

Canine Osteosarcoma Profiling Update

— William C. Kisseberth, DVM, PhD

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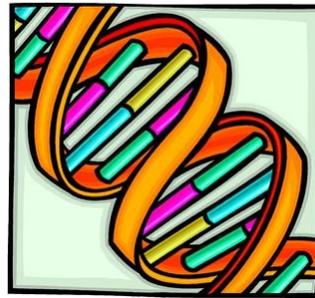
Osteosarcoma, commonly known as bone cancer, is a significant cause of death in large and giant dog breeds. Because of the strong breed predilection for bone cancer, it is believed that genetic mutations predispose dogs to develop this disease.

To identify genetic causes of canine bone cancer, researchers at the Ohio State University have developed a customized genetic tool—canine microRNA microarray—which is being used to characterize microRNA expression in osteosarcoma cells.

The tool will also be used to determine any differences in microRNA expression between tumors and healthy tissue from Greyhounds and Rottweilers—two breeds with high risk of osteosarcoma.

To date, researchers have

discovered 17 microRNAs that are differentially expressed in Greyhound and Rottweiler tumors, suggesting that breed-



specific mechanisms may be involved in disease development and progression.

Based on these preliminary results, researchers are now evaluating a larger group of tumor and tissue samples, including those from Greyhounds, Rottweilers, Golden Retrievers and a mixed popula-

tion of other breeds.

Preliminary data from this larger group are encouraging in that researchers have identified 44 microRNAs that are expressed differently in different breeds.

Notably, Golden Retrievers appear to have the most exceptional patterns of microRNA expression compared with other breeds.

Information gained from this study will identify microRNAs that may be important for determining diagnosis, prognosis and treatment of osteosarcoma in all dogs, but specifically for high-risk breeds.

In addition, this grant is serving as the research project for a PhD/veterinary medical oncology resident's graduate thesis and as a Morris Animal Foundation veterinary student scholar project.

Celebrating the Wonderful World of Dogs

—By Teresa C. Brown

We celebrate the wide wonderful world of dogs in this edition of Grey Tales. Sure most folks have heard of Rin-Tin-Tin and Lassie, but how about Seaman? Seaman was Meriwether Lewis' dog and was part of the Lewis and Clark expedi-

tion. Lewis bought the Newfoundland for \$20 in his preparation for the expedition.

Seaman's exploits have become part of history, as Lewis had mentioned the dog numerous times in his expedition journal. From his ability to hunt squirrels for

Lewis' dinner, to defending the camp from bears, to chasing and retrieving a deer in a river, to having an artery nicked when a beaver bit his hind leg, Seaman was a valued member of the team. In one journal entry, Lewis wrote

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Don't forget...

We collect Best Choice labels! Save your UPC labels and send them to us. 1,000 labels = \$60! It's the easiest way to make a contribution without doing anything that you don't ordinarily do. Read more about ways you can help on page 7 in this issue!

New Technologies and Genetics Research Advance Canine Cancer Efforts

By Wayne Jensen, DVM, PhD
Chief Scientific Officer, Morris Animal Foundation

As many dog owners know, cancer is a grave threat to their pet's health. Half of all dogs will face cancer during their lifetime, and one in four will die of the disease. For some breeds, such as Greyhounds, who frequently suffer from osteosarcoma, the risk is even higher.

Morris Animal Foundation launched its Canine Cancer Campaign in 2007 to fund research to prevent, treat and, ultimately, cure this disease in dogs. Through the campaign, the nonprofit organization is currently funding more than 25 canine cancer studies. Studies completed last year yielded a number of promising results, particularly in the areas of treatment and genetics.

Testing New Technologies in the Battle against Cancer

Conventional chemotherapy drugs improve cancer survival rates but can also cause notable side effects, such as vomiting, diarrhea and low white blood cell counts. A study at Colorado State University evaluated metronomic therapy, a novel method of administering chemotherapy that involves frequent, low-level doses of chemotherapy rather than higher doses given at longer intervals.

