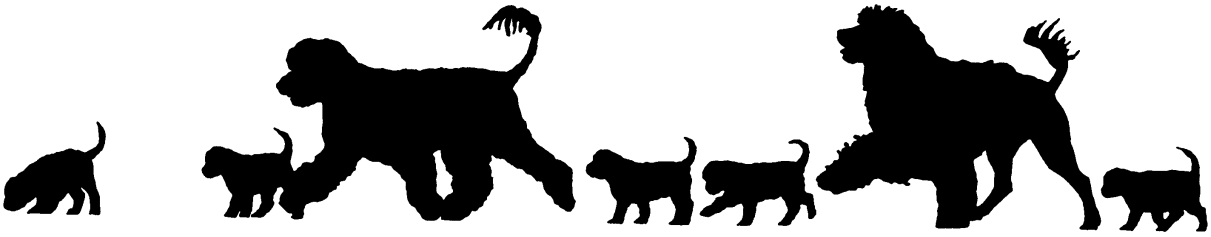
PORTUGUESE WATER DOG FOUNDATION, INC.



2007 MID YEAR UPDATE

ADDISON'S RESEARCH UPDATE Promising Results

Co-Sponsored AKC CHF Grant #225 - Addison's Disease Objective: The specific objectives of this grant are to expand our pedigree, phenotypic, and DNA databases for all possible Bearded Collies, Standard Poodles, Leonbergers, Portuguese Water Dogs and West Highland White Terriers as related to Addison's disease and to continue our genome scan of the DNA to identify a genetic marker linked to the single locus suggested by the pedigree analyses.

A.M. Oberbauer, Professor and T.R. Famula, Professor - *University of California, Davis*

In our ongoing study of Addison's disease in Portuguese Water Dogs, we are grateful to all the owners and breeders who have submitted DNA samples and health information to the study.

We currently have 1091 Portuguese Water Dogs in our study of which 59 are designated as Addisonian. We have been able to glean some interesting details from the data: Based on the submitted dogs, the average age at diagnosis of Addison's disease was 47 months with some dogs being diagnosed before one year of age and others in which the initial diagnosis occurred after the age of ten.

The data presents clear evidence establishing Addison's disease as an inherited disorder in the Portuguese Water Dog with an estimate of heritability of 0.49 with no differences in risk across the sexes. Further, the complex segregation analysis provides suggestive evidence that Addison's disease in the Portuguese Water Dog is inherited under the control of a single, autosomal recessive locus. For the complex segregation analysis used to evaluate mode of inheritance in the Portuguese Water Dogs, we were fortunate to be able to employ a newly revamped statistical program that permits analysis with inbred populations (iBay, 2006). The development of this program by a European researcher was a tremendous asset since previous programs used to develop predictive modes of inheritance were developed for humans meaning that inbreeding loops needed to be broken. The retention of the proper pedigree structure ensures accurate evaluation of the mode of inheritance. As noted above, the Portuguese Water Dog data yielded similar findings to that in the Standard Poodle; that is, the data suggest a single, autosomal recessive locus governs the inheritance of Addison's. *(continued on page 4)*

NEW HEMANGIOSARCOMA RESEARCH PROJECT (CO-SPONSPONSORED WITH MAF)

***Reciprocal Relationship of PTEN and p21 in Canine Cancer* - Jaime F. Modiano, VMD, Ph.D.** - *University of Colorado-Denver*

An estimated one out of every two dogs alive today will get cancer in its lifetime, and as many as 50 percent of those will die from the disease. Despite significant gains in cancer treatment, a thorough understanding of why cancers arise and why they behave as they do is essential to improving prevention and treatment. For this project, researchers will investigate two proteins whose interactions appear to be intimately tied to the behavior of two serious cancers, melanoma and hemangiosarcoma. What they learn may help to test targeted therapies for these cancers and significantly improve the lives of affected dogs.

