
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Leading the Way to Westie Health

Request for Samples

RESEARCH PROJECT	SAMPLES NEEDED	CONTACT INFORMATION
Genetic marker for **Atopic Dermatitis**	Saliva swabs or blood samples from dogs with skin disease or from normal dogs 5 years of age or older from family lines free of allergies	Kim Williams North Carolina State University 919-513-7235 kdwilli4@ncsu.edu
Genetic susceptibility of **Transitional Cell Carcinoma (TCC) (Bladder Cancer)**	Blood samples from dogs diagnosed with TCC and dogs over the age of nine who have no known cancers	Gretchen Carpintero Ostrander Lab National Human Genome Research Institute 301-451-9390 Dog_genome@mail.nih.gov
Genetic marker for **Addison's Disease**	DNA from cheek cells and/or blood from affected dogs and unaffected dogs over the age of 7	Dr. A.M. Oberbauer UC Veterinary School (Davis) 530-752-4997 http://cgap.ucdavis.edu/
Clinical Features and Genetic Basis of **Idiopatic Pulmonary Fibrosis (IPF)**	Blood samples from dogs diagnosed with PF and healthy dogs over age 8 without lung disease	Drs. Ned Patterson and Peter Bitterman Katie Minor (contact) University of Minnesota 612-624-5322 minork@umn.edu
Idiopatic Pulmonary Fibrosis (IPF)	Cheek and/or blood samples from dogs diagnosed with pulmonary fibrosis	Dr. Victor J. Thannickal University of Alabama Sample collection coordinated by Dr. Pamela Whiting, DVM pgwhitingdvm@aol.com 707-529-9222 (cell/text) 707-837-8101 (clinic)
Dry Eye Syndrome (keratoconjunctivitis sicca)	Dogs diagnosed with dry eye and dogs over 7 years old with no ocular abnormalities *participants must be available for appointments at UC Davis Veterinary Center (CA)	Dr. Sara Thomasy UC Veterinary School (Davis) 530-752-1770 smthomasy@ucdavis.edu

For more information about any of the above projects visit
www.westiefoundation.org

On The Health Front

By Kay McGuire, DVM, MS

In this newsletter we are putting an emphasis on the incidence and types of canine cancer. As technology and medicine advances, so does the longevity of our canine pals. With increased life spans, there is also an increase in cancer. Veterinary medicine has reached the point of countless specialties that include advanced diagnostics such as CT's and MRI machines. Many of the treatment protocols in human medicine come from the development of treatment options in canine medicine. Research protocols involving animals for options in humans are known as "One Health."

The Westie Foundation's (WFA) 2018 Grant cycle heavily supported cancer and Atopic Dermatitis (AD) research. A recent update on The Canine Health Foundation **Grant 02472-A: Effect of Lokivetmab on Tissue Biomarkers of Canine Atopic Dermatitis using RNA Sequencing** with Dr. Frane Banovic from the University of Georgia. "The transcriptome *(defined as differentially expressed genes between lesional and non-lesional skin)* investigation of human AD tissues before and after treatment modalities has revolutionized the understanding of the molecular fingerprint of AD, further defining pathogenic immune pathways and identifying disease-specific biomarkers." Dr. Banovic is using a caninized monoclonal antibody targeting interleukin-31 (IL-31) cytokine, lokivetmab. "The investigators will evaluate lokivetmab modulation of the canine AD transcriptome using next-generation RNA sequencing (RNA-seq)." The hope is that "transcriptome analysis using RNA- seq may identify novel pathogenic pathways of inflammatory biomarkers as canine AD disease drivers, with potential for development of novel targeted therapeutics."

The WFA awarded a second Atopic Dermatitis research grant directly to Dr. Elia Tait Wojno at Cornell University. Please see the article by our VP of Communications, Teresa Barnes in this issue. The WFA board feels strongly that any progress in Atopy treatment will be at the cellular level, we are excited about the future of this study.

The WFA extends special thanks for the donation from the Westie Club of New Zealand whose donations are funding half of these Atopy studies.

With the warm months upon us, folks are working in their yards and landscaping. Please know that pesticides and herbicides for your lawn can cause canine cancer. Canine lymphoma and Transitional (Urethral) Carcinomas (TCC) can result from exposure to these products. The AKC and Dr. Matthew Breen offer the Cadet BRAF diagnostic test through the AKC store for early detection of TCC. If your Westie and/or Scottie have any relatives that has been diagnosed with TCC, the Cadet BRAF test used as a screening test three times per year will detect the disease before an ultrasound can diagnose the tumor. This allows for an earlier and better treatment choice for this disease.

Have a fun and safe summer with your Westie(s). Always have a dog bowl and fresh water available with the heat of the summer and please be mindful not to leave your dog in a locked car.

Westie Wellness, the official publication of the Westie Foundation of America is mailed or emailed quarterly to all contributors. Westie Wellness is printed by Art Communication Systems in Harrisburg, PA. 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. The editor reserves the right to edit all materials submitted for publication. The editor welcomes comments, suggestions, and expressions of opinions from the readership. No portion of Westie Wellness may be printed without the written permission of the editor.

Tumors, Cancer, and Your Westie

By John Robertson, VMD, PhD
Westie Health E-Book

Introduction and Overview

"Your dog has a tumor." This is one of the most stressful things a Westie owner can ever hear from their veterinarian. For most people, there is an immediate concern about what it is (what kind of tumor), what to do about it (if anything), and what is going to happen to their dog. This chapter discusses tumors (also called "neoplasms" – new cells), how they are detected and further diagnosed, types of therapy, and what to expect if your dog has a tumor. The chapter is not intended to provide comprehensive information about tumors and cancer. The best source of information about tumors in dogs and specifically in your dog is your veterinarian. Veterinarians are extensively trained to understand how tumors develop, the factors that foster their growth, and, most importantly…. what to do. Unfortunately, the author of this chapter knows personally about tumors and cancer in dogs and cats, and the toll it takes on owners. His best friend, Fluffer I the Westie surcumbed to a tumor of the testis when he was a young boy. Experience is a terrible way to learn some things.

What are tumors ("neoplasms") and what causes them? All tissues in the body (of dogs and people alike) are made of many cells. Cells in different tissues, such as muscle cells in muscle and kidney cells in kidneys, have different architectures and functions. All of these cells started from a single cell – the fertilized egg - that gave rise to an embryo and eventually to all cells and tissues. Since every cell in every tissue came from one single cell, all cells have the same DNA, organized into genes and chromosomes in the cell nucleus. As a result, all cells are genetically identical.

During the processes of cell growth, duplication, and organization into tissues, the form and function of the cells and tissues evolves into their 'final' adult form. This process of cell evolution is called differentiation. Cell growth, replication (making more cells), and differentiation let tiny puppies grow into dynamic adult dogs.

The processes of cell growth, replication, and differentiation occur every day and throughout life. These processes are absolutely critical in repairing damage and replacing worn out tissue components. It is important to realize that the processes of growth and repair are very tightly controlled by genes in the nucleus of every cell. When these processes are working perfectly, cells that can replicate make exact copies of themselves, and other cells ensure that tissues continue to function properly.

Tumors (neoplasms) are groups of abnormal cells that have escaped from the normal controls of cell division, replication, and differentiation. The fundamental 'thing' that starts and fuels this out-of-control process is mutation of genes that program and control cells. Mutations (changes in gene structure and function) have an important normal role in evolution, as they provide the mechanisms needed for changes in genes to be incorporated into organisms (and eventually into species). Mutations that favor new characteristics and improve survival become permanent additions to the gene blueprint of cells ("the genome"). Mutations that damage the DNA in genes in the genome and that impair cell survival usually aren't preserved, as the cells with these profound defects die off before they make more cells.

Some mutations affect critical elements in genes that control cell growth, replication, differentiation, and survival. It is these mutations that give rise to tumors (neoplasms).

