Hemangiosarcoma Research Offers Hope in Treating Complex Cancer

Among the cancers that affect dogs, hemangiosarcoma is one of the most baffling ones for scientists to understand. German Shepherd Dog enthusiasts also have struggled to understand this cancer, as the breed is among those with a high occurrence rate.

Hemangiosarcoma is an extremely aggressive cancer that has usually metastasized by the time it is discovered. Sadly, without treatment, survival is short, especially if the cancer is in the spleen or other internal organs and the dog has collapsed due to internal hemorrhage. Despite the best standard therapy, surgery and chemotherapy, dogs do not live long, and most fail due to drug-resistant metastasis. This cancer occurs largely in middle-aged and older dogs.

The American German Shepherd Dog Charitable Foundation is helping to fund hemangiosarcoma research looking into the gene profiles of this cancer. Supported by the AKC Canine Health Foundation, the research may determine whether hemangiosarcoma in German Shepherd Dogs has unique molecular features compared to the cancer in other high-risk breeds.

Different gene mutations in different breeds would potentially revolutionize the way the cancer is treated. If all dog breeds share the same mutation, a more general treatment would be practical. Owners should contact the researchers or visit their websites to learn more about the studies.

How to Participate in Hemangiosarcoma Research

Owners of German Shepherd Dogs, Golden Retrievers and other breeds at high risk for developing hemangiosarcoma are encouraged to contribute to ongoing research by submitting blood samples. Each clinical study has varying requirements. Owners should contact the researchers or visit their websites to learn more about the studies.

For information, please contact:
- University of Minnesota scientist Jaime Modiano at lab@modianolab.org or visit www.modianolab.org.
- North Carolina State University researcher Matthew Breen at matthew_breen@ncsu.edu or visit www.breenlab.org.
- Broad Institute of MIT and Harvard research coordinated by Chieko Azuma at chieko.azuma@tufts.edu or visit www.dogdna.com.
Hemangiosarcoma Research
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unique, heritable traits are associated with increased risk for hemangiosarcoma and lymphoma in Golden Retrievers, and consequently, tumors in Goldens have unique molecular geometries and phenotypes that influence their biological behavior,” Breen says. The process involves:
• Identifying regions of the genome linked to risk of hemangiosarcoma and lymphoma in Golden Retrievers;
• Defining DNA variants and gene expression profiles that recur in tumors; and
• Defining patterns of susceptibility in Golden Retriever and non-Golden Retriever cancer cells to compounds with known pharmacological activity. “We predict our work will highlight targets for the prevention and control of these diseases,” says Breen. “As we discover regions of the genome that are associated with these two cancers, additional work will be conducted using other breeds to determine if the key regions or genes cross breed boundaries.”

Signs of Hemangiosarcoma
A difficult cancer to recognize, hemangiosarcoma is generally diagnosed after it has metastasized. Without treatment, survival is rarely more than eight weeks following diagnosis. Signs of this cancer include:
• Sudden weakness, dizziness or collapse
• Pale gums
• Sudden tremendous thirst
• Rapid pulse
• Distended, fluid-filled abdomen, which occurs with tumors in the spleen

Less dramatic signs that may go unnoticed include:
• Weight loss or lack of appetite
• Intermittent lethargy, weakness or fatigue
• Fast breathing

The average survival in dogs with hemangiosarcoma is approximately six months when dogs receive surgical tumor removal and chemotherapy. The exception is hemangiosarcoma of the skin, which has a better prognosis. Since hemangiosarcoma is seen more frequently in some breeds than others, it is presumed that risk has a heritable component. Besides German Shepherd Dogs and Golden Retrievers, other at-risk breeds include Bernese Mountain Dogs, Boxers, Flat-Coated Retrievers, Portuguese Water Dogs and Skye Terriers. The cancer has been estimated to comprise approximately 7 percent of all canine cancers, and it occurs in dogs more than any other species. A survey conducted by the Australian Shepherd Health and Genetics Institute indicates that hemangiosarcoma is the No. 1 cancer in the breed. Likewise, according to the Golden Retriever Club of America, the breed has one in five lifetime risk for this cancer, based on a 1999 breed health study.