About the researcher: ***Dr. Modiano earned his Ph.D. in immunology from the University of Pennsylvania. He served his residency at Colorado State University and was a postdoctoral fellow at the National Jewish Center for Immunology and Respiratory Medicine. Dr. Modiano is an associate professor of immunology at the School of Medicine of the University of Colorado-Denver and Health Sciences Center in Denver.***

IN THIS ISSUE:

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CANINE HEMANGIOSARCOMA - *a Brief Primer for the Donors of the PWDF*

Jaime F. Modiano, VMD, PhD - *School of Medicine, University of Colorado Health Sciences Center*

As many of you know, we wrote an extensive article that appeared in the January/February issue of *The Courier* describing the nature of hemangiosarcoma and recent advances in hemangiosarcoma research that offer hope and promise to prevent and treat this disease. Here, we briefly highlight aspects that are important to remember. In the companion article, we describe new research possibilities that will continue to help us conquer this dreadful disease.

Canine hemangiosarcoma is a silent killer. The disease is relatively common in all dogs, and especially common in some breeds. In Portuguese Water Dogs, the 2005 Health Survey reported cancer as the most common cause of death, with hemangiosarcoma being the most common type of cancer in the breed (occurring in >3% of the population). The most common sites where this tumor arises are the spleen, the heart, and the tissue beneath the skin. The tumors do not cause pain and they grow relatively slowly (at least in the initial stages), but they are highly metastatic; so, while even dogs with large hemangiosarcomas may show no clinical signs, this tumor is always life threatening. The eventual outcome for most dogs with this disease is death due to tumor rupture that results in severe, acute, irreparable blood loss.

We do not precisely know what causes canine hemangiosarcoma, but we can assert two things: (1) heritable factors probably contribute to risk; (2) these heritable factors lead to somatic changes that are seen repeatedly (in one case after another), and which are responsible for the behavior of the tumor. However, these same changes may themselves present an Achilles heel that we can exploit to treat the tumors. This was covered in greater detail in the article published in *The Courier*, but some review is pertinent here. First, there are probably risk factors that are shared by all dogs (or in other words, that arose in a common ancestor before pure breeds were derived in the past ~1,000 years). Second, selective breeding probably heightened some of these risk factors by, making some breeds more susceptible than others (for example, it is estimated that as many as 20% of Golden Retrievers will die from this disease). Third, while new treatment approaches may be identified that work in all dogs, the differences in tumors among breeds could mean that such treatments work better in one breed than in another. All that being said, it is extremely important for dog owners to understand that cancer (in general) is a complex disease that cannot be easily reduced, and whose cause cannot be blamed on a single incident or factor. Articles in the press and elsewhere often point to "culprits" claimed to be responsible for one type of cancer or another, where the reality is that cancer is in many ways a disease born from our evolutionary roots, and any single intrinsic (within the cell or the body) or extrinsic (outside the body) factor will play a relatively small role. Rather, it is the interactions between those intrinsic (heritable risk) factors with the extrinsic (environmental exposure) factors that ultimately lead to cancer.

The treatment options available for hemangiosarcoma today are not terribly satisfying. The standard of care includes surgical removal of the primary tumor (whenever possible) followed by adjuvant chemotherapy to delay growth of metastatic lesions that may already exist. Advances for treatment have been slow in coming, reflecting our rudimentary understanding of this disease. In fact, clinical trials developed over the past ~10 years were based on the assumption that hemangiosarcoma cells would resemble cells that are recruited by solid tumors to form new blood vessels. As tumors grow, they lose their ability to obtain nutrients from blood, since most essential molecules can only travel a distance of approximately 1/1000 of a millimeter (or 1/25,000 of an inch) through tissues. In order to continue growing, then, tumors must somehow "trick" the body into providing them new blood vessels so that they can remain well fed. This process is called "tumor angiogenesis" ("blood vessel formation in tumors") and the endothelial cells that form these vessels are called "neoangiogenic cells" ("new blood vessel forming cells"). On the surface, there are many similarities between hemangiosarcoma cells and neoangiogenic cells, so the assumption that treatments that inhibit tumor angiogenesis would be effective against hemangiosarcoma seemed safe and reasonable. However, the results of trials using anti-angiogenic agents to treat hemangiosarcoma have been largely disappointing. At best, "sporadic success" has been reported, meaning that a few dogs achieved extended remissions. Since we know some cases of hemangiosarcoma that are caught early can respond well to standard of care, and that some hemangiosarcomas simply do not "behave badly", we cannot distinguish if the "sporadic success" was attributable to the treatment, or these cases were bound to have a favorable outcome regardless of the treatment. It appears more likely that hemangiosarcoma cells differ from normal neoangiogenic cells in important ways, and the solid tumors formed by these cells will themselves recruit normal blood vessels to support their own growth and nourishment. Thus, we will need to develop improved strategies to attack both the tumor cells and the normal blood vessels to significantly improve outcomes for this disease.