With Morris Animal Foundation funding, investigators determined that metronomic dosing of the drug cyclophosphamide is safe and may be effective in treating dogs with soft-tissue sarcomas. The treatment decreased the blood supply to the tumor in the treated dogs, and 8 of the 10 dogs treated experienced zero tumor growth during the four-week study period. In addition, none of the dogs experienced significant side effects. Results of this study indicate that metronomic chemotherapy could significantly decrease side effects and may increase survival rates of dogs with cancer.

Another study looked at treatments for lymphoma, one of the most common cancers in dogs. Chemotherapy often produces a good initial response,

but relapse is common and survival is usually less than two years after diagnosis. A new technology, nuclear magnetic resonance spectroscopy, has been used successfully in humans to identify tumor biomarkers, which are sub-

Several genes have been identified that play a role in radiation resistance in human melanomas, so veterinary researchers have hypothesized that the same would be true for animals.

stances produced by cancer cells.

With Morris Animal Foundation funding, researchers at Colorado State University used this new technology to measure whether metabolites (or their changing values after the first dose of chemotherapy) could predict a dog's initial response to therapy, remission times or long-term survival. They discovered that the lymph nodes of canine lymphoma patients have the same types of metabolites found in human cancers—and in people, these biomarkers are known to have prognostic and therapeutic significance. This new information about lymphoma is not only needed to find new therapeutic targets during drug development, but it could also help in the immediate

evaluation of a patient's treatment response and allow modification of therapy according to that early response. Furthermore, the investigators will use this information to evaluate the usefulness of advanced imaging techniques for determining early treatment response noninvasively.

Playing the Genetics Card

The Canine Cancer Campaign goes beyond treatment. It has long been known that some breeds have a predisposition to develop certain cancers—such as osteosarcoma in Greyhounds, lymphoma and hemangiosarcoma in Golden Retrievers and melanoma in Scottish Terriers. Through the campaign, scientists are zeroing in on genetic factors that may predispose dogs to certain cancers. Morris Animal Foundation's goal is to dramatically reduce the occurrence of and mortality from canine cancer in the near future.

A number of studies last year looked at the genetic links associated with different cancer types. Melanoma, a highly aggressive, often fatal cancer, is often resistant to radiation therapy, and recurrence rates are high. Several genes have been identified that play a role in radiation resistance in human melanomas, so veterinary researchers have hypothesized that the same would be true for animals. A recent study evaluated three genes in canine melanomas to determine their effects on radiation sensitivity. The researchers' most exciting finding was that melanoma cells produce receptors for one gene, indicating that blocking these receptors could slow cellular growth in cancer cells. In addition, using a drug that blocks the receptor enhances the effects of radiation. This previously unreported pathway in canine melanoma holds promise for developing new therapeutic strategies for this cancer.

Bone cancer, which is thought to be an inherited disease resulting from several gene mutations, is the most

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Tracking the Treasurer



This past year, we at GREYlong have made new friends and, of course, appreciate our loyal supporters. Your generosity helped GREYlong donate \$11,000, earmarked for canine cancer studies, to Morris Animal Foundation (see *Helping* story on page for study information). What a year it's been.

Diana May joined the GREYlong board of directors this year. She rallied around the Maypole, gathering all sorts of goodies for the rummage sale. As Diana often says, "The work getting here is composed of blood, sweat and tears, bruised knuckles, back aches and running all around town, but, all of it is sooo worth it!"

We have been joined by others this year who are passionate about our mission: **Joann Stephan** and **Nancy Singer**, also known as the GREYknit Ladies, who contribute handily with their knitting creations.

Cathryn Farrow and **Tibbi Ramsdell** generously list items on eBay and Amazon to benefit GREYlong.

Nancy DeSmet invited us to sales events that she held at her home.

Becky Williams makes unique jewelry pieces to sell with proceeds benefiting GREYlong and **Becky Hinks** has shared her photographic and card artistry with us.

From the corporate world, we salute **Verizon Foundation**, **Capitol Federal Foundation**, my dentist **Dr. Stanley Wint** (the best!) and **Sandy Paws**; they all added to GREYlong's coffers.

