4. Fundraising for the Colony Dogs in 2012
5. Support Health Research With Great Holiday Gifts!
6. SCWT Genetic Research Foundation Poetry Book
7. DNA Bank, Geriatric Dog, Informative Family, and Open Registry Report
9. The Wheaten Genome and Lifetime Project
12. SCWTCA Contributes to New Research!
13. AKC CHF Hosts 2011 National Parent Club Canine Health Conference
13. CHF & Grant Sponsors — Working Together for a Healthier World for Dogs
14. Comparative Cytogenetics of Cancer — Just How Human Are Our Dogs?
15. “I Gave DNA” Pin!
16. What We Know About the Inheritance of Dilated Cardiomyopathy, Arrhythmogenic Right Ventricular Cardiomyopathy, and Subaortic Stenosis in the Dog
17. Vitamin D and Cancer
17. Researchers Gain Better Understanding of Bone Cancer
19. Managing Canine Arthritis, 09/19/2011
21. September 11 — 10 Years Later for the Search & Rescue Dogs
22. Canine Phenome Project Committee — Annual Report
24. Top Ten Warning Signs Of Cancer In Pet Animals
25. CVM Joins FDA Investigation of Salmonella in dogs, cats
26. FDA Continues to Caution Dog Owners About Chicken Jerky Products
27. SCWTCA Conformation Assessment Program (CAP)
28. Test! Test! Test!
28. Donate to the SCWTCA Health Endowment
28. Donate to the SCWT GRF (Genetic Research Fund)
FROM THE EDITOR . . .

We are making our very last big push to get participants for the NIH 10-Year Study of Soft Coated Wheaten Terriers. We absolutely must reach 500 dogs by the end of 2011! We are extremely pleased to announce that the University of Missouri and the Canine Phenome Project were able to sort through their SCWT samples and find 319 eligible dogs that already have DNA stored with the CPP. Owners of these 319 SCWTs will be contacted by the CPP in a soon-to-be arriving email regarding their additional participation in this NIH project. Please take a precious moment to respond positively to this email.

Thank you to all who have supported research through your donations of DNA and your purchase of our boutique items that support Wheaten health. I hope we can count on your continued support! Your generosity has contributed directly to funding for necropsies, clinics, and more and has been a huge benefit to our research projects.

One year ago, we announced that the AKC Canine Health Foundation had approved a grant for a new research project, under the leadership of Dr. Meryl Littman and Dr. Paula Henthorn at the University of Pennsylvania, which would search for a genetic marker for PLN. The project resulted in exciting developments in the area of genetic testing for the disease. We look forward to additional information as well as a formal announcement on their findings in the next few months.

Many thanks to the SCWTCA Board for supporting our publication and to our readers for their comments and suggestions. As always, kudos to Roxanna for her wonderful photos, graphics, and layout; to Carol for her articles and inspiration; and of course, to Robyn, who makes the newsletter accessible to all!

Happy Holidays and Merry Christmas to our two- and four-legged friends!

And Best Wishes for a Happy, Healthy New Year in 2012!

For the love of the dogs..., 
—Cecily Skinner
FUNDRAISING FOR THE COLONY DOGS IN 2012  
—Carol Carlson, 12/2/11

There are four dogs left in the colony: two male Wheagles (Edestin and Renin) and two Wheatens (Taurine and Threonine). The Wheatens have been on hypoallergenic diet since they were born. Here are the latest reports from Tonya, their caretaker at NC State Veterinary School.

Ed has kidney disease that has progressed over the last couple of months. He has days when he does not eat well, and we struggle to keep weight on him. He is currently undergoing the Hill's z/d and gastrocrom trial. We continue to keep a close eye on him.

Renin just had an ear infection, but other than that, he is doing great!

Taurine seems to be doing well. His only problem is neck pain. He has had several episodes in the past. He is currently on pain medicines and appears to be a lot more comfortable.

Threonine seems to be doing okay. He also has days that he does not eat well. Since his diet is strictly his hypoallergenic diet, we cannot offer other foods. We will continue to monitor his weight closely.

Rather than seeking donations for the entire year, as I have done in other years, I am limiting my request to half a year. Here is the estimate that Dr. Vaden gave me and what we agreed to ask. For the next six months, rather than paying 25%
of Tonya’s salary and fringes, we will be paying 10%. In addition, each dog will cost about $2000 for room and board, daily meds, and extra diagnostic testing that is required due to their advancing age.

The reason for seeking funding for only 6 months at this time is that Dr. Vaden does not expect Ed to live any longer than this because of his deteriorating health.

I will keep you updated on all the dogs’ health.

Thanks to the people who contributed to the Colony in 2011 and each dog’s sponsor, including Mary Lou Lafler, SCWTCA of Tampa Bay, Shari Boyd Carusi, and an anonymous donor. Complete list will be published in the March 2012 issue of Benchmarks.

SUPPORT HEALTH RESEARCH WITH GREAT HOLIDAY GIFTS!
—CECILY SKINNER, HEALTH CHAIR, THE SCWTCA HEALTH COMMITTEE, SCWTCA, INC.

Dear SCWTCA Members and Breeders:

This year has been an exciting year for our club! As you know, in 2012, there will finally be a genetic test for Protein Losing Neropathy (PLN) that has long affected our breed. Together, breeders, owners and researchers have done a tremendous job raising money and providing samples from their dogs. We thank you so much!

In the past year, our Health Fund provided funding for the Colony Dogs, Necropsies and Pathology, and the University of Pennsylvania and a summer student at the University of Pennsylvania. Our balance in the Health Fund in the past 12 months has gone from $20,440.85 to $9,283.04. It is time to replenish!

We have two major fundraisers: our 2012 Calendar and our 2011 Holiday Ornament. We are at 50% of our goal, and we hope that you will consider supporting these fundraisers by either purchasing a calendar or an ornament or sending the link out to your pet owners who might not have heard about them. We have had a huge response from pet owners on these fundraisers!

The ornaments are really wonderful as are the pictures in the calendar! Both make perfect gifts, and don’t forget to order them for yourself, too! While you’re ordering, you may want to order one of the shopping bags to put your gifts in! We just reordered the purple ones and have a new color, red, which should be available soon!

You can see the ornaments, bags, and the calendar on the SCWTCA web site at www.scwtca.org. Just follow the links on the homepage! PayPal is available for all of our items.

Many, many thanks to everyone who has and continues to support our Wheaten health research! You are the best!

Happy Holidays!!
SCWT GENETIC RESEARCH FOUNDATION POETRY BOOK

RONI ANDREWS, FUNDRAISING OFFICER
SOFTWARE COATED WHEATEN TERRIER GENETIC RESEARCH FOUNDATION

Raising funds for the Genetic Research Foundation is always important to our breed. Right now, however, it is essential, since the SWCTGRF, with the Endowment and the SCWTCA, is funding the research to test the recent hypothesis outlined in Dr. Littman’s report. Part of the puzzle we have been trying so hard to solve may well be at our fingertips. However, we can’t do it without your support.

We are working on some exciting events in which you can participate. For now, you can do several things to help our Foundation grow its research funding. If you would like a gift for a Wheaten friend, or for yourself, go to www.scwtgrf.org and order the book, The Irish Gift, a book of Wheaten-themed poems illustrated by Darcie Olsen of Deer Island Creations. All proceeds from this book go directly to the Foundation’s fund for genetic research.

If you would like to give a larger donation to the fund, send us a check. We are a full charitable foundation, so donations are tax-deductible. If you have a litter, do what many of us do: have your puppy buyer include a check to the SCWTGRF as part of the puppy price. If you have a stud dog, have the bitch owner send part of the stud fee as a donation to the Foundation. If you wish to honor a friend, a dog, or remember a person or dog who is no longer with us, make a donation in his or her honor to the Foundation.

Working together we can solve this, we can assist Dr. Littman further her research, we can give our Wheatens a longer, healthier life. Please visit www.scwtgrf.org for more information on our Foundation and its purpose. Thank you.
SCWT-related projects (DNA Bank, Geriatric Dog, Informative Family, and Open Registry) at the University of Pennsylvania (Penn’s) School of Veterinary Medicine are combined herein.