(Continued on page 5)

(Tumors, Cancer and Your Westie continued from page 4)

"Tumors (neoplasms) are groups of abnormal cells that have escaped from the normal controls of cell division, replication, and differentiation."

Mutations can be caused by many things. Surprisingly, some mutations (favoring abnormal gene control and function) can be inherited. We know that the selective breeding of dogs for the past 200+ years has facilitated the passage of mutations favoring tumor development in some breeds of dogs, including Westies. An example of an inherited 'risk' for developing tumors is bladder cancer in Scottish and West Highland White Terriers *(see Bladder Cancer in Westies and Scotties)*. At some point in the selective breeding of these purebreds, one or more mutations were incorporated into their genome and have been inherited ever since. Another example is lymphoma in Golden Retriever dogs. Based on breed and health club statistics, about 60% of Golden Retrievers will succumb to lymphoma or tumors of the spleen (hemangiosarcoma). As dog breeders and owners, we need to be aware of the presence of breed-associated inherited mutations linked to the development of tumors.

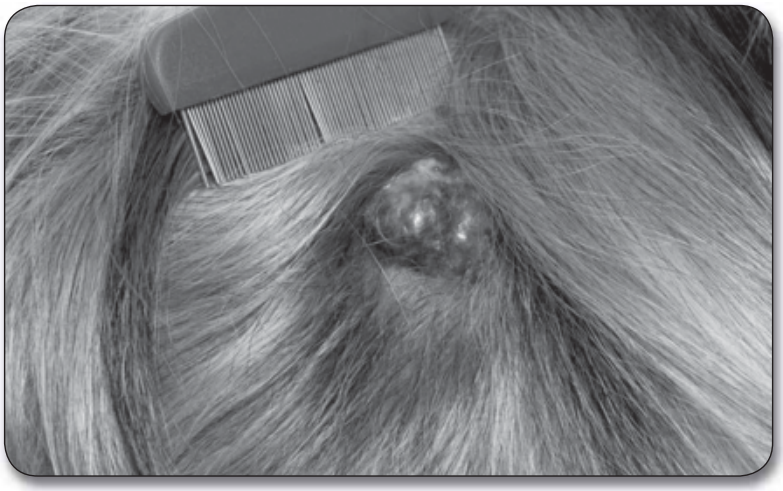

Figure 1 -Some skin tumors may be hidden beneath the dog's hair.

Many mutations are caused by exposure to excessive ionizing radiation (e.g., ultraviolet light, x-rays/ gamma rays), chemicals that damage DNA (called chemical mutagens), and some very specialized viruses (called oncogenic viruses). These entities (radiation, chemicals, and viruses) are collectively referred to as carcinogenic agents. They damage DNA and genes, removing critical control elements that regulate cell replication, differentiation and survival. Dogs and people get exposed to these carcinogenic agents in the air, drinking water, in food, and by direct physical contact. Exposure is unavoidable; but our bodies and those of our dogs are very resistant to the effects of the agents, and very, very few exposures ever lead to mutations and even fewer lead to the uncontrolled growth of cells (tumors). Our bodies simply kill off nearly all mutated cells. Unfortunately, a few survive.

We now know that the formation of tumors begins in individual cells that acquire several mutations (either through inheritance or exposure to carcinogenic agents). These mutated cells make more mutated cells…and more mutated cells, creating a tumor. This process of evolving from one uncontrolled cell to a clinically important tumor takes months to years. So, by the time we owners see tumors in or on our dogs, they have been developing for a long time.

Benign tumors and malignant tumors ("cancer"): By examining small samples microscopically, tumors are classified by their growth patterns and cell architecture *(see Detecting and Diagnosing Tumors)* as being either benign or malignant. Benign tumors, such as warts (officially known as "cutaneous papillomas"), are characterized by excessive cell growth in a local area. Many benign neoplasms form discrete lumps and bumps. These are frequently treated by surgical removal, local chemotherapy, radiation, cryosurgery (freezing), or a combination of these treatments. Benign tumors usually respond very well to treatment, being well controlled for long periods of time or cured completely.

Malignant tumors are a different story. Malignant tumors are those types of neoplasms that are officially "cancer". Malignant tumors start as local uncontrolled cell clusters, but may spread (infiltrate) into the tissue around them. Malignant neoplasms may also spread to distant sites, a process called "metastasis", by way of the blood stream and lymphatic channels. Sometimes, veterinarians will use the terms "carcinoma" or "sarcoma" when discussing malignant neoplasms. These terms help define the type of tissue that the cancer originates from and relates to terminology that pathologists use when describing what they see in the tissue samples *(see Detecting and Diagnosing Tumors)*.

Malignant neoplasms are difficult to control or eliminate in dogs and people. One reason for this is that malignant cells tend to infiltrate normal tissues around the site of tumor growth early in the life span of the tumor. Because malignant neoplasms infiltrate tissue, they are more difficult to remove with surgery or radiation therapy. As a result, malignant neoplasms

(Continued on page 6)

(Tumors, Cancer and Your Westie continued from page 5)

Figure 2 -A great time to start examining your dog is when it is three-weeks old. (Photo courtesy of Bebe Pinter and Kay McGuire, DVM, MS).

frequently require extensive surgical resection, followed by additional radiation and chemotherapy to control tumor growth. Unfortunately, many malignant tumors are identified after they have grown for a while, and they may be large, highly infiltrative, or have already sent clusters of tumors cells to distant sites, like the lung, liver, brain, or bones (tumor metastases). When these malignant tumors are spread, they are more difficult, if not impossible, to get under control and to cure.

Detecting and Diagnosing Tumors

Most tumors are detected by dog owners, not veterinarians! You are your Westie's best friend and spend the most time with your dog. It is very common for owners to be the first to detect "lumps and bumps" that appear on the skin, simply by seeing them, or feeling them as they pet or groom their dog. So, Strategy #1 in fighting tumors – regularly (every day) examine all the parts of your dog you can see and feel. Early detection of tumors is one of the best ways to effectively prevent serious problems – since small tumors are relatively easy to treat and have rarely spread extensively in tissue around them or to distant sites.

Regular examination should start when dogs are very young and continue throughout their life. A great time to start examining your dog is when it is three-weeks old. *(see Figure 2, courtesy of Bebe Pinter and Kay McGuire, DVM, MS)*. This activity helps you bond with your dog and helps the dog get used to being examined; your veterinarian will thank you for doing this. Most importantly, this will help you identify abnormalities like swellings/lumps and potentially painful spots that are often hard to see because they are covered by hair or they are on parts of the dog (the belly, for example) that may not be easy to see. A good routine is to start by patting and stroking the head and face and then moving your hands down the entire body. Palpation (i.e., careful, systematic touching) should extend to the neck, under the legs, the belly and the groin. Your examination should include looking at the eyes, eyelids, ears and into the mouth. Being thorough and starting early in life are keys to success, as dogs get used to the examination as part of their daily routine.

Male dogs need to get used to examination of their penis and testicles; testicular tumors can cause asymmetrical (uneven) swelling of the testicles, generally in older dogs. The absence of a testicle in the scrotal sac ("cryptorchidism"), after dogs have reached 6-12 weeks old, should trigger a visit to the veterinarian. Testicles that are retained in the inguinal canal or abdomen may develop tumors later in the dog's life. Breeders need to be especially diligent about regular evaluation of the testes of their male breeding dogs, since testicular tumors are most common in older male dogs. Neutering at a young age effectively eliminates the chance that a male dog will develop testicular tumors.

The careful examination and palpation of the mammary glands is very important, as tumors of the mammary glands are common in all breeds of dogs. Most of these tumors start as small lumps, perhaps the size of a pea, but can grow steadily larger. It is not uncommon for some dogs to have several small lumps develop in the mammary glands over time. Many mammary gland tumors in dogs are benign and can be easily controlled with surgery.