To all our other supporters who are just as important, we are so very grateful to each of you for your time, your

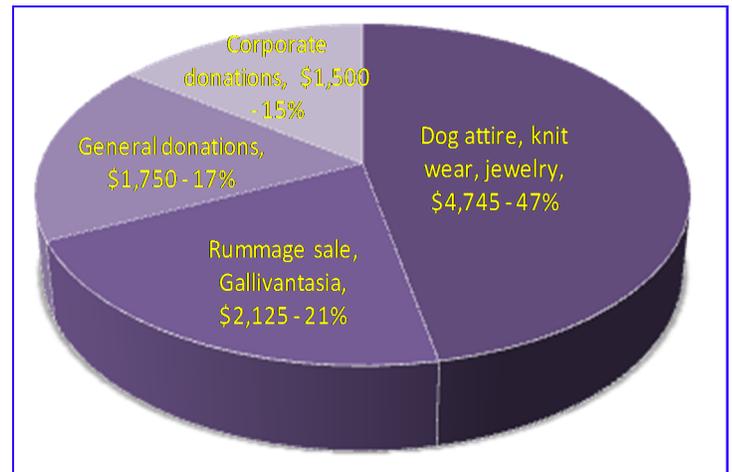
kind contributions to the Maypole rummage sale and your attendance at the dog-friendly fun Gallivantasia.

We are humbled by your support. Your generosity has helped us raise more than \$10,000 in 2010. It is obvious that you are as passionate about finding a cure for canine cancer as we are.

Your generosity has helped GREYlong raise \$10,120 in 2010. Expenses (state registration and office supplies) were \$140.

Thanks again for your continued support. It's been a tremendous year and it's clear, your passion will help find a cure for canine cancer.

— *Lori Haberman-Wilson*



GREYlong Circle of Friends

Among GREYlong's friends are these terrific folks. We happily encourage our readers to visit these fine online proprietors.

GREYTKNITS—Nancy Singer makes lovely hand-knitted scarves, hats and shawls, as well as snoods for our greyhound friends. Contact Nancy at n.singer@sbcglobal.net.

MISS DAISY'S ORIGINALS—Becky Williams creates handcrafted jewelry and you can reach her by e-mailing missdaisy1@suddenlink.net.

GREYHOUND GREETINGS—Sue Baro offers unique greeting cards and gifts. www.greyhoundgreetings.com.

NORTHCOAST GREYHOUNDS—Cara Brockhoff has a unique approach to "fun-raising." www.northcoastgreyhounds.net/store

CATS COLLECTIBLES, ETC—Cat Farrow creates distinctive one of a kind polymer clay ornaments. Cat donates 10 percent of many of her eBay-sold sculptures to GREYlong and other animal charities. You'll find favorites among her Halloween, animal and mushroom ornament collection.

AMETHYST GROUP—Tibbi Ramsdell sells new books, collectible first-edition books, metaphysical jewelry, crystals, pet-collar charms, handcrafted candles, herbs, incense, bath salts and gift baskets. The sale proceeds of many items are donated directly to GREYlong through eBay Giving Works in the name of Azie's Angels, the philanthropic division of Amethyst Group. <http://stores.ebay.com/amethyst-group-inc>.

Celebrating The Wonderful World of Dogs

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that a Shawnee Indian offered him three beaver pelts in exchange for the dog, an offer politely declined.

Fast forward a couple centuries, you might have seen the 2006 film “Eight Below” about an Antarctic expedition forced to abandon sled dogs for an entire year. This tale, as tall as it seems, was loosely based on a true story.

In 1958, a Japanese scientific team, the Second Cross-Winter Expedition, had to evacuate its base suddenly due to severe weather.

A relief team was expected; so, their team of 15 Sakhalin huskies (known in Japanese as *Karafuto-ken*) was tethered at the base. However, severe weather prevented the second team from getting to the base. The dogs were left until the following year when the third team arrived.

One of the dog handlers returned on Jan. 14, 1959, with the Third Cross-Winter Expedition. He wanted to give the dogs a proper burial. However, upon return, he was greeted by two of the huskies, Jiro and Taro.

Along with six other huskies, the male litter mates had not only escaped the tether, but the pair had somehow survived the entire year. The six other

escaping dogs disappeared.