To recap our previous report, in our genome-wide association studies (GWAS), we found a statistical hotspot for association of DNA markers in a specific region of one chromosome in dogs affected with PLN compared to control geriatric Wheatens (not affected with PLN). Genes in this region that are associated with PLN or related disease in humans were studied by meticulous gene sequencing. We found that two related genes, which are very close together in the hotspot region, each have a DNA change that causes an alteration in the proteins they encode. The proteins that the two genes encode are produced by the podocytes (cells at the slit diaphragm), and these proteins have been identified to be important for the structural and functional integrity of the slit diaphragm of the glomerulus of the nephron (the functional unit in the kidney). Our hypothesis is that these DNA changes actually cause a “podocytopathy” and an abnormal permeability at the glomerulus, causing leakage of protein into the urine (and thus, protein-losing nephropathy, PLN). After testing more than 750 DNA samples from other breeds, only 2 Airedale terriers and 1 Bloodhound were found to carry any copies of these DNA variations. One of these dogs (an Airedale) had both copies of each of these variations, and this dog was itself affected and died of PLN.

It's hard to top the exciting June 2011 update, but here goes.

I. SCWT PLN DNA Testing

Before 2011 concludes, we will begin accepting DNA samples for testing for the DNA changes that we have found associated with PLN in Wheatens! Preliminary results in Dr. Henthorn’s laboratory are encouraging for the use of cheek brushes for providing DNA samples, as well as whole blood or tissue, for testing for these PLN-associated DNA variants. “Yes,” I said, “Cheek Brushes!!! That’s so important because it will save owners lots of time and money since they won’t have to go to their veterinarian’s office to have blood samples taken, and they won’t have to send cold blood samples by FedEx overnight with an ice pack inside a styrofoam box, and they won’t have to call me to see when I am available to receive the samples! It will also be much easier to send from other countries samples for testing.” I am delighted, but please understand that we still prefer blood or tissue DNA samples from geriatric dogs and dogs affected with IBD/PLE, Addison’s, renal dysplasia, or other diseases that still require more study by GWAS, because we still need to identify the mutations associated with those diseases.

We are finalizing the submission forms now and will discuss with SCWTCA whether owners should get their cheek brush “kit” from our Lab or from the Club. We are preparing a FAQ sheet to help answer questions about the statistics regarding PLN affection when carrying zero, one, or two copies of these mutations, and how to interpret an individual dog’s test results in breeding decision-making and screening. PLN is not simply inherited, and these DNA variations are not perfectly associated with having the disease. Our data indicate homozygous dogs (those for whom both copies of each gene carry the variations) are at increased risk for developing PLN. A few homozygous “predisposed” animals do not have PLN, and a few geriatric dogs with the normal versions of these genes ARE affected with PLN. We are concerned that if people are over-cautious, they may misinterpret the test results.
results. We do not want to lose carriers that have other excellent qualities, and we do not want to lose diversity of the overall gene pool; or else, other new genetic problems may appear. So, the FAQ sheet will discuss how dogs carrying the PLN-associated variations might still be used carefully in a breeding program.

My wonderful colleagues, Claire Wiley and Paula Henthorn, will attend the SCWTCA Annual Dinner on October 7th. Claire will summarize her award-winning presentation of our findings, much of which were discovered due to her hard work! Paula will discuss the DNA test for the PLN-associated variations. Please give them a standing ovation!

Claire’s poster of this work was presented at Penn’s Phi Zeta Day in March (Claire won first prize!), at the Merial-NIH National Veterinary Scholars Symposium hosted by the University of Florida in August, and at the 5th Tufts’ Canine and Feline Breeding and Genetics Conference in September. The full manuscript for submission to a peer-reviewed journal is in the early draft stage.

II. Open Registry Update

Early October, I will send to Carol Carlson the updated Open Registry (OR) for her per-view. Sarah Paumier, 3rd-year summer veterinary student, helped with this update, which has roughly 80-100 additional dogs listed. I am still waiting for more signed permission forms from owners who were contacted by Sarah late in the summer. The OR, started in 1997, now has roughly 1000 dogs listed with genetic diseases, the most common of which is PLN, but there are many dogs with IBD/PLE, PLE/PLN, Addison’s disease, and renal dysplasia. The OR is still important to help stop rumors about which dog had which disease, to keep track of the numbers of dogs we are seeing with each disease, and to help educate everybody about these problems and the need for screening.

III. Renal Biopsies

There have been no recent reimbursement requests to cover expenses for renal biopsies sent to the Texas Veterinary Renal Pathology Service (TVRPS) for electron microscopy, immunofluorescence, and thin section microscopy analysis. Luckily, we are getting information from the TVRPS anyway, which is very useful. They have shared information about past submissions they have regarding Wheatens with PLN. We will try to contact the owners and see if the dogs are still alive, offer help, and ask for DNA samples when appropriate.

2011 Goals and Status Updates

1. Publish an October revision to the Open Registry. Coming shortly - Draft anticipated early October.

2. Get as much information as possible from the DNA samples we already have, including Informative and Cooperative Families, by SNP chip GWA analysis and gene sequencing. Ongoing

3. Continue giving consultations/advice, but ask for donations until a new fee is instituted for all but Informative Family members. Ongoing - On average 15-25 consultation requests are received each month. September was unusually high with 35. Donations do not keep pace with consultation requests. Only a handful of donations are received each month, just one in September.

4. Replenish the Penn Wheaten fund with annual reimbursement from the SCWTCA Health Fund to cover histopathology costs. Also, reimburse for shipping costs approved on a case-by-case basis for necropsy samples and/or Geriatric DNA samples that the owner cannot afford to cover. Ongoing - Reimbursement through September was received for recent histopathology charges. An invoice is being developed to
reimburse for shipping associated with these samples. The cost probably won’t be too high since we are now asking owners to pay shipping charges. Additional reimbursement requests will be filed when work is complete.

5. Facilitate SCWTCA Endowment reimbursement for kidney biopsies conducted pursuant to AKC CHF grant #01485. Ongoing - When subjects are available, $500 will be paid by the grant, $500 will be paid by WSAVA/TVRPS (provided the dog is a candidate), and remaining out-of-pocket veterinary expenses incurred by the owner will be reimbursed by SCWTCA Endowment.

6. Study a second set of samples, mostly geriatric dogs and PLE-affected dogs, for genome-wide association by SNP chip analysis. Ongoing - 2nd set of SNP chips for the GWAS of PLE has been submitted for processing.

7. Identify appropriate outlets to disseminate findings, and submit a manuscript for publication in a peer-reviewed journal. Ongoing - Journals have been selected, manuscript guidelines reviewed, and a manuscript is in progress.

8. Prepare a Q&A manuscript for distribution in Wheaten HealthNews and Benchmarks to address the significance and possible application of our findings. Ongoing

9. Refine the submission process and develop a form for the PLN-Associated Variant Genes DNA Test. New

10. Invite sample submission for PLN-Associated Variant Genes DNA Test. New - Anticipated before year’s end.

11. Deliver presentation during SCWTCA Annual Meeting. New

12. Encourage Claire Wiley to apply for the SCWTCA Endowment Student Researcher Professional Development Award. New

13. Increase the number of geriatric normal DNA samples in Penn’s DNA Bank. New - 5-10 samples were received as a result of a recent push to increase cases. More are needed. A handful of additional inquiries were answered regarding candidacy.

THE WHEATEN GENOME AND LIFETIME PROJECT

The Wheaten Health Initiative would like to thank Helen Moreland, Carol Carlson, and the Soft Coated Wheaten Terrier Club of America (SCWTCA), for their cooperation and encouragement in allowing WHI to disseminate information about their project.

The following is a summary of the announcement in October 2011 by Helen J Moreland:

“I am coordinating the SCWT Lifetime Study offered by SCWTCA in collaboration with the National Institutes of Health (NIH), National Human Genome Research Institute. We have a chance for the NIH to look at all the health diseases of the SCWT, by DNA mapping the genome and identifying disease markers.

To do this we need samples of blood from dogs born between 1 January 2006 and 31 December 2010.

This is a big deal — the study is worth several hundred thousand to a million dollars and is being offered free to SCWT owners by the NIH. The NIH would like to study the SCWT genome. The Boxer’s genome was the first mapped. Basically, we are going to lose this grant by the end of December if more specimens are not submitted.

It’s in your hands now to decide whether you want to support research that will help our dogs now and future generations.”
The National Institutes Of Health (USA)
Study Description

The SCWT Lifetime Health Study will follow 500 Wheatens for 10 years to determine the diseases prevalent in the breed and find genes related to those diseases. The study will be conducted through the NIH. Dr. Heidi Parker, PHD, Ostrander Canine Genomics Laboratory, National Human Genome Research Institute of NIH is the researcher.