If you find a lump….see your veterinarian! There are many, many things that can cause lumps, bumps, and other abnormalities on the skin, eyes, ears, and "outside parts". Lumps that are scabbed over or which bleed easily, as an example, could be anything ranging from a localized skin infection to a tumor. You and your veterinarian then will determine the next steps to take. If the clinical diagnosis is that the mass may be a tumor, a small sample, called a tissue biopsy, may be obtained. Usually this procedure is performed with the dog under general anesthesia and by surgical incision so the sample can be evaluated by a pathologist. The piece of tissue is first preserved in a solution of formaldehyde and then processed to produce a thin piece of stained tissue on a glass microscope slide. It generally takes 1-2 weeks to process and examine a

(Continued on page 7)

(Tumors, Cancer and Your Westie continued from page 6)

surgical biopsy. This slide is evaluated by a pathologist trained to recognize the abnormalities in cell size and architecture that differentiates normal cells from tumor cells.

When pathologists examine a biopsy, in most cases they are able to determine if a tumor is benign or malignant. If the veterinarian did a surgical procedure aimed at removing the entire tumor, the pathologist will evaluate the edges of the tissue – the boundary between normal and abnormal tissue (called "the margins") – to see if the tumor has been completely removed. In most cases, surgery to treat tumors *(see Treating Tumors)* is designed to remove all tumor cells, as remaining tumor cells may regrow.

At times, your veterinarian may decide to use other methods to make a diagnosis. One technique, called needle biopsy, involves anesthetizing the mass and surrounding skin with a local anesthetic, and puncturing it with a needle. Fluid and cells drawn out of the lump are examined by the veterinarian or a pathologist to see if changes in cell size and shape indicate a tumor may be present.

While tumors on the outside of the body (skin, mammary glands, testes, eyes, eyelids, ears) can be easily detected by regular and repetitive examination, some tumors grow in tissues inside the body. These tumors are not easily detectable but may produce some signs that your dog needs further evaluation. Some clinical signs that may trigger further evaluation include:

• Unexplained loss of weight and changes in eating habits, including loss of appetite

• Unusual discharges from body orifices including ears, mouth, reproductive tract, or digestive tract

• Unusual behavior, including lethargy or sleepiness that is not normal for your dog

• Unusual weakness or lameness

• Pale gums

• Other changes in the normal routine of your dog that make you think "Something is not right". In fact, this is how I detected tumors in several of my dogs and cats. My dog Heidi, age 11, suddenly collapsed because a tumor in her abdomen was making hormones that interfered with blood calcium concentrations.

When you suspect that "something is not right", your veterinarian will conduct a thorough physical evaluation of your dog, very likely will take blood samples to evaluate general health (hematology and clinical chemistry evaluation) and potentially detect abnormalities, and may recommend radiographs (x-rays) to examine your dog's internal organs. In many cases, this more thorough evaluation will help determine if a tumor is present, where it is located, and which tissues are involved. This process will help you and your veterinarian determine the best course of treatment. If an internal mass is detected, it is common for veterinarians to recommend that a biopsy sample be collected. This sample will be examined to determine the type of tumor present and, based on its characteristics and what is known about tumors of this type, to predict how the tumor will behave (grow and potentially spread) and which therapies might be effective.

MOST COMMON TYPES OF TUMORS
BLOOD/LYMPH TISSUE 22.6%
URINARY 17.7%
SKIN 14.5%

Common Tumor Problems in Westies

A couple of generalizations about tumors in dogs will help put things in perspective:

- Tumors are more common in middle age (over 5 years old) and older aged dogs, than in young dogs.
- Most tumors develop slowly and the cause of the tumors is never known; owners need to know they very likely could not have prevented the development of a tumor, except…
- Early neutering of male dogs will eliminate development of testicular tumors and may affect development of prostate problems.
- Spaying of female dogs less than one year of age will decrease the incidence of mammary gland tumors as the dog ages. Early spaying eliminates the possibility of developing both ovarian and uterine tumors, although neither of these types of tumors are common in dogs.
- Regular examinations by owners and veterinarians help detect tumors at earlier stages, when they are more likely to be controlled with surgery, radiation, and chemotherapy – the standard types of treatment.
- Skin tumors are common in all dogs and are usually and effectively treated with surgical removal.

(Continued on page 8)

(Tumors, Cancer and Your Westie continued from page 7)

- Malignant tumors are more difficult to treat and control, are more likely to have poor outcomes, and can be costly to manage if chemotherapy and/or radiation therapy is used.

Tumors in Westies by site of occurrence (62 animals total; number in parentheses is the number of neoplasms)

- Digestive System (7)
- Endocrine System (1)
- Epithelial and Melanocytic Tumors of the Skin (9)
- Hematopoietic/lymphoreticular System, including Malignant Lymphoma (14)
- Mesenchymal Tumors of Skin & Connective Tissue (3)
- Mammary Glands (5)
- Male Genital System (2)
- Nervous System or Eyes (4)
- Respiratory System (6)
- Urinary System (11)

The most common types of neoplasms, based on percentages were: hematopoietic/lymphoreticular system neoplasms including malignant lymphoma (14/62 = 22.6%) and urinary system neoplasms (11/62 = 17.7%).

While the information in this Veterinary Cancer Registry database search is very useful for identifying overall trends in the incidence of neoplasms in dogs, it has limitations. First, only a small number of total cases are submitted for entry into the database, and it is very likely that there are many more dogs with tumors whose records are not submitted for inclusion. Second, only cases in which there has been a biopsy confirmation of the tumor type are included. Many dogs with masses may not be biopsied and their information may not end up in the database. Third, it is very hard to tell if the numbers presented in the Veterinary Cancer Registry database represent all of the dogs at risk. There is no way to know how many Westies (or Scotties, or Cairns, or dogs of mixed heritage) are in the United States. As a result, we can only make rough estimates of 'dogs at risk' for developing neoplasms.

The work of breed clubs like the WFA in conducting surveys of health problems in specific breeds is one of the best ways to know how many Westies (or Scotties, or Cairns, or dogs of mixed heritage) live in the United States. Data from these organizations can help provide rough estimates of 'dogs at risk' for developing neoplasms and is a great help in making more accurate data available.

Bladder Cancer in Westies and Scotties

One type of cancer that is of very serious concern to owners of Westies and Scotties is bladder cancer. The medical designation of this type of malignant neoplasm is "transitional cell carcinoma" of the urinary bladder. Bladder cancer can occur in any dog breed, but is more common in Shetland Sheepdogs, Scottish Terriers and Westies. The median age of occurrence for dogs is around 8 years old.

There are several excellent websites which discuss bladder cancer in dogs, how this tumor is diagnosed and how it is treated. While owners may wish to "Google" this subject, a more comprehensive, scientific literature review and list of references are found at the end of this section.

A brief summary of important aspects of this disease will help to alert Westie owners that their dog may have a problem.

Bladder cancer develops from cells that line the urinary bladder and the kidney. There appear to be several factors that influence whether or not this neoplasm will develop. In dogs, the genome appears to play a major role, as some breeds (the short legged Scots breeds like Westies and Scotties) appear to have a higher incidence per capita than other breeds of dogs (see below). This

(Continued on page 9)

(Tumors, Cancer and Your Westie continued from page 8)

increased breed incidence suggests that during the development of the breed, certain mutations in the genome were acquired and linked to desirable breed characteristics. It is very likely that several mutations may be present and research scientists are actively looking for them, in order to see what is causing cancer to develop. Remember, not every dog will inherit mutations that can lead to the development of cancer, and it may take the complex interactions of several mutations to lead to the initiation and development of neoplasms.

One other important factor in the development of bladder neoplasms in Scotties, though not proven to be a factor in Westies, is exposure to certain environmental chemicals. Glickman and his colleagues at the Purdue University School of Veterinary Medicine have shown that repeated exposure to one type of common lawn chemical – phenoxy herbicides – may lead to an increased risk for developing bladder cancer. There are several other important factors (see below).