No one knew how Taro and Jiro survived; dog food left behind was largely untouched and penguins and seals (which the dogs probably hunted) do not stay on shore during



Taro (left) and Jiro greet the third expedition in 1959. Photo from Ministry of Education, Culture, Sports, Science and Technology, Japan

the winter.

The following year while on a fifth expedition, Jiro died of natural causes. Taro lived long into his retirement years. He died in 1970; he was 15 years old.

And then there’s “Jess.” This little Sheltie’s can-do spirit was shared on a tracking-dog message board in 2009.

Jess’ life started out in misery. She was a breeding female at a puppy mill,

where no one bothered to even give her a name. At 9-1/2 years old, the breeder-owners surrendered her to a rescue because she was no longer useful.

The Sheltie was adopted by a new owner who worked hard to help socialize her and give her a full life.

The work paid off. By the time Jess was 13 years, she had earned a Rally Novice title. However, arthritis cut her Rally career short, prompting her owner to consider tracking as an activity.

It was good match; Jess loved it. They practiced as often as they could.

A brief illness affected Jess’ tracking ability, though not her desire. Even though she recovered, she wasn’t the same at tracking; she always struggled.

At almost 15 years old, Jess was partially deaf and she teeter-tottered between good days and bad days.

Several months after her illness, a tracking trial was held nearby and Jess’ owner thought, given Jess’ advanced age, there might not be another opportunity for her to earn a title. But trial slots are limited in number because the tracks themselves are physically long (from 440 up to 500 yards long with from three to five corners), can be used only once per trial and can be challenging to create given the land available.

Jess’ owner didn’t want to take the slot from another dog that might have

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New Technologies and Genetics Research

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common cause of death in Irish Wolfhounds. Scientists from the Animal Health Trust in the United Kingdom identified a region on the X chromosome that seems to show an association with osteosarcoma and warrants further investigation. The researchers also tested a new method for finding gene defects that lead to the development of many complex diseases, including cancer. Further research in this area would help breeders reduce the number

of dogs at risk of developing osteosarcoma through more informed breeding practices and could provide insight into new treatments for affected dogs.

Campaign funding also helped researchers continue to populate a tumor tissue bank with samples of lymphoma, melanoma, osteosarcoma, hemangiosarcoma, mast cell tumors, soft-tissue sarcomas and pulmonary tumors. More than 1,500 samples have been collected—the goal being 3,000—from seven universities: Michigan State University, University of Wisconsin, University of Missouri,

Colorado State University, Tufts University, University of California–Davis and Ohio State University. Researchers can now use this tool to study various cancers.

New developments like these are taking place all the time, and each one brings us one step closer to better preventions, treatments and, one day, a cure.

To learn more, visit www.CureCanineCancer.org.

Meaty Kong Stuffers

Recipe from *You Bake 'Em Dog Biscuits Cookbook* by Janine Adams

- 2 2.5-ounce jars meat baby food
- ½ C wheat germ or wheat bran
- ¾ C non-fat dry milk

Preheat oven to 350° F. Prepare a baking sheet by greasing it or wrapping the baking surface with nonstick foil.

Mix all ingredients together in a large bowl.

Roll pinches of the mixture into balls no greater than ¾-inches (smaller if your dog is small and you use a small Kong toy). Place balls onto a baking sheet covered with greased or non-stick foil. Alternatively, put the batter into a pastry bag with a ¼-inch tip or a plastic sandwich bag with an eighth of an inch clipped off the corner. Squeeze out into small rounds onto the greased baking sheet.

Bake for 8 to 10 minutes or until the bottoms are brown.

After the treats have cooled, fill a Kong toy with them and seal the hold with cream cheese or peanut butter.

Store in refrigerator in an airtight container.

Celebrating The Wonderful World of Dogs

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a better passing chance than Jess. She waited until closing day to enter the old girl.

Jess was the last dog at the trial to take to the field. Even though her owner had to shout at her (so Jess could hear her) and had to stay as close to her as rules allowed, the old dog struggled to track.