Ongoing work is therefore focused on defining why hemangiosarcoma happens in the first place, what are the differences among breeds, and whether it can be prevented. In addition, we seek to develop and implement better ways to diagnose the disease in its earliest stages when treatments might be more effective. We also wish to find out why some tumors respond so well even to conservative management, while others do not respond at all. And finally, we are working to identify weaknesses in the tumors that will allow us to develop new treatments that will kill the tumor and spare the patient, that is, non-toxic and more effective therapies based on rational design. The urgency of this work cannot be understated, and we are grateful for the support (moral and financial) that we have received and continue to receive from the Portuguese Water Dog community.

Editors note: We wish to thank Dr. Modiano for these two articles written specifically for our donors.

2007 Mid Year Update is a publication of the Portuguese Water Dog Foundation, Inc.
P. O. Box 203
Parker Ford, PA 19457-0203
www.pwdfoundation.org

The mission of the
Portuguese Water Dog Foundation
is to generate significant resources for funding research into genetic and other canine diseases to improve the life and health of all Portuguese Water Dogs.

IMPORTANT - ADDISON'S
Cheek Swabs Still Needed

If you have not participated in the study or need to update your dog's health information (especially as it relates to any relatives related to a affected dog and it's parents – this would include sibs, aunts, uncles, grandparents, cousins, half-sibs, etc.) please go to http;//cgap.ucdavis.edu

Can We Lessen the Impact of Hemangiosarcoma on Portuguese Water Dogs?

Jaime F. Modiano, VMD, PhD - *School of Medicine, University of Colorado Health Sciences Center*

In a companion article, (*see preceding page*) we describe how hemangiosarcoma is more common in some breeds than in others. While this suggests we have enriched heritable risk factors for this disease through selective breeding, we do not know what these factors are or how they contribute to risk. Recent advances in canine genomics have created tools we can now use to ask questions about heritable risk. We can use "mapping" techniques to pinpoint regions of the genome that segregate with the "affected" phenotype. This approach is being used to identify regions that may harbor candidate genes for select cancers in various breeds. The power of this approach is that it can be used relatively quickly to determine if risk traits are amenable to management by selective elimination of "carriers" from the breeding pool, but the pitfalls are that it requires large numbers of affected and unaffected dogs with detailed pedigree information and precise diagnoses, that the traits may involve more than one region, making such management difficult, and that the regions may not definitively identify a culprit gene or genes. A complementary approach is to start with the tumors to identify abnormalities that are shared by members of one breed, and work backwards along biochemical pathways to determine the least common denominator that uniquely defines the disease in that breed. The advantage of this technique is that it will identify specific genes (and pathways) that are highly likely to be involved in disease progression and can inform decisions regarding therapy and prognosis, and that the numbers of cases required are relatively small. The disadvantage is that it may not identify the precise gene (or genes) that are responsible for risk, and so may not inform strategies to reduce the incidence or prevent the disease by breeding management. Thus, a combination of both approaches offers the best possible means to obtain information that can be used for prevention, prognosis, and treatment.