Diagnosing Urinary Bladder Cancer in Dogs

The first clinical signs that there may a problem with the health and function of the urinary bladder may be one or more of the following:

- Difficulty urinating
- Frequent attempts to urinate (a change in the pattern of urination)
- Dribbling urine
- Loss of housebreaking in adult dogs
- Blood in the urine ("hematuria), evidenced by pink or red spots on floors and carpets
- Abdominal tenderness

These signs only indicate a potential problem with the health and function of the bladder and are not specific for any disease. For example, these signs might indicate bladder infection, the presence of bladder stones, a neurologic problem leading to altered bladder function, or the presence of a neoplasm, among other diseases. However, if Westie owners detect any of these signs, it is important for them to take their dog to their veterinarian for further evaluation.

The veterinarian will perform a physical examination and suggest some additional tests to narrow down what is causing the dog to have signs of bladder disease. During the physical examination, it is very likely the veterinarian will gently palpate the dog's abdomen, paying attention for signs of tenderness, especially around the area of the urinary bladder.

The veterinarian may suggest collecting a urine sample, either by catching urine in a pan or a cup during spontaneous urination (a "freecatch' specimen), by passing a catheter into the bladder, or by taking a small sample with a syringe and needle, through the abdominal wall ("cystocentesis'). Urine samples collected with a catheter or by cystocentesis can be used for bacterial culture – to see if there is an infection present. Urine samples can also be analyzed for the presence of blood and to see what types of cells and other suspended materials are present. In some cases, veterinarians and clinical pathologists will identify clumps of cells that may indicate the presence of tumors.

It is very likely that your veterinarian will also suggest additional tests (see below). Recently, a test called the bladder tumor antigen test ("VBTA') was developed to help detect the presence of some unique proteins associated with transitional cell carcinoma in dogs. Other "tumor marker" tests that detect proteins in urine associated with the development of bladder cancer are also being developed. Eventually, these tests may be especially helpful in screening for the presence of a neoplasm.

It is quite common now for veterinarians to use radiography (the old term was "xrays"), ultrasonograpy, or computed tomography (CT) to look for masses in the bladder. Shown on the following page is a CT image of the urinary bladder of a Sheltie dog which was seen by a veterinarian for blood in the urine *(See Figure 4)*. In this image, the arrow points to a dark mass (a "filling defect") which is a transitional cell carcinoma projecting into the center of the bladder. These imaging techniques are very helpful in differentiating between bladder stones and tumors.

Definitive Diagnosis and Options for Therapy

If there is a high likelihood that a tumor is present, your veterinarian may want to perform a surgical biopsy. This will involve general anesthesia, an exploratory surgical procedure of the abdomen, and opening of the urinary bladder. Some

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(Tumors, Cancer and Your Westie continued from page 9)

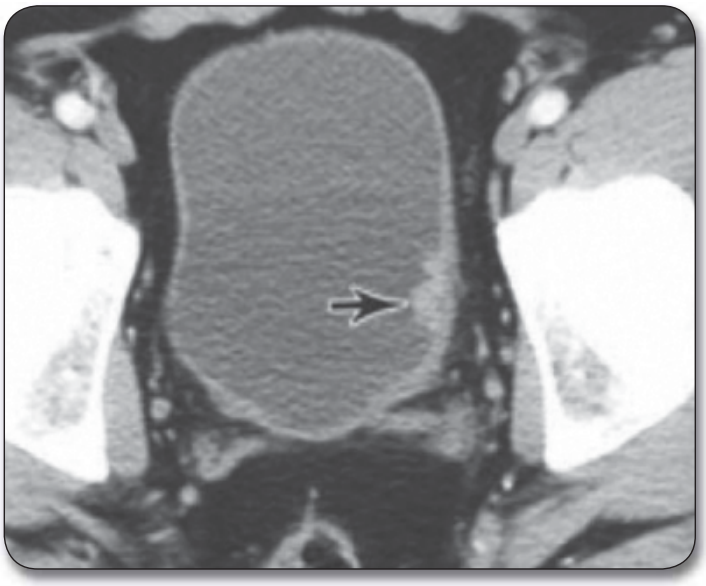

Figure 3 - ACT image of the urinary bladder of a Sheltie dog which was seen by a veterinarian for blood in the urine. The arrow points to a dark mass (a "filling defect") is a transitional cell carcinoma projecting into the center of the bladder.

veterinarians will remove as much tumor as possible during this procedure. Others may choose to take a small biopsy to be sent to a pathologist (see above), and then to treat the bladder with one or more chemotherapeutic agents.

Chemotherapeutic drugs used to treat cancer of the urinary bladder in dogs are identical to those used to treat this neoplasm in people. All cancer chemotherapy drugs are given to kill tumor cells. They do this in a variety of ways, including interrupting tumor cell division, blocking tumor cell metabolism, breaking down tumor cell DNA and genes, or poisoning other tumor cell activities.

Cancer chemotherapy drugs are usually given by mouth or injection, or a combination of these methods. Treatment may continue for months, depending on the extent of the tumor, response of the tumor to therapy, and tolerance for the side effects of the drugs. Typical unpleasant side effects seen in some dogs may include vomiting and diarrhea, loss of energy, changes in patterns of urination, and potentially increased susceptibility to infections.

It is very important to know that veterinarians are experienced in treating cancer, that they understand the effects and side effects of drug therapy, and that they are trying to help you and your pet overcome a serious disease problem. Most side effects of drug therapy are transient and temporary, and can be managed with supportive care.

You need to discuss this with your veterinarian when deciding how and if to treat your dog. Most veterinarians will also discuss the use of medications to control any discomfort and will be candid about the probability of the treatments being effective.

The outlook ("prognosis") for dogs with bladder cancer is guarded and depends a great deal on:

- Initial size and location of the tumor
- Amount of invasion of the bladder wall and surrounding tissues in the abdomen
- Metastasis of tumor cells to lymph nodes and other locations
- Age and overall health of the dog
- Type of tumor, including degree of differentiation and cellular patterning
- Response of tumor cells to chemotherapy
- Toxic side effects of chemotherapy

According to Dr. Deborah Knapp, et al, the median survival of all breeds of dogs with the early stages of transitional cell carcinoma is 218 days. For dogs with more advanced disease, the survival is about half of that interval. Of course, the outcome for any individual dog is hard to predict, but transitional cell carcinoma of the urinary bladder is one of the most serious health problems affecting Westies and other short legged Scots breed terriers (see below).

The early detection of bladder cancer in "high risk" dogs (including Scottish and West Highland White Terriers, Shetland Sheepdogs, among others) would allow more timely intervention (chemotherapy, surgery) and is likely to be associated with better prognosis. Development of simple, economical tests using urine specimens will allow life-long sampling of high-risk dog breeds and may decrease the devastating effects of bladder cancer in these breeds.

Transitional Cell Carcinoma

According to several excellent, comprehensive papers and review articles (Norris et al, 1992; Knapp et al, 2014), bladder cancer is common in all dogs; about 2% of all dogs in a post-mortem research study had bladder cancer. It is estimated, based on the size of the dog population, that there may be at least 15,000-20,000 new cases each year. Bladder cancer is especially common in several breeds of dogs. In one recent study, the odds that a particular breed would develop bladder cancer was compared against the odds that the disease would occur in mixed breed dogs. These comparisons involved calculating 'odds ratios' [OR], with an OR value of 1.0 meaning that a specific breed and mixed breed dogs were equally likely to develop bladder cancer. Furthermore, if the OR was greater than 1, then the breed was more likely to develop the disease. In that study, Scottish Terriers

(Continued on page 11)

(Tumors, Cancer and Your Westie continued from page 10)

(OR=21.12), Eskimo Dogs (OR = 6.58), Shetland Sheepdogs (OR=6.05), West Highland White Terriers (OR=5.84), and Beagles (OR=3.09) were found more likely to develop bladder cancer (Knapp et al, 2014). In addition to breed-associated (genomic) predispositions, risk factors for the development of bladder cancer in dogs include advancing age (more common in middle-aged and older dogs), sex and neutering status (more common in female dogs than male dogs, and more common in neutered dogs), obesity (Glickman et al, 1989) and exposure to some chemicals, including commonly- used herbicide lawn treatments (Glickman et al, 1989, 2004; Knapp et al, 2013), water disinfection products (Backer et al, 2008) and older generation flea control products (Glickman et al, 1989).