The proposal states, “Our aim is to use a combination of blood samples, physical measurements and health information to examine a variety of health issues important to the breed. This information will be used to find genes important in disease susceptibility and progress, as well as to understand the genetic basis of canine body shape and size. We will use the health information provided from these dogs to determine the incidence of disease within the breed and calculate the inheritance of each. All genetic, identification, and health information will remain confidential.”

For more information follow this link to the NIH (USA) website (the Wheaten project is detailed at the bottom of the left margin of this page).

Wheatens Needed For The Study:

Must be born between January 1, 2006 and December 31, 2010 and can be from any country, as long as purebred with a pedigree (i.e., parentage is known and authorized by the country’s official Kennel Club).

Before you proceed, please be sure that you can commit to annual health surveys (can be completed online) for 10 years and provide copies of veterinary and laboratory reports for diagnosed health issues.

If you are a breeder, please forward this information to your pet owners who might be interested in participating.

REQUIREMENTS FOR PARTICIPATION:

If you decide to participate in this project, you should email: dog_genome@mail.nih.gov to reach Gretchen M. Carpintero-Ramirez, Lab Samples Manager, to get the Veterinary Kit(s). Don’t forget to state how many dogs will participate. The Kit will be dispatched as soon as possible, but Gretchen advises that: “Whenever the Kits get sent out, we send an email letting people know that these are on the way, along with further instructions on how to complete the Survey online and other must-do tips for our study. Sometimes, the turnaround time is quicker than other times due to the number of requests. We are trying to do our best to send the Kits out to everyone as fast as possible.”

1. Your Kit will include:
   ▫ A Blood Consent Form.
   ▫ A pair of phials for collecting blood at your veterinarian's practice.
   ▫ Instructions for handling the blood.
   ▫ An introductory letter relating to the study.
   ▫ A hard copy of the Introductory Health Survey. The researchers prefer the Survey to be completed online, and the password will be provided as part of the Kit. This is an important part of the project; but, if you have no internet access, feel free to use the hard copy of the Survey.
2. Make an appointment with your vet and take the Kit(s) with you. The cost to owners will vary according to veterinary charges, so do make sure that your vet is aware of the project. Also, you will need postage to return the annual survey unless this is completed online.

3. Return the Samples and Forms using the addressed label(s) provided; these can be easily sent by airmail. The collection Kit comes in a small mailer tube that protects the blood phials and can be mailed at room temperature without cold packs.

   The Blood Consent Form must be included inside the mailer!

All of the information the NIH collect is kept confidential, and individual dogs will never be identified. Thank you, in advance, for your time and effort. Every sample is precious and provides researchers with new and unique genetic information. The work would not be possible without the participation of responsive owners like yourselves, and the NIH thank you for considering our request.

**Message from the Steering Group of WHI:**

The WHI can supply a 3-generation pedigree, if required. Please email for this and with any other queries you may have specific to UK participating dogs.

©Wheaten Health Initiative 2009-11, revised: November 2011

---

**SHARI BOYD CARUSI'S WHEATEN PET GROOMING DVD**

**In Honor of the Colony Dogs**

Do you wish your Wheaten looked like a Wheaten when returning from the groomer? Would you like to learn how to groom your own Wheaten? Want to help make sure your SCWT pups look like Weathens in their forever homes?

If you answer “Yes!” to any of these questions, then this is the DVD that you can follow along to learn how to trim your own Wheaten or give to your groomer or your SCWT puppies' owners, Shari Boyd Carusi is a longtime breeder and professional handler of top-winning Wheatens. Her DVD will show you how to put a great pet trim on your Wheaten.

The DVD is $25 per copy plus $3.99 shipping per DVD in the US. Order 5 DVDs shipped to the same address for only $100 plus $5.99 in the US. Checks must be made payable to NCVMF. Because 100% of the proceeds from the DVD sales is donated to the on-going support of the Colony Dogs.

Number of DVDs: _______ + $ _______ (shipping inside US) = $ __________ (check amount)

Name: ________________________________________________________________

Address: __________________________________________________________________

City: ___________________________ State: ______ Zip: _______________

Phone: ___________________________ Email: __________________________

Mail this form to: Holly Craig, 2517 Kristen Lane, Gilbertsville, PA 19525,

For shipping costs outside of the US, please email hollycraig@me.com.

**Thank you for supporting the Colony Dogs!**

www.colonydogs.org

[All of the proceeds from the DVD support the Colony Dogs. The DVD has raised over $5,000 since it started selling in January, 2008.]
SCWTCA CONTRIBUTES TO NEW RESEARCH!

01658: Urinary Protein and Gene Expression Characterization and Comparison with Renal Biopsy Findings and Clinical Data in Dogs with Proteinuric Renal Diseases

Principal Investigator: Dr. Mary B Nabity, DVM, PhD  
Institution: Texas A&M University  

Total Grant Amount: $80,000.00  
Grant Period: 1/1/2012 - 12/31/2014  

SCWTCA Sponsorship: $5,000

Project Abstract:

Primary glomerular diseases are very common causes of chronic kidney disease (CKD), which is a significant source of illness and death in dogs, affecting up to 15% of elderly individuals. Early treatment generally prolongs the lives of dogs with CKD, but timely detection can be difficult and the outcome for each patient based on current, early non-invasive testing is unpredictable. While glomeruli are often the initiating site of kidney disease in dogs, collateral damage to the tubulointerstitial (TI) is important in determining disease severity and progression because of the extensive interplay between these 2 kidney compartments. Evaluations of urinary proteins have enhanced the early identification of TI and glomerular damage and demonstrated prognostic utility in people with CKD. In addition, particular urinary cells (called podocytes) that wash down from damaged glomeruli have been evaluated, with increased podocyte detection indicating greater severity of glomerular damage and thus poorer prognosis for glomerular disease in people.

The purpose of this study is to evaluate promising indicators of kidney injury that might improve detection and/or assessment of progression or prognosis in dogs with CKD. We plan to use urine samples from dogs with various kidney diseases to measure: 1) urinary proteins indicating tubular and glomerular damage, and 2) gene expression profiles indicating podocyte loss. Results will be correlated with conventional measures of tubular and glomerular function, kidney biopsy findings, and information regarding disease outcome to determine the utility of the novel tests to non-invasively detect and accurately assess kidney damage in dogs.

The Oak Grants are listed at http://www.akcchf.org/research/funded-research/2012-oak-grants.html and include (near the bottom) this one sponsored by the national SCWT club in the United States.

The AKC Canine Health Foundation is proud to announce that the 2012 OAK grant cycle opens on January 5, 2012. Preproposals may be submitted through March 1, 2012. (http://www.akcchf.org/research/application-process/oak-grant-program/pre-proposal-instructions.html)
AKC CHF HOSTS 2011 NATIONAL PARENT CLUB CANINE HEALTH CONFERENCE

—Cecily Skinner, Health Chair, SCWTCA, Inc.

AKC CHF held its 2011 Parent Club Canine Health Conference in St. Louis, MO from August 12-14. The event was sponsored by Nestlé Purina PetCare Company and featured presentations by prominent researchers in various areas of canine health.

I was invited to attend the conference by the SCWTCA Board and was thrilled to be able to hear so many wonderful speakers! During the conference I met Samantha Wright who is the new Program Manager with CHF. Samantha has formed a Yahoo Group for Health Chairs/Liaisons for all National Breed Clubs. Publications/articles from the various clubs are shared within the group and made available for use by other breed clubs.

Overviews of several of the presentations from the Conference are in this issue, following my introduction; and we will feature developments in many of the research projects in upcoming editions of “Wheaten HealthNews.”

CHF & GRANT SPONSORS — WORKING TOGETHER FOR A HEALTHIER WORLD FOR DOGS

—Christine Haakenson, PhD, AKC CHF Chief Scientific Officer

The relationship between the AKC Canine Health Foundation and Parent Clubs, breed health foundations, and other sponsor organizations is very important and is part of the Foundation’s distinction. They all share the goal to improve the health and lives of dogs through funding scientific research. The focus of this presentation was on this relationship; and it provided information about available resources and tools for organizations and their designated CHF Health Liaison. The CHF Health Liaison is a very important person in the Foundation’s relationship with breed organizations, and they want to ensure that the Liaisons have what they need to perform this role. This person is the breed organization member who functions as the main contact for communication with the CHF regarding the health and wellbeing of their breed, research projects, and grant sponsorships. The CHF Liaison is also critical in communicating with their club about research discoveries, new programs, and canine health educational resources.