My lab is using the second approach to study how and why tumors arise in various breeds of dogs, and to identify potential targets for therapy. In the case of hemangiosarcoma, we have begun to compare the genetic properties of tumors from Golden Retrievers and "non-Golden Retrievers". Using a readily achievable sample size (between 8 and 20 dogs), we can already see that, even though Goldens are affected more commonly than other breeds, the age of onset for the disease is similar. Our analysis is using technology that includes assessment of more than 40,000 known and predicted genes, comprising virtually every possible dog gene (and then some). This collection of all expressed (or transcribed) genes is called the "transcriptosome"; the analysis generates a "signature" (or perhaps we can define it as a "paw print") of genes that are turned on and off in a particular tissue at a particular point in time. This provides a powerful way to compare functional relationships among all genes across different sets of samples. In our case, it tells us first whether we can define an expression profile or "paw print" for genes turned on and off in hemangiosarcoma samples when compared against normal controls. The answer is "yes", as we can show that tumors are more like each other than they are like normal cells based on signatures comprising between ~20 and 50 genes (of the more than 40,000 genes analyzed!) Even though this answer was predictable, the results allow us to select some of these genes for further study based on their function as a means to begin to develop possible new ways to diagnose and treat the disease in all dogs. The power of this approach does not stop there, however. We can next ask if the tumors from one breed (Goldens, in our case) are more similar to each other than they are to tumors from dogs of other breeds. Perhaps the answer to this is intuitive to breeders who can see obvious differences between their preferred breed and other dogs. But the answer would most definitely not be intuitive to the oncologist treating the dog or to the pathologist diagnosing the disease. To them, the tumor looks like a tumor (hemangiosarcoma), and it makes little difference if it came from a Golden, a Poodle, a Saint Bernard, or any other dog! So we were gratified when our data told us that genetic lineage matters in this disease. Importantly, we could tell that age and gender seem to contribute much less than breed, indicating that the risk factors in this case mirror the occurrence of the disease - that is, there is no difference among breeds regarding the mean age of onset, and the disease affects males and females approximately equally. So far, we have been able to define a very preliminary "paw print" that consists of 5 to 17 genes that shows tumors from Goldens are more like each other than they are like tumors from other purebred dogs. Our ongoing analysis seeks to determine possible reasons for the elevated risk we see in this breed and to predict if there will be differences in their response to established (standard of care) or new therapy approaches.

A next step is to define hemangiosarcoma "paw prints" for other breeds. Our collaboration with Dr. Elaine Ostrander, which includes a large set of DNA samples from unaffected Portuguese Water Dogs, offers an unparalleled opportunity to make Portuguese Water Dogs the next breed used to tackle the genetics of canine hemangiosarcoma. With your help, we can combine the approaches described above to increase both the power of the study and its likelihood of success. We plan to extend our productive partnership with the Portuguese Water Dog Foundation in pursuit of this endeavor. In the meantime, while we truly hope none of you will have to confront this disease in your friends and companions, such a study can only move forward with assistance from the community to obtain suitable samples. For additional information on how you can help, please visit our web site at http://www.modianolab.org/studyInfo/studyInfo_index.shtml, where you can find contact information and download instructions for sample submission.

Today, hemangiosarcoma is a devastating, untreatable disease of dogs. Ongoing work is rapidly increasing our understanding of this disease. With your help, we can reach our goals to reduce the incidence and control the impact of hemangiosarcoma in dogs and their human families within our lifetime.

MEMORIAL

The Foundation would like to announce the creation of a section on our website devoted solely for our donors to memorialize their PWD. This would be an exceptional way to remember and honor those dogs that have meant so much to us.

While your dog will live forever in your hearts, you will now have the unique opportunity to share him with the world through photo (s) and words, as well; your donation is tax deductible and will be used to support canine health research.

A $250 donation allows for 1 photograph and up to 100 words while a $1,000 donation gives you a private page and either 1 large photo or four smaller one and 500 words. For an example of what this beautiful tribute looks like please visit our website at www.pwdfoundation.org

ADDITIONAL RESEARCH UPDATES

IBD

Mechanisms of Epithelial Injury in Canine Inflammatory Bowel Disease - *Peter J. Felsburg, VMD, PhD* - *University of Pennsylvania*

Inflammatory bowel disease (IBD) occurs relatively frequently in dogs and can cause vomiting, diarrhea, anorexia and weight loss. Despite the incidence and severity of IBD in dogs, the underlying causes remain uncertain. Current theory suggests an interplay of genetic, environmental and immunological factors. Investigators will obtain epithelial cells from gastrointestinal tract tissue during routine gastrointestinal endoscopy in dogs with IBD. They will study these cells to determine their involvement in the inflammatory response of the gut. Results obtained should shed light on this disease and may lead to more specific strategies for treating and preventing IBD.

Results: Although preliminary in nature, investigators showed that epithelial cells, those that line the dog's intestine, normally express receptors that interact with bacteria and their products. The result of this interaction is production of soluble factors called cytokines, which can have both destructive and protective effects on the intestine. Investigators showed that the receptors on epithelial cells are dysregulated in dogs that are prone to intestinal inflammation. This dysregulation appears to occur before the development of clinical IBD. Investigators also identified potential mechanisms for dampening this response.