As indicated above, bladder cancer is suspected in dogs with clinical signs of difficulty urinating, hematuria, changes in patterns of housebreaking, frequent attempts at urination, and evidence of pain when urinating. Many of these clinical signs resemble those seen dogs with bladder infection ("cystitis"). As a result, it is important for dogs with these clinical signs to be examined thoroughly by a veterinarian. In many of those cases, diagnostic testing will include urinalysis with cytology evaluation, hematology and chemistry profile (to include or exclude systemic and/or urinary tract disease), urine culture (to include or exclude inflammatory/infectious cystitis), and diagnostic imaging, such as ultrasonography (Hanazono et al, 2014), standard radiography with and without contrast agents, and computed tomography. While a definitive diagnosis may be made based on abnormal urine cytology findings, the gold-standard is by evaluating a biopsy specimen procured with cystoscopy under sedation/anesthesia. The cost of such a comprehensive work-up often will exceed several hundreds of dollars.

When the diagnosis of bladder cancer is made, most dogs have relatively advanced disease –tumor cell growth has penetrated the musculature of the bladder wall, or spread to tissues adjacent to the bladder in the abdomen (Higuchi et al, 2013), or elsewhere in the body (e.g., lung, lymph node, bone, and other sites) (Knapp et al, 2000). Dogs with bladder cancer are most commonly treated with single- or multi-agent chemotherapy, with remissions up to 50% being reported and median survival times ranging from 130-250 days (Robat et al, 2010; McMillan et al, 2011; Knapp et al, 2013, Fulkerson et al, 2015). Bladder resection, radiotherapy, or combinations of therapies are not commonly used in dogs. Dogs rarely are cured or live more than one year, even with therapy.

Routine screening for hematuria, which may be associated with bladder cancer in asymptomatic dogs, is not practical. This would require regular collection of urine samples, probably at least on a yearly basis. Likewise, routine screening of all dogs is not economically viable. Many owners would be reluctant to pay $25 -$75 for a yearly urinalysis, which might not be either sensitive enough or specific enough to detect a disease affecting less than 5% of 'normal risk' dogs.

For decades, veterinary clinicians have relied on examination of urine cytology as a reliable first diagnostic test when bladder cancer is suspected (primarily due to detection of hematuria and/or pain), followed by cystoscopic bladder inspection and biopsy of suspect lesions. Such methods are valuable in detection of high-grade bladder cancer, but lack sensitivity for detecting low-grade tumors (Lokeshwar et al, 2001).

Over this same period, veterinary clinicians and researchers have searched intensively for biological markers of tumor growth that may be present in urine specimens (including cytologic markers) and biopsy specimens. The obvious value of these biomarkers would be rapid, sensitive/specific identification of bladder cancer, the ability to differentiate bladder cancer from inflammatory or degenerative diseases affecting the kidneys, bladder or urethra, and the ability to screen "high-risk" individuals for early bladder cancer. Biomarkers that might be present in urine would facilitate non-invasive, repetitive analysis without the need for sedation or anesthesia. A number of non-invasive biomarker probes have been developed. These include NMP-22 (a protein associated with apoptosis) (Grossman et al, 2005), BTA (bladder tumor basement membrane protein) (Irani et al, 1999), FISH (fluorescent, in-situ hybridization) probes for cell chromosomal abnormalities (UroVysion) (Hajdinjak et al, 2008), tumor sensitive monoclonal antibodies (ImmunoCyt) (Vriesema et al, 2001), and gene product-based assays (Allen et al, 1996; Borjesson et al, 1999; Mochizuki et al, 2015a,b; Decker et al, 2015).

None of these markers have gained wide acceptance, become a standard-of-care for patient screening, or are used for routine screening of either "normal-risk" or "high-risk" individuals – be they canine or human patients. They are somewhat costly,

(Continued on page 12)

(Tumors, Cancer and Your Westie continued from page 11)

require some degree of expertise to achieve valid results, and are highly dependent on sample quality and stage of tumor growth. The fact these biomarker assays have not seen wide use in human medicine in nearly two decades makes it seem unlikely they will see wide use in veterinary practice, although multiplex marker approaches may have limited use (Bracha et al, 2014).

Most recently, a single mutation in the canine BRAF gene was identified in tissue samples obtained from some dogs with transitional cell carcinoma and urothelial/bladder cancer. This discovery was made by comparing the DNA and RNA sequences of genes from dogs with bladder cancer against those from dogs lacking cancer. This mutation changed a single amino acid in the BRAF protein, which was associated with development of cell proliferation and the development of cancer. (Mochizuki H et al, 2015). In subsequent work, a laboratory assay was developed to see if the mutation could be detected in cells shed in urine samples collected from dogs at high risk of developing either of these diseases (Decker et al, 2015). This assay has now been used successfully to identify small masses in the bladder of dogs 3 to 4 months before they developed any clinical signs associated with the disease condition. This is an exciting step forward in helping detect these problems in dogs at the earliest possible time point, thereby improving their likelihood for a positive response to treatment. Additional information about this assay is available at www.SentinelBiomedical.com

In Summary

We collectively (owners, breeders, veterinarians, and research scientists) need to put forth our best efforts to identify the causes and to find effective treatments for tumors in our dogs.

We owe them that.

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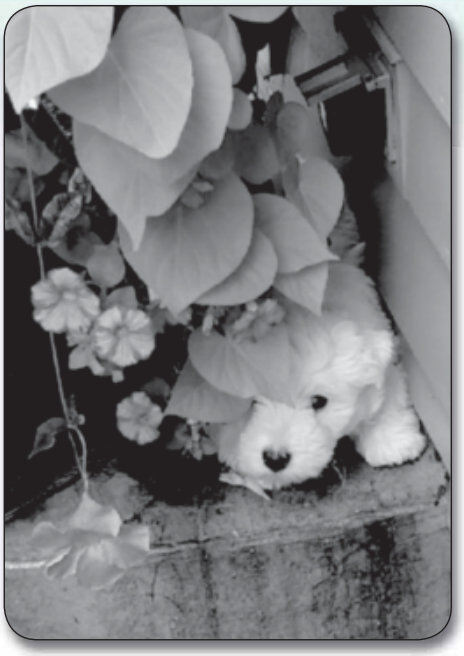

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Westie Foundation of America Awards First Veterinary Scholarship

Organization Co-Founder, Board Member Memorialized with Funding Focus

By Teresa Barnes

Houston, TX – June 4, 2018 – Daphne Gentry's wish is coming true. A librarian and author, Gentry was a co-founder and founding board member of the Westie Foundation of America (WFA) and wanted to help boost efforts focused on the health of the West Highland Terrier breed. The first Daphne Gentry Scholarship has been awarded to Chie Tamamoto-Mochizuki, DVM, a veterinarian in her post-doctoral training at North Carolina State University who is keenly interested in atopic dermatitis (AD) in Westies.

"It is a great honor to receive the Daphne Gentry Scholarship award 2018. Not only the scholarship itself but also the fact that I was awarded by WFA, one of the well-known organizations, will give me a great benefit to my career as a researcher because this means my research was recognized and endorsed by the third party," said Tamamoto-Mochizuki. "My research topic, canine atopic dermatitis, is one of the most common diseases in dogs, and Westies are one of the common breeds to develop this disease. There are also many similarities between canine and human atopic dermatitis. This scholarship will help Westies suffer [ing] from this disease, but also there is a high possibility that it will give a great benefit to human medicine."