Dr. Christine Haakenson* described: (1) the grant sponsorship process; (2) what the Health Liaison should expect from the Foundation; (3) the tools and resources available to them, including a soon-to-be-released electronic quarterly newsletter for Health Liaisons; and (4) where to find information on the CHF website. They are also working on a new Health Liaison Handbook to be released in the next few months.

Dr. Haakenson listed the benefits to the breed clubs of working through the AKC CHF: (1) rigorous research review process, (2) identification of researchers for potential grants, (3) grant management, (4) project monitoring and sharing of non-confidential information, (5)
sponsorship collaboration so we get more value for our money, (6) receipt of progress summaries to share with our breed clubs, and (7) sponsorship acknowledgement.

The benefits to the AKC CHF are: (1) identification of health concerns for each breed club, (2) participants in the research studies, (3) sponsorship collaboration which gives more value for the money invested, (4) sharing of ideas, (5) passion and dedication of the breed clubs and its members, and (6) working together to reach goals.

The CHF website offers a wealth of knowledge and is constantly being updated with the latest grants, research findings, and news and events, including ‘Success Story’ articles that highlight scientific discoveries and the latest podcasts for you to listen to your favorite researcher. The Liaison can always contact CHF at the Foundation for questions regarding administration of funds, identification of researchers, and sponsorship opportunities. They are also able to pull reports regarding Donor Advised Fund (DAF) information, grant sponsorship history, grants seeking sponsorship, grants specific to a breed and/or disease, and more! They want to provide information and resources that we need to be successful in building our breed’s health programs.

Dr. Haakenson introduced Samantha Wright who has recently joined the AKC Canine Health Foundation team as the new Program Manager. Ms Wright is excited about this new opportunity and is looking forward to increasing her interactions with the Fancy through dog club communications, health liaison relationships, presentations, and dog events.


**COMPARATIVE CYTOGENETICS OF CANCER — JUST HOW HUMAN ARE OUR DOGS?**

—MATTHEW BREEN, PhD, CBiol, FSB
NORTH CAROLINA STATE UNIVERSITY, COLLEGE OF VETERINARY MEDICINE, PROFESSOR OF GENOMICS

Dr. Matthew Breen completed his PhD in cytogenetics in 1990 and, then, spent two years as a Post Doc in Molecular Genetics at the UK Medical Research Council's Human Genetics Unit in Edinburgh where he developed new techniques as part of the human genome project. Dr. Breen then spent four years working for the research arm of the Australian Thoroughbred industry, returning to the UK in 1996 where his laboratory developed molecular cytogenetics reagents, resources, and techniques for application to canine genome mapping, comparative cytogenetics, and cancer studies. In 2002, Dr. Breen relocated his laboratory to NCSU's College of Veterinary Medicine as part of its Genomics initiative. Since then, his research interests have continued to focus on the genomics, genome mapping, and the comparative aspects of canine cancer. He is leader of the Clinical Genomics Core of the Center for Comparative Medicine and Translational Research and co-Director of the Clinical Studies Core. Dr. Breen currently has a number of active grants from the AKC CHF that are focused on the molecular cytogenetic evaluation of canine tumors.

There are [approximately] 80 million dogs residing in 40 million households. Cancer is the leading cause of death in dogs, and the presentation is similar to humans; they share the same environment, and the causes are probably comparable. Humans have 1.53 million cancers per year, [and] dogs have 4.2 million per year ([approximately] 10-fold higher incidence than humans). The most common cancers in dogs are: (1) lymphoma (20 times higher

(continued on next page)
(incidence) than humans!), (2) mast cell tumors, (3) osteosarcoma, (4) melanoma, (5) leukemia, and (6) soft tissue. All of the genes in dogs are likely also in humans, but arranged differently. Researchers can use the dog genome to identify cancer genes hidden in the human genome. They can use the genes in dogs to narrow down the number of regions to look for genes in humans.

The application of genomics to canine biomedical research has resulted in significant advances as we strive to enhance the health and welfare of our companions. Over the past several years, we have recruited tumor tissues and blood samples from hundreds of dogs presenting with a variety of cancers, as well as from their family members.

During the same period we generated a series of sophisticated molecular cytogenetic reagents and resources that complete the genomics ‘toolbox’. Collectively, these tools provide a robust means to interrogate tumor specimens for organizational changes to the genome that lead to identification of genome regions and genes associated with cancer. We have demonstrated the presence of numerous cytogenetic signatures associated with canine cancer subtypes and are using these to offer a more sophisticated means of tumor diagnosis.

In addition, we have begun to define genomic lesions that correlate with prognosis. For example, in our CHF- and MAF-funded work with canine lymphoma, we have developed a cytogenetic test that allows us to predict the duration of first remission of dogs diagnosed with lymphoma when treated with doxorubicin-based chemotherapy. This test has been licensed to a global company and will be launched in 2012. Some of the revenues from this test will flow back to the CHF and MAF.

We have demonstrated previously that the chromosome changes we continue to observe in several canine cancers are shared with the corresponding cancers in humans. These data provide strong evidence for a shared pathogenetic origin of several cancers affecting both humans and dogs. Analysis of our data has revealed that we are well on the way towards development of more sophisticated molecular subclassifications of canine (and maybe even human) cancers, a process that should facilitate the emergence of improved and tailored therapies.

Comparing the molecular cytogenetics of recurrent changes in human and canine cancers is allowing us to refine key signatures to a subset that are shared, thus reducing the size of regions of interest. By considering the canine and human genomes in such a comparative context, we have identified that the genomic complexity of cancers may be less than human studies alone have suggested. Overall these studies are advancing rapidly and indicate that the keys to unlocking some of nature’s most intriguing puzzles about cancers may be found in the genome of the dog. Finding such keys in the dog will also lead to improved understanding of human cancers. For every penny spent on dog research, a dollar is saved in human research. For 15,000 years the dog has been man’s best friend; in the 21st Century, it is becoming increasingly evident that the dog is also man’s best biomedical friend.

“I GAVE DNA” PIN!

—Carol Carlson, kccarlson@comcast.net

If your dog donated DNA to NIH, CPP or the geriatric dog study and you did not receive a pin, send me your name and mailing address and I will send you a pin.
WHAT WE KNOW ABOUT THE INHERITANCE OF DILATED CARDIOMYOPATHY, ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY, AND SUBAORTIC STENOSIS IN THE DOG

—KATHRYN M. MEURS, DVM, PhD
NCSU COLLEGE OF VETERINARY MEDICINE, PROFESSOR, ASSOCIATE DEAN OF RESEARCH AND GRADUATE STUDIES

Dr. Meurs is a Professor and the Associate Dean of Research and Graduate Studies at North Carolina State University College of Veterinary. She completed her DVM in 1990 at the University of Wisconsin – Madison and completed a small animal internship at North Carolina State University in 1991. She completed a Cardiology residency at Texas A&M University and is board-certified from the American College of Veterinary Internal Medicine (Cardiology).

Cardiomyopathy is a primary muscle disease that has been shown to be inherited in the dog as well as in several other species. There are two common forms: dilated and arrhythmogenic.

Dilated Cardiomyopathy is characterized by heart muscle dysfunction and enlargement of the heart chamber, particularly the left. This generally first occurs at five or more years of age. Affected dogs may die suddenly or develop congestive heart failure as characterized by coughing and shortness of breath. There is no cure. The disease looks the same in all breeds on echocardiogram, but is from different causes. It has been known to be inherited in the Newfoundland, Irish Wolfhound, Scottish Deerhound, Great Dane and Doberman Pinscher, among other breeds. In North America, the most commonly reporting breed is the Doberman Pinscher, and the largest number of studies have been done on this breed. In the Doberman Pinscher, the disease is inherited in an autosomal dominant mode, and — at least in some families — is associated with a mutation in a gene involved in the energy metabolism of the heart. The cause of the disease in the other breeds is not known. In human beings, there are now 20 different genes that cause the development of this disease. It is likely that there is more than one cause in the dog — and, even in the Doberman Pinscher, as well. An important aspect of all cardiomyopathies is that they are affected by variable penetrance, meaning that not all dogs who have the genetic cause will show the same severity of disease: some will show severe clinical signs, while others will remain free of symptoms their whole life. In Great Danes, it is carried on the X chromosome; and females can be a silent carrier of the disease.