CHD

Genotypic and Phenotypic Dissection of Canine Hip Dysplasia *Rory Todhunter, BVSc, PhD*, - *Cornell University*

A pedigree based on greyhounds and dysplastic Labrador retrievers will be expanded to find genetic markers associated with the genetic mutations that cause hip dysplasia (HD). Several measures of the inherited traits of the dysplastic hip, age, distraction index, dorsolateral subluxation score and Orthopedic Foundation for Animals hip score, will be used to maximize the chance of finding genetic markers. The heritability, mode of inheritance, and predictability of these measures for HD will be determined.

Results: In the experimental cross breed and Labrador retriever pedigrees we studied, the dorsolateral subluxation score serves as the most accurate single predictor of subsequent hip arthritis but when combined with the Norberg angle, an improved estimate is obtained. Based on genome wide screening in the greyhound/Labrador retriever cross breeds, hip dysplasia is caused by mutations in multiple genes (maybe as many as a dozen chromosomes contribute to the appearance of the hip on a radiograph). These hip dysplasia genes act in both an additive manner, in which the cumulative effect of all the genes underlies the radiographic appearance of the hip. Some genetic loci improve hip quality and some are detrimental. In addition, there are also dominant loci. Now we will narrow the chromosomal regions that contain these genes so as to be in position to assess candidate genes that may harbor the mutations that contribute to hip quality. To do this, we are acquiring DNA samples and hip radiographs on as many pure breed dogs as we can. By discovery of the contributing mutations, the design of genetic tests is now possible that will enable us to screen for dogs both susceptible and resistant to hip dysplasia. This information will further allow us to follow hip development more closely in susceptible pups and introduce strategies to prevent secondary hip arthritis and to develop new treatments.

HEMANGIOSARCOMA

Receptor Tyrosine Kinase Activity in Canine Hemangiosarcoma *Stuart C. Helfand, DVM* - *Oregon State University*

Hemangiosarcoma (HSA) is a common and fatal canine cancer, for which there are no effective treatments. HSA is caused by malignant blood vessel cells that spread. Despite surgery and chemotherapy, the median survival time for dogs diagnosed with HSA is little more than six months. It is more commonly seen in male dogs between eight to 10 years old, and German shepherds are at greatest risk with golden retrievers, Great Danes, boxers, English setters and pointers also at high risk. The investigators are looking for targets in HSA that are vulnerable to new therapeutic approaches and are evaluating a new class of drugs that show promise in treating this deadly cancer.

Results to date: Hemangiosarcoma is a uniformly fatal malignancy in the dog. It arises from malignant cells that form blood vessels and is highly resistant to traditional cancer treatments. We have identified the presence of certain cell surface receptors that appear to be dysfunctional in hemangiosarcoma resulting in the unregulated growth of these cancer cells. Our research has investigated the potential for a new class of drugs designed to interrupt growth-promoting signals transmitted from the surface receptors to the cells' interior that may offer promise for future hemangiosarcoma therapy. Our results are helping to validate the merits of this strategy.

Addison's Research Update (continued from page 1)

Using those findings, we initiated a genome-wide screen with the goal of discovering a genetic marker linked to the disorder. We began by targeting candidate genes that have been implicated with Addison's in humans: a) the cytotoxic T lymphocyte antigen 4 (CTLA 4) gene which resides in a chromosomal complex with the CD28 gene, both of which have been implicated in human and canine autoimmune disorders, b) the major histocompatability complexes known to influence immune function and to confer susceptibility or resistance to immune-mediated disorders, and c) the *AIRE* gene responsible for the autosomal recessive autoimmune polyendocrinopathy syndrome type I in which T cell tolerance is disrupted in humans and hypoadrenocorticism [Addison's] is induced. These candidate loci are located on canine chromosomes 37, 12, and 31, respectively. From the entire DNA samples of Portuguese Water Dogs submitted, we used a small family of dogs in which Addison's was passed on through the generations (176 dogs total with 29 diagnosed as Addisonian) to improve our ability to detect linkage (we confirmed that this family was powerful enough to detect linkage if linkage existed). Using microsatellite markers that flanked the candidate genes we found that none of these markers demonstrated significant linkage although a recently published manuscript from Dr. Lark's laboratory described putative linkage of canine chromosomes 12 & 37 to Addison's disease in the Portuguese Water Dog. In our analyses only one of the markers was common to both their work and ours and in our evaluation that marker was not significantly linked to the Addisonian phenotype but it should be noted that we use a computational program that is highly conservative in its analysis.