Dr. Chie Tamamoto-Mochizuki Awarded First Daphne Gentry Scholarship from the WFA

Photo courtesy North Carolina State University

"We are pleased to present the first scholarship to Dr. Tamamoto-Mochizuki. She personifies the dedication and concern Daphne had for the Westie while she pursues important answers to atopic dermatitis. We are grateful to Daphne for remembering the WFA in her final wishes and for continuing to lead efforts to improve Westie health through her memorial scholarship," said Bebe Pinter, President of the WFA.

Atopic dermatitis is among the top health concerns for the Westie breed and affects 10 percent of all canines, according the the AKC Canine Health Foundation.

Gentry, who died in 2007 at the age of 65, was the first secretary of the WFA and was committed to the support of research into the health issues affecting the Westie. The Daphne Gentry Scholarship was established by the WFA in her memory and will help continue her legacy to the breed. In addition to her service to the WFA, Gentry was a past president of the West Highland Terrier Club of America, the WFA's parent breed club and was the author of *The New West Highland White Terrier*. Her service to the Westie community was extensive and she incorporated the WFA in her annual giving and as well as endowed the organization in her will.

The Daphne Gentry Scholarship is to be awarded each year to a deserving veterinary researcher. The 2018 award provides $5,000 in scholarship funds. To donate to the WFA scholarship fund including the Daphne Gentry Scholarship or to establish a fund in another name, contact the WFA at: donormanager@westiefoundation.org or donate via the WFA website at this link: http://westiefoundation.org//donations.html

About the Westie Foundation of America

The mission of the Westie Foundation of America, Inc. is a 501C(3) organization established to provide financial aid and other support for medical research in order to benefit the health and quality of life of West Highland White Terriers; and, to further develop and communicate information regarding the health, care, breeding and quality of life of Westies to Westie owners, Westie breeders and veterinarians. For more information visit www.westiefoundation.org.

Contact for participation and questions:
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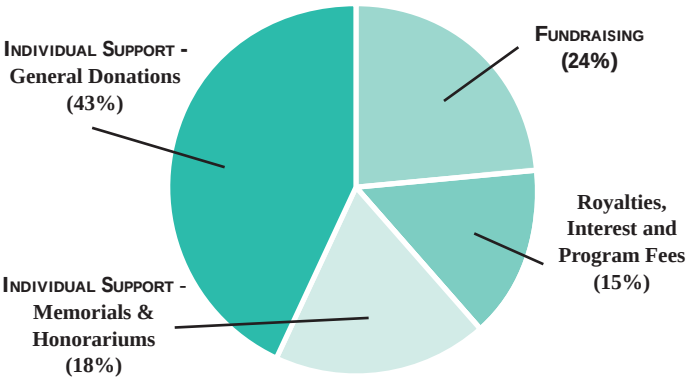
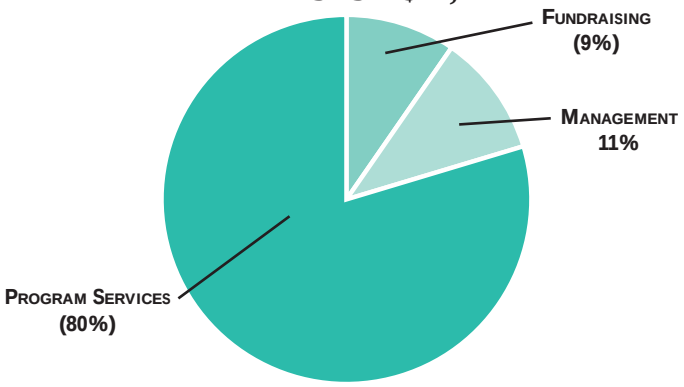


EXPENSES = $47,727



REVENUE

INDIVIDUAL SUPPORT

Revenue from individuals supporting the Westie Foundation of America, Inc's (WFA) mission in 2017 totaled $46,168 (61%) with an additional $7,977 in royalties from Affiliate programs/ Interest (15%) and $16,770 from fundraising efforts including the Facebook and Montgomery County auctions (24%).

ASSETS

ENDOWMENT FUNDS

All memorials and honorariums are added to the Donor Restricted Endowment Fund which now totals $328,617. 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 55% 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. In 2017, our endowment fund grew by 15.9%. These funds are tracked monthly to ensure conformance with the WFA's Investment Policy.

UNRESTRICTED FUNDS

The WFA has an unrestricted fund balance of $263,912 including cash, CDs and Mutual Fund investments. These funds are used to fund management operations, fundraising and program services.

The inventory was valued at $1,102 at year end.

LIABILITIES

Future Projects WFA retains liabilities of $69,834 to fund a planned Cancer connection workshop (deferred revenue of $18,000), publishing results of the 2014 workshop (pending final draft of report of $42,350), funding the winter newsletter ($2,000) and funding a grant on atopic dermatitis ($7,500) which was not settled at year-end.

EXPENSES

PROGRAM SERVICES

In 2017, 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, compounding the benefits our Westies will receive. Grants addressed further Investigation into Atopic Keratinocytes ($3,300), Treatment of Atopic Dermatitis ($2,300), two grants related to B-cell Lymphoma ($5,000 each), Irritable Bowel Disease ($4,300) and KCS ($1,500). In early 2018, the WFA will provide a grant to Cornell University for Atopic Dermatitis Research and has a liability of $7,500 to fund this grant.

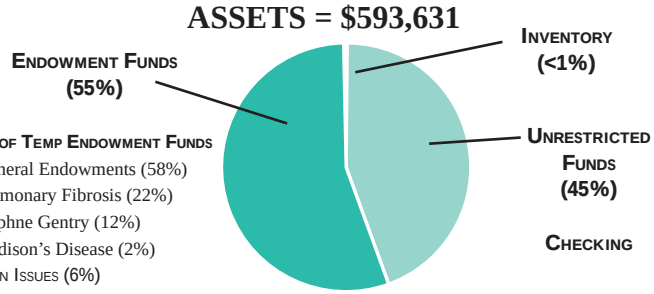
EDUCATION

Education expenses included our website ($839), the outstanding newsletter Westie Wellness ($6,335), and our sponsored seminars ($364).

MANAGEMENT AND FUNDRAISING

These expenses were kept to a minimum by careful allocation of resources and by the fact that all officers, directors, and committee members are volunteers.

ASSETS = $593,631



Solving Allergic Issues In Westies With A Little Help From Human Science

WFA Awards Research Grant to Cornell Immunology Researcher to Study Atopic Dermatitis and Allergy

By Teresa Barnes, Vice President Communications

A basic science immunologist turned veterinary researcher wants to unlock the mystery of the canine immune system. She seeks to find better ways to treat a common affliction and possibly the most burdensome in the West Highland White Terrier breed – atopic dermatitis (AD) and new funding just announced by the Westie Foundation of America (WFA) will provide the support she needs to launch a new study.

According to the AKC Canine Health Foundation, 10 percent of dogs are affected by AD which is the second most common allergy in dogs behind flea bite allergy.

Elia D. Tait Wojno, PhD.

"We know relatively little about what the immune system in the dog does when it becomes allergic. There are exciting questions to answer that could help us to develop better treatments for dogs with allergies," WFA grant recipient Elia D. Tait Wojno, Ph.D. said. "It is quite a burden – dogs with allergic disease. When the quality of life of dogs is negatively impacted, owners' lives are negatively impacted."

A Unique Human/Canine Researcher

"We are pleased to provide this grant to Dr. Tait Wojno to support her work in allergic disease in Westies, and atopic dermatitis, in particular," said Kay McGuire, DVM, and Vice President, Health for WFA. "The work she is doing in AD in canine medicine side-by-side with human medicine is unique and we believe is part of the future for improving the health of our Westies."

It is the perspective that Tait Wojno brings to the table, along with her ongoing collaborations in human medicine that provide the basis for potentially dramatic improvement in canine allergy treatment. "This project offers the opportunity to make a difference in dogs' and humans' lives. For the work in canine allergy, I feel like the real opportunity is that the work we do in the lab will have a real clinical impact in the short term – for discovery and also to apply the knowledge in a practical and helpful way," she said.