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) is a heart muscle disease characterized by cardiac arrhythmias that result in fainting or sudden death. It is most commonly observed in the Boxer, but has been observed in English Bulldogs as well. A deletion mutation has been identified in many affected Boxers. The mutation prevents the cells from holding together properly, and this leads to cardiac arrhythmias and sudden death. As in other cardiomyopathies, variable penetrance exists, meaning that not all dogs who have the genetic cause will show the same severity of disease: some will show severe clinical signs, while others will remain free of symptoms their whole life. In Great Danes, it is carried on the X chromosome; and females can be a silent carrier of the disease.

Subvalvular Aortic Stenosis is the second most common heart birth defects in dogs. It is known to be inherited in the Newfoundland, Rottweiler, and Golden Retriever. Affected dogs can live comfortably with the mild form of the disease, but severely affected dogs have an average life span of 2 years. The speed of the blood flow shows the severity of the disease. This disease does not exist in humans. We have some preliminary data that suggests that the disease may have a similar genetic cause in the Rottweiler and Golden Retriever (on chromosome 21), but each breed may have additional genetic modifiers as well.

http://www.merckvetmanual.com/mvm/bc/ciran03.htm
**VITAMIN D AND CANCER**

---Rondo P. Middleton, PhD  
Nestlé Purina Research, Senior Research Scientist Pet Care Basic Research

Dr. Rondo P. Middleton completed his PhD in biochemistry in 1999 at the University of California, Riverside where he studied 1,25(OH)2 vitamin D3's ability to regulate gene expression at the transcriptional, translational, and post-translational levels. He was hired by Ralston Purina as a research scientist in 1998. Dr. Middleton is currently a senior research scientist at Nestlé Purina Research Center where his research interests include osteoarthritis, cancer, aging, and weight management, among others. Most of his work focuses on the molecular aspects (i.e., gene expression, metabonomics, systems biology) supporting these health and disease areas.

Since its discovery as a molecule necessary for proper calcium and phosphate metabolism, vitamin D — and, more specifically, the hormonally active form, 1,25-dihydroxyvitamin D3 (calcitriol, \( \text{1,25-dihydroxycholecalciferol} \)), has become known as an important player in many other biological systems. These areas include cancer, heart disease, autoimmune diseases, and skin disorders, among others. Physiological responses to calcitriol are mediated through the vitamin D receptor (VDR). The VDR elicits its actions by binding to specific regions on DNA and promotes or inhibits the expression of vitamin D-responsive genes. It was the discovery that the VDR was present in many tissues not involved in calcium homeostasis that led to the finding of the pleotropic actions of calcitriol. Research has shown that higher levels of vitamin D in the blood are associated with reduced incidence and recurrence and greater survival in various types of cancers. Dogs and cats do not produce a lot of the compound, so they do not get vitamin D from sunlight; they must get it from their diet. Mortality rates are higher in the northeast vs. the southwest and may be from the lower sun in the northeast. When there are low levels of D3, there is an increase in cancers. The expression of many genes encoding for enzymes involved in the metabolism of vitamin D — as well as other proteins regulated by vitamin D — are altered in cancer. These vitamin D-responsive genes and their respective proteins affect many processes involved in cancer.

These include anti-proliferation, pro-differentiation, and pro-apoptotic effects. We have previously shown that calcitriol and some associated vitamin D analogs can decrease the proliferation and induce differentiation in canine cancer SCC 2/88 cells in vitro. In order to further understand the molecular mechanisms associated with calcitriol’s antiproliferation and pro-differentiation effects, we recently investigated the gene expression changes involved in canine transitional cell carcinoma cells in response to calcitriol and some of its associated analogs. Additionally, due to the involvement of reactive oxygen species (oxidative stress) in cancer, we have investigated the role of antioxidant enzymes in these canine cancer cells. Antioxidant enzymes appear to interact with the identified differentially expressed genes and show beneficial modulation of key cancer processes in our study.

---

**RESEARCHERS GAIN BETTER UNDERSTANDING OF BONE CANCER**

08/02/2011

*Article is reprinted with permission from the University of Minnesota.*

A University of Minnesota discovery might help bone cancer patients fight their disease more effectively, according to new research published in the September issue of *Bone.*

Bone cancer typically affects children; the course and aggressiveness of the disease can vary from patient to patient and is very difficult to predict. Some patients respond remarkably well to conventional therapies. Their disease shows less aggressive behavior, and they
can survive for decades without recurrence. Others respond poorly to treatment, or their disease comes back rapidly. Often, these patients survive less than five years.

Recently, a team led by Dr. Jaime Modiano, a College of Veterinary Medicine and Masonic Cancer Center expert in comparative medicine, (http://www.akcchf.org/research/researcher-profiles/Dr-Jaime-Modiano.html) discovered a gene pattern that distinguishes the more severe form of bone cancer from a less aggressive form in dogs. Dogs are the only other species besides humans that develops this disease spontaneously with any frequency.

In fact, dogs are much more likely to develop bone cancer than humans, but according to Modiano — who specializes in the relationship between animal and human disease — human and canine forms of bone cancer are very similar, and the gene pattern is an exact match. The discovery of this key differentiating signature might be beneficial in the treatment planning of human bone cancer patients.

“Our findings pave the way to develop laboratory tests that can predict the behavior of this tumor in dogs and children at the time of diagnosis,” said Modiano. “This allows us to tailor individualized therapy to meet the patient’s needs.”

The downstream impact of the findings

University of Minnesota researchers hope to use their findings to develop practical and useful lab tests for humans and for companion animals that will help clinical care providers determine the type of cancer a patient faces and how aggressive that cancer might be.

Then, depending on which type of cancer a patient has, clinicians could adjust interventions and treatment plans accordingly.

“Patients with less aggressive disease could be treated conservatively, reducing the side effects and the risks associated with treatment, while patients with more aggressive disease could be treated with more intense therapy,” said Modiano.

The study was funded by the National Cancer Institute, the AKC Canine Health Foundation, and the Kate Koogler Canine Cancer Fund.

Related Grants
01503-A: Rational Development of Targeted Therapy — Aurora Kinase Inhibition in Osteosarcoma  
00947B: Heritable and Sporadic Genetic Lesions in Canine Osteosarcoma

Related Articles
Canine Cancer Updates Presented at National Parent Club Canine Health Conference (09/14/2011)  
*U of M researchers look to dogs to better understand intricacies of bone cancer, July 28, 2011  
http://www.health.umn.edu/media/releases/bone-cancer/index.htm

The College of Veterinary Medicine improves the health and well-being of animals and people by providing high-quality veterinary training, conducting leading-edge research, and delivering innovative veterinary services.

Masonic Cancer Center, University of Minnesota is part of the University’s Academic Health Center. It is designated by the National Cancer Institute as a comprehensive cancer center for cancer research, treatment, and education. For more information, call 612-624-2620 or visit www.cancer.umn.edu.

**ScienceDirect — Bone, Volume 49, Issue 3, Pages 315-590 (September 2011)  
http://www.sciencedirect.com/science/journal/87563282/49/3

MANAGING CANINE ARTHRITIS, 09/19/2011

If your dog experiences difficulty getting up, tires easily or seems stiff, arthritis may be the culprit. The most common type of canine arthritis is degenerative joint disease, or osteoarthritis, affecting one out of five adult dogs in the United States, the Arthritis Foundation recently reported.

Osteoarthritis occurs when the cartilage protecting the bones of the joint is destroyed. The joint loses its cushion, causing friction between bones, leading to pain and decreased mobility in affected joints. Inflammation of the cartilage can also stimulate bony growths (spurs) to form around the joints. Since cartilage has no nerve supply, damage can progress with no outward symptoms until the joint is severely damaged and the lubricating fluid has lost its ability to protect the bone surfaces. Although any joint in a dog’s body can be affected by arthritis, the most commonly affected joints are the hips, elbows, lower back, knees, and wrists.

The other less common type of arthritis affecting dogs is inflammatory joint disease, usually caused by an infection, such as bacterial or fungal infection, tick-borne disease, and Rocky Mountain spotted fever. This type of arthritis can also be caused by an underlying defect in your dog’s immune system, which may be hereditary.

Factors contributing to a dog developing arthritis include aging, congenital joint disorders like hip dysplasia, osteochondrosis, elbow dysplasia, old injuries, repeated trauma to joints, activity levels in working and athletic dogs placing increased stress on joints, obesity, and metabolic diseases such as diabetes and Cushing’s disease.