You never know how long it might take a dog to complete a track. A bloodhound can run one in just a few minutes. Other dogs might take 10, 15, 20 minutes. Jess took 41 minutes.

It was a struggle, but she never gave up. In that last moment when Jess stood over the last item on the track, her owner said, "I only remember gulping, running up and bawling, and hugging

her for so long."

At nearly 15 years old, a partially deaf, former puppy-mill breeding dog earned a Tracking Dog title.

It's pure inspiration what these dogs did. Each one represents commitment and determination to move forward another day. Going further and farther than we could imagine for them.

Book the Date!



Mark your calendars for these upcoming GREYlong events!

- **May, 2011—Rummage Sale**

Usually the 2nd or 3rd weekend. Plan to drop by. Watch your e-mail for the time and date.

- **Sept 17, 2011—Gallivantasia**

Kill Creek Park, 11670 Homestead Lane, DeSoto. Details to come.

GREYlong is a 501(c)(3) organization established in 2006 devoted to raising funds to help support canine cancer studies. The money raised by GREYlong is donated to Morris Animal Foundation. All gifts are tax-deductible. We have no paid employees, so all gifts make an impact in finding a cure for cancer.

We are passionate about making a difference in our current and future pets' lives. Our name "GREYlong" is symbolic. It represents our goal that everyone's pets should live LONG lives in their senior-citizen GREY fur.

We are grateful for all of your support. Our year-end financial report is posted at www.greylong.org.

GREYLONG

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GreyTales is the official newsletter for GREYlong. It is published electronically in May, September and January. It is distributed by e-mail to a subscriber list. To receive the newsletter, send an e-mail with the word "SUBSCRIBE" in the subject line to lori@greylong.org. We welcome both editorial and photo submissions. Submissions may be e-mail to lori@greylong.org or shibas.rock@yahoo.com. Editorial submissions may be edited for space and style.

Helping is as Easy as One, Two, Three

Can you spare a paw, or two, or three?

Helping GREYlong can be as easy as clipping a label, doing a little basement or attic cleaning or even baking a batch of your famous chocolate chip cookies. Here is how you can help:

- **BEST CHOICE SAVE-A-LABEL**—We need only 650 more UPC labels to earn a cash reward. Best Choice products are available at Hen House, and Price Chopper. E-mail lori@greylong.org to find out how to turn in your labels. You can learn more about the Best Choice Save-A-Label program at www.awgbrands.com/savealabel.html.
- **MAYPOLING FOR OUR MUTTS RUMMAGE SALE**—The next sale will be held on a Friday and Saturday on the second or third week in May and we need donations. We collect small treasures year-around and will be accepting large items in April. We gladly accept everything from bathroom sinks to ceiling fans, garden goods to jewelry, collectibles to kitchen gadgets and everything in between. If you love to bake, we gratefully accept baked goods to sell during the rummage sale to visiting shoppers. Or perhaps you can donate packages of hotdogs and buns to sell; they are real crowd-pleasers when lunchtime rolls around. As always, we never turn down rummage-sale helpers, assisting in price-marking, setting up, selling or taking down. If you'd like to help in any of these areas (donating, baking, selling), just e-mail Lori, lori@greylong.org.
- **GALLIVANTASIA**—Another fun outing is planned for Saturday, Sept. 17, 2011, at Kill Creek beach. We need auction items as well as help to set up and clean up.



The annual Gallivantasia is a bone-fide success!

Where Does the Money go?

This year, GREYlong has set a goal to raise \$8,000 from our events. GREYlong has committed to sponsoring three canine cancer studies vetted by Morris Animal Foundation. Two of the studies deal with therapies for treating bone cancer. One of those is being conducted at Texas A&M; it is evaluating cyclophosphamide's ability to inhibit tumors. The second is being conducted at Cornell University. It is evaluating a drug therapy to inhibit the LOX pathway with the hope it will kill bone cancer. The third study deals with a drug therapy for Lymphoma. It is being conducted at University of Illinois and it is evaluating a compound called PAC-1.

As some may know, breast cancer metastasizes to bone cancer. While these studies focus on canine cancer, they may also benefit humans as well.