An assistant professor at Cornell University's College of Veterinary Medicine in Ithaca, NY, Dr. Tait Wojno didn't begin her research working in canine disease. In fact, she completed a fellowship at the University of Pennsylvania, Philadelphia where she also received her doctoral training, studying immune responses during infection and allergy.

She spent years looking at human allergic conditions in the field of immunology, training that helped her better understand atopic dermatitis and allergy.

Professor William H. Miller, Jr., VMD, DACVD, believes Tait Wojno's work and her expertise are the right fit to help figure out AD in Westies. "With her experience in innate immunity, she's in a very good position to help define the array of allergic mechanisms in allergic dogs," said the Medical Director in the Companion Animal Hospital in the College of Veterinary Medicine at Cornell University. "Her long term findings may lead to the development of new treatments."

(Continued on page 19)

(Solving Allergic Issues continued from page 18)

Specifically, the goal for Tait Wojno's research project is to identify an immune cell profile of an allergic Westie and determine how it differs from that of a healthy Westie. She believes her team may be able to identify an immune cell profile in the blood of allergic dogs. This profile may also exist in dogs that don't yet show signs of allergies but will develop them. This work will provide researchers with a better understanding of the immune responses that underlie allergy in dogs, which will improve our ability to identify biomarkers of disease, develop new therapies, and come up with ways to measure response to therapy. "Having a way to measure if therapy is successful early on could be important," she said.

The work in the study, Tait Wojno believes, could also help lead to better diagnostic tools. Though readily diagnosed by doctors who treat Westies, AD in the general veterinary practice, she says, may be less familiar and making such a diagnosis in a first visit can be complicated. She says looking to see if an immune cell profile in the blood could be used as a diagnostic factor, thereby improving the accuracy and speed of making the diagnosis.

Ultimately, Tait Wojno hopes this work will help improve lives of all who suffer from atopic dermatitis. "AD - we talk about it a lot in human and veterinary medicine," she said. Though with the disease, dogs and humans are not dying from the condition, she says the negative impact on quality of life is clear. "Human literature shows lost work hours, negative financial impact, time lost at home. This creates a very significant burden. Data in dogs shows that the same is true for canine allergy. As much as we can measure their mental health, their happiness – the burden of disease in dogs is really significant and has a negative impact on the dog and the owner, as well."

The WFA Research Project

"This project with the WFA, I am really excited about it," Tait Wojno said. "When I first started here at Cornell, we were looking at any dog that walked in the door with allergic disease [atopic dermatitis]. We can now identify differences in the immune cells in the blood in allergic dogs, which is important as it could allow us to identify dogs that are going to become allergic in the future. The new tools in the lab that we have developed to study canine allergy are going to help us to do more sophisticated allergic analysis and to build a picture of what the allergic immune system looks like in [canines]."

Tait Wojno says working with Westies adds an important element to her work in allergic disease in canines. "This project allows us to work with a group of dogs that have pedigrees, and so we can look at genetic information and immune profiles in a single breed -- looking at the gene and environment interaction."

Studying Children And Dogs

As a post-doctoral fellow, Tait Wojno focused on how the immune system operates when things are normal and how it can become disregulated and cause problems. Her work in humans specifically focusing on pediatric allergy and children with food and respiratory allergies, prepared her for the move she would soon make to add veterinary research to her repertoire.

Having a rich history of working in human populations has prepared her for a growing area of collaborative human/veterinary medicine known as One Health. "More and more people are embracing this idea that if we look at naturally-occurring diseases in other species, we can learn a lot about human disease," Tait Wojno said. She says the advances in the cancer space provide a good example of the potential to make significant progress. "Looking at how breakthroughs

(Continued on page 20)

(Solving Allergic Issues continued from page 19)

in naturally-occurring canine lymphoma have been applied successfully to human medicine, we know that if we solve problems in dogs, we can help humans and if we help solve problems in humans, we can help dogs," she said.

After completing her doctoral training in immune responses to parasite infection, she began her post-doctoral fellowship, this time at University of Pennsylvania and Weill Cornell Medicine at Cornell University in New York. It was in her work there that she began to see the immense need for better understanding of immune-related disease in the canine health space.

Tait Wojno joined the Baker institute for Animal Health at the Cornell University College of Veterinary Medicine as a junior faculty member and has been there for three years. "Being part of the Institute and the College of Veterinary Medicine has allowed me to bring together my interest in allergic disease and work focused on dogs," she said.

Starting The Study

With the help of the WFA, Tait Wojno is optimistic about the potential to translate this research into canine clinical practice.

"We are hopeful. We are going to continue our study here across breeds. We are interested in identifying if there are differences between Westies and larger breed populations. In humans, we are moving towards personalized medicine. In dogs, can we do the same? Are there treatment options and management strategies we want to apply to some breeds and not others?"

Tait Wojno's team has already begun recruiting for the initial study. For the first year, they will seek to enroll 25 healthy and 25 allergic Westies, she says. "We would love to continue working with the WFA." She says there is great potential to do some additional and longer-term studies that could reveal even more about allergic issues affecting Westies and other canines "following litters as they develop and grow and become adults and providing additional opportunities to work with breeders and the kennels."

Alongside her work in canine allergy, Tait Wojno's work in basic immunology and diseases that affect humans allows her to pursue the complicated areas of allergy and immunology. She holds two sought after R01 grants from the National Institutes of Health related to immunity and infection.

Mark Your Calendar — Annual Health Seminar

WFA
WESTIE FOUNDATION OF AMERICA, INC

Presented by the

Westie Foundation of America

Kimberton Fire Hall (compliments of the WHWTCA)

Thursday, October 4, 2018 — 6:30pm

Light Supper provided prior to the Presentation

Infertility in the Bitch

Common causes of perceived or true reduced fertility. • When should it be explored and what are the steps?
What is reduced fertility? • How to interpret, manage, and incorporate (or not) for a breeding program.

Featured Speaker: Carol Margolis, DVM

Lecturer in Pediatrics, Medical Genetics and Reproduction
University of Pennsylvania, School of Veterinary Medicine

Veterinarian Escaped Hurricane Harvey with Her Westies, Created Safe Haven for Others' Pets

WFA VP Made Plan and Followed it to Safety

Hurricane season is here again even as the rebuilding is still underway in many parts of the southern U.S. from the damage left behind by storms in 2017. Perhaps sharing the story of WFA's VP of Health, Kay McGuire DVM, MS and her experience during the devastating flooding in Houston caused by Hurricane Harvey will help inspire other pet owners and help them better prepare in the event of another disaster.

By Teresa Barnes, Vice President Communications

When veterinarian Kay McGuire saw the heavy rain pouring down on a Friday in August 2017, she thought it could be a repeat of Hurricanes Rita and Ike that pummeled the Houston area in 2005 and 2008 respectively.

McGuire began preparations for her veterinary hospital and clinic to again become a temporary home to pets and maybe even people as it had then when it housed 26 pets and 11 people during Rita. What she didn't yet know was the rain would continue to push the region past flood stage and the levee near her home would be released.

The WFA Vice President of Health, McGuire also didn't expect her clinic to become her temporary home and for her dogs to live there for three months.

"The rain just kept coming," McGuire remembered about Friday, August 25, 2017. "It is difficult to even imagine that much rain."

As the water crept up the road toward her house near Bush International Airport north of Houston, McGuire took initial steps to insure her and her animals' safety while keeping a close eye on the rising water. She researched and documented her choices for evacuation routes and checked her emergency lists of supplies. At regular intervals of every two hours, McGuire made her way through the torrential rains and down her driveway for a peek at the rising water to assess how close it was getting.

By Saturday afternoon, August 26, things were markedly worse. McGuire could see water reaching her driveway and feared it would rise quickly. She knew it was time to activate her evacuation plan and put her logistics in motion.