Arthritis symptoms include stiffness, lameness, or limping after rest; appetite loss or unusual weight gain; inactivity and sleeping more; reluctance to walk, run or climb stairs; unusual urinating in the house; and irritability and other behavioral changes. A veterinarian can diagnose arthritis based on your dog’s age, medical history, and a physical exam. X-rays of the joints might be necessary to determine severity of disease.

Non-medical approaches to minimize arthritic aches and pains include:

- Weight control. If your dog is overweight, this puts added stresses on joints, causing greater joint damage and more severe arthritis. Helping your dog lose weight will help minimize further joint damage. A recent collaborative study between the Universities of Glasgow and Utrecht found that weight loss among obese dogs with osteoarthritis dramatically improved lameness and mobility.

(continued on next page)
• Food. The right mix of dietary fatty acids can do more than improve your dog’s skin and coat. Research shows that eicosapentaenoic acid (EPA), an omega-3 fatty acid, can help reduce inflammation, help limit damage to cartilage and reduce the symptoms of arthritis in dogs. Ask your veterinarian for foods that provide high levels of EPA.
• Exercise. Light to moderate exercise helps keep stiff joints supple and mobile. The exact exercise requirements depend on the individual dog, with 15-20 minutes of exercise twice daily often recommended rather than one long, 40-minute walk. Ideal [exercise] is swimming, a low-impact activity that improves muscle mass without overstressing joints.
• Animal physical rehabilitation. Most academic centers and many large private practices have certified rehabilitators today. Rehabilitation therapy can include underwater treadmills, ultrasound therapy, and electric stimulation. Like techniques used to help humans with arthritis, canine physical therapy utilizes applications of cold and heat, massage, stretching, and range-of-motion exercises to maintain joint health and muscle strength. Rehabilitation can relieve pain and promote cartilage, tendon, and ligament health.
• Natural over-the-counter treatments. Pills or food containing glucosamine and chondroitin sulfate or Omega fatty acids have shown to ease arthritis symptoms in dogs.
• Acupuncture and massage. Although controlled clinical studies are lacking, there are many anecdotal reports on the use of acupuncture to help relieve pain from hip dysplasia and degenerative joint disease in dogs. You can also gently massage your dog’s painful joints to help restore blood flow.

Medically managing canine arthritis is aimed at controlling pain, increasing mobility, slowing down joint degeneration and encouraging cartilage repair. Options include:
• Non-Steroidal Anti-Inflammatory Drugs. NSAIDs. Aspirin and many other modern and prescription medications like Rimadyl reduce pain and inflammation. Because of the side-effects associated with the use of anti-inflammatory drugs, many vets will choose to run a blood test to ensure that the liver and kidneys are in working order before initiating this treatment.
• Glucocorticoids (commonly known as steroids or cortisone). Given as tablets or injections, these drugs have a higher anti-inflammatory effect than NSAIDs, but long-term use may cause more obvious and serious side effects.
• Chondroprotectants. Helping protect cartilage as it attempts to repair itself, these drugs are increasingly popular in treating degenerative joint disease. This category includes the FDA-approved Adequan for management of degenerative joint disease in dogs, which works by inhibiting enzymes that contribute to cartilage destruction. Administered by intramuscular injection, studies show when puppies diagnosed with hip dysplasia were given Adequan before arthritic changes occurred, their radiographs showed significant improvement, and development of degenerative joint disease was delayed.
• Surgery. If your dog’s joints become severely damaged or if the pain is intense, your veterinarian may recommend surgery to reduce pain and improve movement and function. Among the different kinds of procedures for degenerative arthritis is arthroscopic surgery, which involves making small incisions through which the surgeon can clean cartilage debris from the joint. Other surgeries are aimed at repairing bone deformity, fusing joints, or rebuilding part of a joint. Your dog can also undergo an operation to replace a damaged joint with an artificial joint.
Preventing or delaying arthritis later in life can begin in puppyhood with these strategies:

• If you're buying a purebred puppy, choose a reliable breeder who should have X-rays taken of hips and elbows to prevent dogs with poor joint conformation from breeding.

• Don't let your puppy eat too much or over-exercise. Providing a wholesome diet with added calcium and omega-3 might also help delay or prevent arthritis.

• Providing a comfortable sleeping space for your puppy will help prevent lying in awkward positions and relieve unnecessary pressure on joints.

Related Articles

• Dog Orthopedic Basics (10/24/2011)
• An Improved Understanding of Canine Paw Anatomy May Help Get Injured Dogs Back On Their Feet (12/01/2010)

SEPTEMBER 11 — 10 YEARS LATER FOR THE SEARCH & RESCUE DOGS

Dr. Otto, a board-certified emergency and critical care veterinarian, is currently a tenured associate professor of Critical Care at the University of Pennsylvania, School of Veterinary Medicine. She graduated from the Ohio State University, completed a rotating internship at the University of Pennsylvania and a residency in internal medicine and PhD in veterinary physiology at the University of Georgia. Dr. Otto has also been involved in disaster medicine as a member of the Pennsylvania Urban Search and Rescue Task Force 1 between 1994 and 2010 (including deployments to Hurricane Floyd and 9/11), and the Veterinary Medical Assistance Team-2 since 1999 (deploying to Hurricane Katrina). She has been monitoring the health and behavior of Urban Search and Rescue canines since October of 2001, through an AKC CHF funded grant (now in its third renewal). She has organized the PennVet Working Dog Conference in 2010, and the upcoming conference in Sept 2011 and serves as the co-chair of the 10-year anniversary 9/11 Tribute to the Search Dogs and Veterinarians. She was named Pennsylvania’s 2002 “Veterinarian of the Year” and received an Alumni Recognition Award in 2006 and the OSU Distinguished Alumnus Award in 2008 from the Ohio State University.

September 11, 2001 was an unprecedented day in the history of the United States. In response to the terrorist attacks in New York, Washington DC and the downed plane in Pennsylvania, hundreds of search and rescue and other canine teams were deployed. During the deployments in New York, both at Ground Zero and at the Staten Island Landfill, and in Washington DC at the Pentagon, the health and well-being of the dogs was monitored. Remarkably, the dogs coped with the adverse conditions with minimal morbidity. The dogs wore no protective gear and their medium age was five years. There were 300 total dogs representing eleven breeds; and the top three breeds represented were: 31 German Shepherd Dogs, 28 Labrador Retrievers, 12 Golden Retrievers. The most commonly reported problems reported by handlers were cuts and scrapes, most of which were minor. Only four dogs required stitches. Problems related to the intensive work included fatigue, weight loss, and dehydration. Interestingly enough, respiratory problems were rare.

The presentation opened with a video of the September 11th tragedy, and the entire room of almost 300 people was completely silent while the video was on. Please feel free to share these findings with your fellow fanciers and colleagues who were unable to join us. The Search & Rescue Dog 10th Anniversary Tribute video shown at the conference is available at: http://www.youtube.com/watch?v=Fcss_rJ4do.
**Highlights of Research Findings**

- Both clinical reports and X-ray findings show minimal lung abnormalities. There were only 8 dogs with mild signs of respiratory distress. In fact, there have been no systematic conditions that have been identified in deployed search and rescue dogs that did not also occur in control (non-deployed) search and rescue dogs. It was interesting to note that dogs do not get asthma. This is in stark contrast to the findings in the human responders suggesting important differences between the humans and dogs. Although not associated with clinical disease, the review of the first 5 years of chest x-rays identified more heart abnormalities identified in the deployed dogs. Surprisingly, there was minimal lung pathology in both groups both on x-rays and at post mortem examination.

- The average age at the time of death of the 75/95 deceased deployed dogs was 12.5 years and of the 35/55 deceased control dogs was 11.8 years.

- Approximately 40% of both groups succumbed to cancer although there was no statistical difference in incidence of cancer. Both groups had an equal incidence of hemangiosarcoma and we are continuing to monitor for differences in incidence of other cancer types.

- Handlers that suffered the loss of their canine partner within 3 years of the 9/11 response had a higher incidence of PTSD, demonstrating the importance of dogs to human health.

There is currently a critical shortage of detection dogs. The legacy of 9/11 has been an increased awareness of the important role that these dogs play and the need for continued research in behavior, genetics, and sports medicine to enhance their capacity and safety. To that end, the PennVet Working Dog Center has been established at the University of Pennsylvania.