A Look at Targeted Therapies
The high levels of chemotherapy drugs needed to treat hemangiosarcoma sometimes cause side effects that kill normal tissues such as bone marrow and the gastrointestinal tract are affected. Targeted therapies with greater specificity potentially would have fewer, if any, side effects. A fourth-year veterinary student at the University of Minnesota, Jill Schappa, is exploring the possibility of administering a potent bacterial toxin directly to tumor cells using targeted mole-
cules. Schappa has received a research fellowship through the Howard Hughes Medical Institute and Burroughs Wellcome Fund to study the targeted therapy. Her work includes Modiano and Daniel Vallera, Ph.D., professor of radiation oncology at the University of Minnesota Masonic Cancer Center. “Unlike chemotherapy, these drugs would target specific cancer cells, leaving the body’s healthy cells alone,” Schappa says. “This would make targeted treatment of hemangiosarcoma a possibility in dogs and a potential lifesaver for hemangiosarcoma-affected dogs.”

The promise and goal of these molecular and genetic studies is that not only will they assist in identifying the genes associated with the inherited predisposition to hemangiosarcoma, they also will provide targets for new drug developments. Though it may be many years before a targeted hemangiosarcoma drug treatment is offered, it is promising to know that scientists are working to better understand this complex cancer. As scientists learn more about this cancer and its variations among breeds, breeders will benefit from improved treatments and knowledge that hopefully will decrease the incidence of this devastating malignancy that affects so many dogs all over the world.

Purina appreciates the support of the German Shepherd Dog Club of America Inc. and particularly Ginny Altman, GSDCA past president, health liaison and chairwoman of the GSDCA Health and Genetics Committee, and vice president of the American German Shepherd Dog Charitable Foundation, in helping to identify topics for the Purina Pro Club German Shepherd Dog Update newsletter.

Want to Reach the Editor?
Have comments about Purina Pro Club Update? Send them to us at: Purina Pro Club Update, c/o Editor, Nestlé Purina PetCare, 2T Checkerboard Square, St. Louis, MO 63164 or via e-mail at today’sbreeder@purina.com.

Send Us Your Questions
Have questions about your Purina Points or how to redeem weight circles for rewards and rebate checks? Contact Purina Pro Club at (877) PRO-CLUB, or (877) 776-2582, between 7 a.m. and 5 p.m. CST Monday through Friday. You also may visit www.purina proclub.com to review and redeem Purina Points.
Purina Pro Club offers many perks for members. Here are tips to help you tap into valuable member services and get the most of your membership.

**Submitting Weight Circles**

Weight circles are the colored circles on packages of Purina brand dog food that can be redeemed for Purina Points and used to order items from the Pro Club Rewards Brochure and dog food checks. When submitting weight circles, you should:

- Use a Weight Circle Claim Form. You may download a form at www.purinaproclub.com by signing into your account and clicking on “Pro Club Tools” on the red bar at the top of the screen. Then under Pro Club Forms, click on “Download Weight Circle Claim Form.” You also may call Pro Club member services toll free at 877-PRO-CLUB or 877-776-2582.
- Fill out the Weight Circle Claim Form completely. A completed form expedites the processing.
- Always put your return address on the weight circle submission envelope.
- Submit a minimum of 200 pounds’ worth of weight circles.
- Submit only weight circles, not UPC codes. Only weight circles are valid for credit to your account.
- Effective Dec. 31, 2009, Purina Hi-Pro weight circles were no longer accepted.
- Weight circles and points from redeemed weight circles cannot be purchased or otherwise transferred.
- Do not submit torn and worn weight circles, and avoid taping multiple weight circles together.

**Ordering Puppy Starter Kits**

Pro Club members may order Puppy Starter Kits for new owners that contain important information on caring for new puppies. You should only order Puppy Starter Kits for the puppies you currently have on the ground. Starter Kit information and coupon expiration dates are continually updated, so make sure you have only the most current Starter Kit information.