She gathered the necessities she had set aside for herself, her dogs and the clinic and quickly packed them as well as her pets into her car. She called her cousin, Lisa Singletary, with whom she had been in close contact since the rain started, to join her. Singletary, who lived just a few doors down in McGuire's rental home, quickly loaded her vehicle, as well.

Together, the two brought with them 12 dogs, including three nine-week-old Westie puppies. They drove the animals to the safety of McGuire's veterinary clinic and hospital, Suburbia North Animal Hospital, Houston.

McGuire recalled animals being brought to her for shelter during Hurricane Rita in 2005. She welcomed the animals to safety, as owners dropped them off as they, too, evacuated. More might have come to the clinic, McGuire said, had people been able to get there. "The freeways were packed and people were stuck," she said. She said of the animals that were being brought in, some were suffering from heat stroke from the intense temperatures on the freeways.

As a result of previous storms, and the nightmares that played out on the freeways such as the ones described by McGuire, this time, Houston officials asked most people to stay in their homes if they could. Businesses, including many veterinary offices across the area, were forced to close because of flooding or the inability of staff to make it in.

McGuire's veterinary clinic was operational within days of the storm. "I was getting animals in – no one else was open," said McGuire. "I was there, so I took them." She took emergency cases and housed animals needing shelter. In all, there were 20 animals being housed at the clinic.

Veterinarians often act as first responders during natural disasters like Hurricane Harvey, said McGuire who was an emergency veterinarian earlier in her career. "I think like any other type of

(Continued on page 22)

(Veterinarian Escapes Harvey with Her Westies continued from page 21)

first responder, we are almost put in that situation – trying to provide a place of rescue for animals. We took a lot of animals from people who were displaced," she said. "I am in a compassionate industry. Veterinarians love animals."

McGuire choked up as she recalled the loss of so many pet lives in addition to human lives as a result of the devastation last summer. "A lot of people were forced to unfortunately leave animals. Some died. Some were given up," she said.

"Kay is a survivor and is always thinking of dogs first, as well as others," said Bebe Pinter, president of the WFA. "She is a good person to have with you in an emergency."

Pinter drove her RV to McGuire as soon as the water receded enough on the highways for her to make the 50-mile trek from her home west of Galveston Bay. She knew the RV could be parked behind the veterinary clinic and provide shelter for McGuire as her home restorations began. She and Singletary lived in it until Thanksgiving. "She maintained a work schedule seeing patients and overseeing the reconstruction of her home," said Pinter.

Pinter's home was spared during Hurricane Harvey but she learned how valuable her RV could be when she, her husband, Randy, and their five Westies lived in it for several days following Hurricane Ike. "Many people suffered flood loss," said Pinter about the storms that hit Texas last summer. "When owners are stressed, their dogs are stressed."

You could say 2017 was a tough year for McGuire. She lost her mother early in the year and she lost both her home and and her rental house in the hurricane. Somehow, though, she still feels lucky. Her business was spared and she made it out safely with her animals.

She began the rebuilding process almost as soon as the more than three feet of water receded from her home - within 24 hours of her evacuation.

In part because she planned ahead and even hired a home repair company prior to evacuating, the process of rebuilding started almost immediately. Still, nearly a year later, there is still work to be done, but McGuire is grateful her situation wasn't worse.

The animals weathered the storm well, too, according to McGuire. Especially the Westies. "The Westies took it better than any of the dogs," she said. "It was a sense of excitement for them."

Her preparation had paid off.

As you make preparations for potentially dangerous storms this season, consider these tips compiled by the WFA from our team of experts as well as a 2014 disaster guide published by Harris County, Texas, the largest county in the state which includes Houston.

When creating a crisis plan for you and your family, it is imperative that you make preparations for your pets as well.

A PET EVACUATION CHECKLIST should include:

- Food and water (seven-day supply)
- Crate (make sure the crate door can be secured). Include extra crate pads and pee pads
- Unbreakable/travel friendly bowls for food and water
- Leash and/or harness (plus an extra leash and collar or harness)
- Medications and identification tags including pet's name, contact phone number, as well as tags for proof of shots including rabies (tags) and tags disclosing any medical conditions your pet has (include all tags on pet's collar).
- Important pet-related documents and enclosed in waterproof locking bags (including shot records and other important information)
- Toys and pet beds
- First aid kit for pets
- Muzzle for each dog
- Life vest that fits your pet (one for each pet)
- Grooming supplies
- Absorbent towels (that pack small)
- Pet-safe insect repellant
- Hard-copy list of important contact phone numbers to include a veterinarian, pet sitter, groomer, as well as important resource numbers such as poison hotlines and local emergency numbers

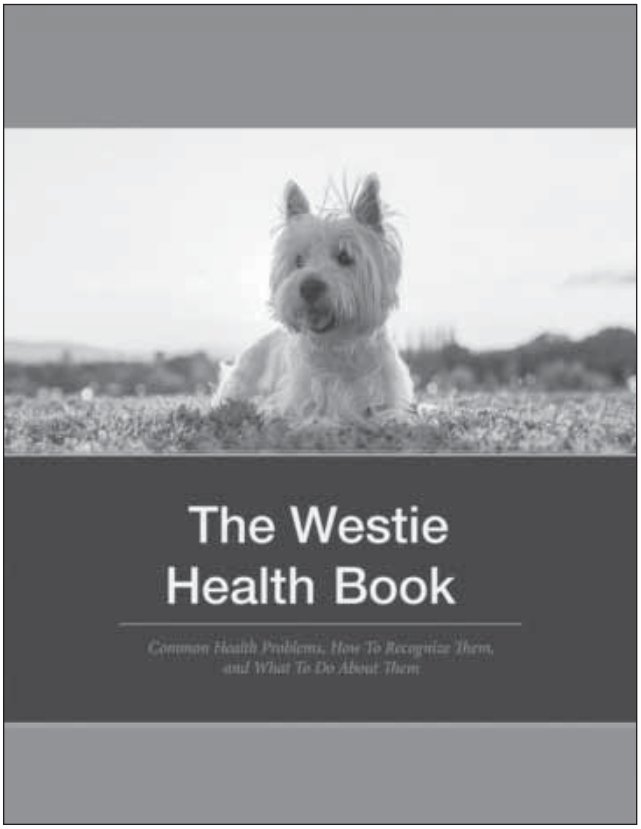
*****Label important items and include your name, contact number and address***

Plan in advance for options that will work for both you and your pets and even pack non-perishable items ahead of time in a backpack or other easy-to-grab bag should conditions require rapid evacuation. Leave a note tied to the bag containing a list of last-minute perishable items that need to be added.

"In the event of an evacuation, the single most important thing you can do to protect your pets is to take them with you. If you need to find a safe place for them ahead of time, check with your local animal care agency to help identify a pet-friendly evacuation shelter in your area," Houston County officials write in their emergency response manual.

For more information about disaster preparedness for your pets call 202-452-1100 or visit www.humanesociety.org/disastertips

Possibly the most important tip is to ID your pet. Do that now. Make sure that your cat or dog is wearing a collar and identification that is up-to-date and visible at all times. You'll increase your chances of being reunited with a lost pet by having him or her microchipped. Also, if your pet is adopted from a shelter or rescue organization, make sure the registration has been transferred.



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 health, breeding, genetics, common diseases, complementary and alternative medicine, and sections on each of the health problems affecting our beloved Westies, written by the foremost researchers and veterinarians who have the greatest knowledge about the health of our breed.

GREAT GIFT FOR YOURSELF, YOUR VETERINARIAN, OR A NEW WESTIE PUPPY OWNER!

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Westie Cartoon Caption Contest

Create the winning caption for this Westie cartoon. Please send your caption to bjpinter@msn.com before September 15, 2018. The winner will be announced in the next newsletter with his/her caption.

Create a Caption for this Cartoon

Copy of original watercolour by Ruth Sutcliffe, England

Winning Caption of Last Cartoon!

Judith Drol

"Old Mac Donald had Westies! Arf arf here, arf arf there..."

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Leading the Way to Westie Health

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