**CANINE PHENOME PROJECT COMMITTEE — ANNUAL REPORT**

**September 29, 2011 (Revised October 20, 2011)**

**Elaine Azerolo, Committee Chair**

**Kathy Drobnak, Operations Coordinator**

**Lee Martin, Communications Coordinator**

**Committee Work Summary, October 2010 – September 2011**

The CPP Committee worked to educate members and other Wheaten owners about the Wheaten DNA Bank at the Canine Phenome Project (CPP) and about related research projects. It also facilitated collection of DNA samples and data.

Educational efforts included preparing two articles for use in *Benchmarks* and *Wheaten HealthNews*. Inquiries and requests for assistance from individual owners were addressed. Liz Hansen, breed club liaison for Dr. Gary Johnson’s work at The Animal Molecular Genetics Laboratory at the University of Missouri, provided information and updates.

Reports were provided to the Board prior to each meeting. Policy for the DNA Health Initiative Committee was summarized at the request of the Board. That committee was subsequently replaced by the Canine Phenome Project (CPP) Committee and the National Institutes of Health (NIH) Committee.

Detailed instructions and forms for organizing and conducting a DNA (blood) collection clinic were updated and provided to Helen Moreland, chair of the NIH Committee. About 40 new samples were sent to the CPP from clinics in 2011.
The committee thanks Robyn Alexander, Molly O’Connell, Cecily Skinner, and Roxanna Springer for their assistance in publishing information. The committee also thanks the SCWTCA Endowment, Inc. for continuing to fund one-half the DNA processing fee for each sample submitted to the Canine Phenome Project and for funding the 2011 clinics.

**Status of Projects Endorsed by SCWTCA**

**Wheaten DNA Bank** — The Wheaten DNA bank at the Canine Phenome Project, University of Missouri, includes over 1050 samples. General health surveys have been completed for 743 dogs. Cumulative results are available at [www.caninephenome.org](http://www.caninephenome.org). Wheaten DNA samples from this bank have been used in several studies at Dr. Johnson’s lab. Using these small amounts of DNA from a small number of samples contributes useful information and does not deplete the supply significantly.

**Sibling Pairs Study on PLE/PLN** — As reported in October 2010, Dr. Johnson completed the analysis of the Sibling Pairs SNP chip data. The data showed a difference between the affecteds and unaffecteds on one chromosome. However, Dr. Johnson described it as a “weak peak” and stated that this is not a definitive result.

The study compared DNA from 14 PLE/PLN-affected dogs and 15 unaffected siblings of the affected dogs. Dr. Littman’s input via the Open Registry was used in selecting affected dogs for the study. Samples from the CPP DNA bank were used as well as samples donated by owners specifically for this study. SCWTCA and the Endowment partially funded purchase of the SNP “chip” used. Pedigree information was supplied by owners and by the SCWT Genetic Research Fund database made available to Dr. Johnson’s staff by SCWTCA member, Willie Rueda.

There are several reasons why a study like this may not give desired results. In this case, possible factors might include the small number of subjects studied, accuracy of diagnosis particularly for the unaffected dogs, and/or combining PLE dogs with PLN dogs and PLE/PLN dogs in the same study. When the Sibling Pairs Study was proposed, it was recognized that this first SNP run was unlikely to lead directly to a genetic marker. It was considered a first step that would help indicate a direction for additional research.

Some of the variables mentioned above would need to be addressed for additional PLE/PLN research to continue at the University of Missouri with any expectation of finding a genetic connection. Dr. Johnson stated that, as geneticists, they need to work with an interested veterinary internist with expertise in diagnosis of PLE and PLN. He recognizes that Dr. Littman is the “leading expert” and that she and Dr. Henthorn are working on their own genetic study that has CHF funding and the support of SCWTCA. He is willing to share samples and Sibling Study data with interested researchers. At the present time, no additional PLE/PLN DNA research is planned.

**Additional Research of Interest to Wheaten Owners**

**University of Missouri Animal Molecular Genetics Laboratory**

Progress in Genetic Research Whole Genome Sequencing — The Animal Molecular Genetics Laboratory at the University of Missouri (Dr. Gary Johnson’s lab) is now able to do whole genome sequencing in a time- and cost-effective manner. In September, Dr. Johnson announced the discovery of the genetic mutation responsible for Fanconi Syndrome in Basenjis. Whole genome sequencing was used to identify the gene. A direct genetic test for Fanconi Syndrome in Basenjis is now available through OFA.

Degenerative Myelopathy (DM) — Pathology results confirmed DM in previously clinically diagnosed Wheatens. Results from the DM genetic test developed at MU correspond to the
pathology results. Additional necropsy tissue samples from DM diagnosed Wheatens are sought.

Unnamed Movement Disorder in Wheatens (episodic dyskinesia) — An unnamed movement disorder characterized by erratic, uncontrolled movement of legs, body, and head has been observed in a few Wheaten Terriers. Neurologists working with Dr. Johnson’s lab are interested in samples from additional cases and also from normal siblings and parents.

TOP TEN WARNING SIGNS OF CANCER IN PET ANIMALS

This information and much more is available by the Colorado State University – Animal Cancer Center and can be found at www.csuanimalcancercenter.org.

1. Abnormal swellings that persist or continue to grow
   **Pet your pet! This is the best way to find lumps, bumps or swellings that could be anywhere on the body.

2. Sores that do not heal
   **Non-healing sores can be a sign of infection or cancer. Your veterinarian can determine the reason why the sore is not healing.

3. Weight Loss
   **If your pet is not on a diet but is losing weight, illness could be to blame.

4. Loss of Appetite
   **It is not normal for pets to lose their appetite. This may be a sign of illness.

5. Bleeding or discharge from any body opening
   **Bleeding can occur for numerous reasons – most of which are abnormal. Vomiting and diarrhea are abnormal discharges as well.

6. Offensive odor
   **This is a common sign especially for tumors in the mouth, nose, or anus.

7. Difficulty eating or swallowing
   **This is a common sign of cancers of the mouth and neck region.

8. Hesitation to exercise or loss of stamina
   **This can be one of the first signs that your pet is not feeling well.

9. Persistent Lameness
   **There could be many causes of lameness including nerve, muscle or bone cancer.

10. Difficulty breathing, urinating or defecating
    **If your pet experiences any of these symptoms, please have them evaluated by a Veterinarian.
CVM JOINS FDA INVESTIGATION OF *Salmonella* IN DOGS, CATS

Researchers at North Carolina State University’s College of Veterinary Medicine have joined forces with the U.S. Food and Drug Administration (FDA) to study the prevalence of *Salmonella* infections in pet dogs and cats.

Dr. Siddhartha Thakur, assistant professor in the Department of Population Health and Pathobiology and a member of the Center for Comparative Medicine and Translational Research (CCMTR), is the principal investigator of the study at NC State.

Dr. Thakur studies food-borne pathogens in animals and humans, with a special focus on bacteria resistant to antibiotic therapy. The Thakur Molecular Epidemiology Laboratory will conduct the *Salmonella* testing in the study for the samples collected by the NC State research team.

*Salmonella* is a type of bacteria that can contaminate a variety of food products and is a common cause of food-borne illness or food poisoning in humans. Infection with *Salmonella*, a condition called salmonellosis, causes gastrointestinal disease and can be severe or life-threatening in some individuals. According to the Centers for Disease Control and Prevention, approximately 40,000 cases of human salmonellosis are reported in the United States each year. Animals can also be infected with *Salmonella* bacteria, including farm animals, horses, and household pets. In recent years, a number of human *Salmonella* infections have been traced to contamination of pet treats and pet foods. In an effort to characterize the extent of pet infections and the potential impact on public health, the FDA launched a national study program through the FDA Center for Veterinary Medicine’s Veterinary Laboratory Response Network.

The national study will involve the cooperation of 11 veterinary diagnostic laboratories across the United States. Each laboratory will partner with veterinary colleges and veterinary practices in order to collect fecal samples from pet dogs and cats for *Salmonella* testing. The data gathered in this study will be collectively analyzed to determine the national prevalence of *Salmonella* in pet dogs and cats, and also identify potential risk factors of infection among such things as diet, medical history, and home environment.

The NC State research team includes co-investigator Dr. Kimberly Chappell, a clinical assistant professor, and the CCMTR Clinical Studies Core. The Clinical Studies Core will coordinate collection of data and fecal samples from dogs and cats visiting the NC State University Veterinary Health Complex, and also several nearby veterinary practices.