We followed up on the candidate gene approach by doing a genome-wide linkage scan using a homozygosity approach. The concept of this approach is that the mutation causing Addison's would have occurred in an ancestral dog. Therefore, present-day unrelated dogs that express Addison's should share the DNA region that has the mutation while other DNA regions will be more variable. Because the analyses suggest autosomal recessive, Addisonian dogs should be homozygous in the chromosomal region that carries the mutation. We performed this scan on three breeds: Portuguese Water Dog, Standard Poodle, and Bearded Collie using 323 markers. From that scan, we selected several chromosomal regions that met the criteria of being shared among unrelated but Addisonian dogs. We used 123 additional microsatellite markers on the small family in which Addison's segregates. While no individual markers exceeded the accepted level of linkage (i.e., estimates of linkage with lod scores of 3.0 or greater), we did observe rather high degrees of linkage in the Standard Poodles for some markers which is very encouraging. Because of the commonalities of inheritance and the frequency of Addison's in mixed breed dogs, we hypothesize that there is a single gene that is common across dog breeds that is responsible for Addison's disease. Our next step to determine linkage will be to employ the newly available single nucleotide polymorphism (SNP) assay for the canine genome developed by researchers at the Broad Institute. The SNP assay will yield greater, more comprehensive coverage of the genome and will enable us to map the mutation responsible for Addison's disease.

Again, we thank the Portuguese Water Dog community for their participation in the study. Please continue to submit your dogs including the unaffected healthy dogs. We would also appreciate your updating us on whether your dog's health status has changed since it was last submitted. Please go to http://cgap.ucdavis.edu to request a kit to participate in the study or update your dog's health status.

We wish to thank Dr. Oberbauer and Professor Famula for writing this report for our donors.

Editor's note: As you can see from the above progress report, every effort that each one of you make, even something as simple as a cheek swab, can help the researchers in their quest to solve the health problems in our breed.

The Portuguese Water Dog Foundation, Inc.
P.O. Box 203
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The Portuguese Water Dog Foundation, Inc. needs your help and support to fund research to improve the quality of life land health of our Portuguese Water Dogs. Your **tax-deductible** donation, **in any amount**, would be greatly appreciated. In addition to personal donations, a donation may be made in memory or honor of a friend or loved one, whether human or canine. Donors' names will be kept anonymous upon request.

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The Eisenhower Family
Denise Gilbert
Glenllyn Kennels in memory of Glenllyn's Flashfire at Windruff
Ken & Vicki Goldberg in honor of Blue & Maggie Rae
Monika, & Steve & Onyx in memory of Mambo
Angela Harding in memory of Int/Am CH U-CD Benhil's
Stillwater Forte CDX, RN, CanCD, AWD, SROM "Forte"
Judith & David Harris - "Callie" & "Maggie"
Brytt Hasslinger – DoMarco PWDs in honor of the PWD PSG
Kyle & Chris Hennefer
Susan B. Hopkins for the Bogey Challenge
Nadine & David Hunter in memory of
CH Cortereal Alice In Wonderland
Cynthia Jacelon & John Ridgeway in honor of the PWD PSG
Doris & George Johnson in honor of Lynn & Peter Schwartz
Katherine Kirk
Matt & Katie Kramer
Tejo, Briggs, Haven & Alan hope for an end to JDCM!
Robert S. & Mary Lou Lee in memory of Noreen Additon Hanscom
Jean LeJeune in memory of Northwind's Jackson
Arthur & Roberta Levin in memory of PWD Bissa Levin
Lou Ann & Bob Lindquist in memory of Maggie Mae & The "Bump"
Patriot PWDs, Kathy & Greg Maguire
Pam Marshall
Martha Martin & Gary Stern in memory of Sere & Magnum who
lived long & healthy lives (14+years). May All PWDs be so lucky!
Brian & Mary Ann McGunigle
Mary Ann Meskutovecz
Winthrop F. Miller in memory of Deyanne Farrell Miller - Thanks Mom!
Norm & Jan Mosher in memory of Tank & Lexi
Bonnie & Roland Muehlner in honor of "Matey"
Barbara L. Niemann
Andrew J. & Ruth C. Niesen in memory of Noreen Additon Hanscom
Kelly O'Brien
Dr. Cynthia L. O'Connor
Pacific Lawrence Co., Inc. in honor of Ruby & Henry
Paws 4 Thought K9 Retreat
Sandy Pond
Janine Richter & Tony Paton in honor of Puddles
Ellen E. Rivers
Gary & Kathleen Rosen in memory of Rose Little
In memory of Ashley Rubin 7/4/99-11/28/06
Manda, Cassie , and Kunta Kitty