**Certify Weight Circles**

Pro Club recommends that you mail your weight circles by certified first class mail or other traceable delivery method. This helps to ensure proof of delivery in the event Pro Club does not receive your weight circles. Pro Club is not responsible for weight circles not in its possession.

**Redeeming Purina Points**

Weight circles turn into Purina Points that can be redeemed for items from the Pro Club Rewards Brochure or dog food checks. When redeeming points keep in mind:

- Purina Points expire three years from the date of last activity. You are responsible for any taxes that may be owed as a result of points earned and/or redeemed.
- Your Pro Club account address

**Purina-Sponsored Sporting Events**

**Weimaraner National Field Championships**

- **Event**: Weimaraner National Field Championships
- **Date**: Dec. 4 to Conclusion
- **Location**: Ardmore, OK

**English Springer Spaniel National Amateur Championship**

- **Event**: English Springer Spaniel National Amateur Championship
- **Date**: Dec. 6-10
- **Location**: Cambridge, MD

**UKC (United Kennel Club) Battle of the Breeds**

- **Event**: UKC (United Kennel Club) Battle of the Breeds
- **Date**: Dec. 10-11
- **Location**: Ada, OK

**Continental Championship**

- **Event**: Continental Championship
- **Date**: Jan. 7-8
- **Location**: Orangeburg, SC

**UKC Grand American**

- **Event**: UKC Grand American
- **Date**: Jan. 17 to Conclusion
- **Location**: Dixie Plantation, Greenville, FL

**UKC Winter Classic**

- **Event**: UKC Winter Classic
- **Date**: Jan. 28-29
- **Location**: Albany, GA

**National Open Shooting Dog Championship**

- **Event**: National Open Shooting Dog Championship
- **Date**: Feb. 7 to Conclusion
- **Location**: Sedgefield Plantation, Union Springs, AL

**National Championship**

- **Event**: National Championship
- **Date**: Feb. 14 to Conclusion
- **Location**: Ames Plantation, Grand Junction, TN

*This table lists some, but not all, upcoming sporting events sponsored by Purina.
Pro Plan Introduces Two New Dog Products

Purina Pro Plan is introducing two new dog products in early February: an all life-stages dry dog food, featuring a small kibble and made with real lamb as the No. 1 ingredient, and a dog snack formerly marketed as Purina Carvers. Purina Pro Plan Lamb & Rice Small Bite Formula contains 26 percent protein and 16 percent fat. This nutrient-dense food offers complete and balanced nutrition appropriate for puppies, pregnant or nursing dams, adults and senior dogs. Purina Pro Plan Lamb & Rice Small Bite Formula comes in three package sizes: 6 pounds, 18 pounds and 37.5 pounds.

Pro Plan Roasted Slices is made with over 80 percent real chicken. Already a dog fancy favorite used ringside and for training, this dog snack is high in protein and highly palatable. Roasted Slices can be fed whole or torn into bite-sized portions. Lightly seasoned and oven-cooked, this dog snack is made without corn, wheat, artificial colors or flavors.

Pro Plan is sold at pet specialty and farm supply stores. For information, visit www.proplan.com or to talk with a pet nutrition consultant, call 800-PRO-PLAN (800-776-7526) from 9 a.m. to 4 p.m. Central time Monday through Friday.

Pro Club Member Benefits continued from page 3

should be current. Pro Club is not responsible for items sent to wrong addresses.

• Purina dog food checks have a one-year expiration and cannot be reissued if you allow them to expire.

• As stated on the dog food check, only one $7 check can be used with the purchase of one bag of a Purina product. The terms on the check state "limit one check per bag."

• Rewards — dog food checks, veterinary checks, gift certificates and gift cards — are like cash and should be protected. Purina is not responsible for replacement in the event of loss, theft or destruction.

• Pro Club Terms and Conditions state that three to five weeks should be allowed for processing and delivery of checks, and six to eight weeks should be allowed for processing and delivery of merchandise, gift cards and gift certificates.

• Visit www.purinaproclub.com to see the complete Terms and Conditions or to view your Purina Point balance.

Purina-Sponsored Dog Shows*
December 2010 to February 2011

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<td>Cleveland Crown Classic</td>
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