Local veterinary practices were instrumental in securing the study funding from FDA. NC State received support in the application process from several area practices, including the Care First Animal Hospitals in Raleigh and Morrisville and the Mayfair Animal Hospital in Cary. Veterinary professionals at these hospitals will identify patients for the study, collect samples, and administer a questionnaire to pet owners.

The goal of the NC State team is to collect at least 100 samples from pet dogs, and nearly as many from cats. The team will target half of the samples to be from healthy dogs and cats, with the remaining samples coming from dogs or cats showing signs of gastrointestinal disease, such as diarrhea.

This study represents a unique opportunity for a national collaboration between a federal agency and the veterinary profession in the interest of public health.
The data generated in this study will aid veterinarians and public health officials to better understand the risk posed by *Salmonella* infections in pets, and direct further study in the prevention of salmonellosis in humans and pets.

For more information about this study or *Salmonella*, contact Dr. Thakur at sthakur@ncsu.edu.

**FDA CONTINUES TO CAUTION DOG OWNERS ABOUT CHICKEN JERKY PRODUCTS**

The Food and Drug Administration (FDA) is again cautioning consumers that chicken jerky products for dogs (also sold as chicken tenders, strips or treats) may be associated with illness in dogs. In the last 12 months, FDA has seen an increase in the number of complaints it received of dog illnesses associated with consumption of chicken jerky products imported from China. These complaints have been reported to FDA by dog owners and veterinarians.

FDA issued a cautionary warning regarding chicken jerky products to consumers in September 2007 and a Preliminary Animal Health Notification in December of 2008. After seeing the number of complaints received drop off during the latter part of 2009 and most of 2010, the FDA is once again seeing the number of complaints rise to the levels of concern that prompted release of our earlier warnings.

Chicken jerky products should not be substituted for a balanced diet and are intended to be fed occasionally in small quantities.

FDA is advising consumers who choose to feed their dogs chicken jerky products to watch their dogs closely for any or all of the following signs that may occur within hours to days of feeding the products: decreased appetite; decreased activity; vomiting; diarrhea, sometimes with blood; increased water consumption and/or increased urination. If the dog shows any of these signs, stop feeding the chicken jerky product. Owners should consult their veterinarian if signs are severe or persist for more than 24 hours. Blood tests may indicate kidney failure (increased urea nitrogen and creatinine). Urine tests may indicate Fanconi syndrome (increased glucose). Although most dogs appear to recover, some reports to the FDA have involved dogs that have died.

FDA, in addition to several animal health diagnostic laboratories in the U.S., is working to determine why these products are associated with illness in dogs. FDA's Veterinary Laboratory Response Network (VLRN) is now available to support these animal health diagnostic laboratories. To date, scientists have not been able to determine a definitive cause for the reported illnesses. FDA continues extensive chemical and microbial testing but has not identified a contaminant.

The FDA continues to actively investigate the problem and its origin. Many of the illnesses reported may be the result of causes other than eating chicken jerky. Veterinarians and consumers alike should report cases of animal illness associated with pet foods to the FDA Consumer Complaint Coordinator in their state or go to http://www.fda.gov/petfoodcomplaints.
SCWTCA CONFORMATION ASSESSMENT PROGRAM (CAP)

—Cindy Vogels

There have been a number of questions about CAP, the new SCWTCA breeders’ education tool. In a series of posts, I will try to further explain the process and its potential positive effect on the breed. I invite your comments and questions.

The Basics

The CAP program offers private, one-on-one, non-competitive conformation evaluation sessions open to all SCWTs 12 months or older. Rather than being compared to other dogs (as they are in the show ring) dogs are assessed, point-by-point, determining how well they conform to the AKC Standard. Written evaluations are orally presented privately to each entrant. Dogs are scored Excellent, Very Good, Good, Fair, and Insufficient. Dogs receiving three scores above Insufficient, awarded by three different evaluators including at least one AKC-approved breeder/judge, will receive a CAP certificate recognizing their successful participation in the program.

Evaluators

Core evaluators will be AKC approved breeder/judges. In addition, experienced breeders are encouraged to apply to the committee to achieve evaluator status. While the committee does not have an application form for breeders available yet, tentatively, the criteria for acceptance will be similar to that required by AKC for entry level judging approval — 10 years involvement with the breed, having bred 5 litters and finished 5 champions. At present, evaluators will participate on a volunteer basis.

Process

Every dog will be measured using an official AKC wicket. Dogs will enter the testing area two or three at a time - depending upon the number of evaluators. Working independently, evaluators will go over the dogs, taking notes as they go. Then the dogs will be moved together and individually. Evaluators will then complete their assessments and individually meet with the owners and dogs to present and explain their findings. It is estimated that each evaluation will take 15-20 minutes. For that reason, entries will be limited to 15 dogs.

Applications

CAP Applications are available, can be filled out online or downloaded, and mailed to a designated person. A nominal fee ($10 presently) will help defray expenses. Dogs will not be considered entered until the fee is received. All applicants will receive a schedule with the order of go. Once the 15-dog limit has been reached, additional applicants will be notified and accommodated based on cancellations/no-shows.

The First CAP

The first CAP test is scheduled for Friday, January 6, 2012 in conjunction with the Desert Empire Terrier Show in Indio, CA. Evaluators: Cindy Vogels (cgvogels@...) and Gay Dunlap (Gaydunlap@...); Coordinator: Bonney Snyder (bonwheat@....) Applications can be obtained from any of the above and should be sent with fee to: Ann Leigh 35157 Cornet Way Palm Desert, CA 92211. annleigh@....

Future posts will include the actual evaluation forms.

Everyone's interpretations of the Standard are somewhat different, and perceptions are unique. This program aims to open a dialogue among SCWT breeders (including breeder/judges) that should enhance everyone’s appreciation and knowledge of our breed.
TEST! TEST! TEST!

Please remember to test your Wheaten, at least annually. Our health researchers currently recommend that annual testing include a Complete Blood Count (CBC), Super Chemscreen, Urinalysis, and Urine Protein:Creatinine Ratio. Additional screening tests available include the Heska ERD Test, the MA (microalbumin) Test, and the Fecal API Test. Printable Testing Protocols designed for Wheaten owners and also for their own veterinarians can be found on the SCWTCA website at [www.scwtca.org](http://www.scwtca.org).

Retest your Wheaten, according to your veterinarian’s advice, if any result indicates a cause for concern.

It is essential that you track your Wheaten’s test results and watch for any trends! Early diagnosis of all health problems — including, but not limited to, kidney issues — is vital for a positive prognosis.

An easy-to-use, online Health Tracker is available with a $10 donation to the SCWTCA Endowment Fund ([www.wheatenhealthendowment.org](http://www.wheatenhealthendowment.org)).

Please send your donation to: SCWTCA Endowment Fund, c/o Toni Vincent-Fisher, Treasurer, 3825 132nd Avenue NE, Bellevue, WA 98005. You then get the Health Tracker by emailing Anna Marzolino at marzolinoam@aol.com. Anna is also available to help with any questions about how to input data into the Health Tracker.

DONATE TO THE SCWTCA HEALTH ENDOWMENT

The Board of the Soft Coated Wheaten Terrier Club of America and the Endowment Board thank everyone for their generous donations. Donations either fund grants selected by the SCWT Endowment Fund Board or provide matching funds for grants approved by the American Kennel Club-Canine Health Foundation (AKC-CHF).

Send your contribution to: Toni Vincent-Fisher, Treasurer, 3825 132nd Avenue NE, Bellevue, WA 98005. Make check payable to “SCWTCA Endowment” (US funds only), or contribute online ([www.wheatenhealthendowment.org/endowmentform.html](http://www.wheatenhealthendowment.org/endowmentform.html)).

DONATE TO THE SCWT GRF (GENETIC RESEARCH FUND)

The Board of the SCWT Genetic Research Project thanks everyone for their generous donations to the fund! See [http://scwtgrf.org](http://scwtgrf.org) for the current fundraisers.

The SCWT Genetic Research Fund (GRF), in cooperation with the AKC CHF, sponsors genetic research into the canine genome that is specifically aimed at identifying the genes responsible for the transference of protein-wasting diseases. This information will make it possible to develop testing protocols that will identify PLE/PLN in Wheatens.

The SCWTGRF is a 501c3 foundation. To join our effort and make a tax deductible donation, send your check payable to “SCWT Genetic Research Fund” to: David Ronsheim, Project Financial Officer, 17827 Fireside Drive, Spring, TX 77379-8017.

Or, visit our website ([www.scwtgrf.org](http://www.scwtgrf.org)) to make an online donation through PayPal.