BOATSWAIN (100-$249)

Lynn & Dave Saturno in honor of Legado Guardacostas - Schooner, our beloved boy and constant companion
Dave & Lynn Saturno, Pam Barnett & Jan Shirreffs, Mart Miller, Pam Coffeen, Janis Watts in memory of CH Legado Defensor Donegan – 'Donny'
Roger & Nancy Schlemmer
Pam & Jeff Schleuter/Bayport Waterdogs
Charles & Marge Schreiber & Carol Mattingley in memory of C.J. - Neocles Calimel Cracker Jack
Lynn & Peter Schwartz in honor of Bilbo & Pippin
Scott Semo in memory of "Gracie" my guardian angel
Heather Shilo & Terese Phillips in honor of the PWD PSG
Darrell Shipp & Stacy Hill in memory of Carling
Linda Shultz
Mary J. Shupert in honor of the PWD PSG
Todd, Waleah & Chelsea Michelle Snyder
Southern California Portuguese Water Dog Club in honor of SCPWDC Club Members and Their PWDS
Southern California Portuguese Water Dog Club in memory of Ron Nasch's Sophie & Valerie Newman's Boomer
Ken & Caren Stanley in memory of Splash
Stargazer PWDs in honor of the PWD PSG
Barbara Stratton
Kurt & Lore Tesnow in memory of Outlaw "Josey" Wales
Irwin Tobman
Tamara Trostle in honor of my two best friends, Tess & Clooney
Edward B. & Daphne L. Wagnon
Morgan, Tux, ML, LN, and Stuie in memory of Franklin the Portuguese Wonder Dog
Stephanie Yee & Denise Wallentinson in memory of Koko, always in our hearts
G. Taylor Watson
John & Zita Winn
Paul Zoschke & Marcie Wallace in memory of Splash & in honor of Ann Moore

SAILOR ($50-$99)

Roxana Adams & Leon Ayson in memory of Bird Island's Brisa do Mar, our sweet girl
Anonymous
Carol & Barry Asness in honor of the PWD PSG
Jim & Kimberly Beach in honor of the PWD PSG
Dr. William Benjamin in honor of Camper
Leanne Bertino in memory C.J.
Leanne Bertino in memory of Tiago Boy
Dyanne Brewster in honor of the PWD PSG
Eliot Brown in memory of Maya
Gail Browne-McDonald for JDCM research
Gail Browne-McDonald in honor of the PWD PSG
Gail Browne-McDonald in memory of Presidio Comet of Alto Mare
Ken & Marcia Buckwalter
Kathy Bumiller in honor of the PWD PSG
Robert Candage in honor of the PWD PSG
The Cannon Family in memory of Shiloh Stajduhar
Robert & Marianne Caplan
Morris & April Carter in memory of Gabbie Carter
Donna & Dan Cashman in memory of Daphne (CH Fantaseas Daphne Rose)
Nigel Clark in honor of PWD PSG
Dr. Judith Coche/The Coche Center
Susan & Cliff Curfman
Patricia Daubert wishing Deb & Dean Mease a Merry Christmas!
Alvaro O. & Ilse de Granda in memory of Lali
Dr. Claire De Christina
Meg Defore in honor of the PWD PSG
Libby Devlin
Catherine Divis in memory of Don Brown
Bruce Dobbyn and Linda Hartig

SAILOR ($50-$99)

Steve Dostie
Sharon Field
Christy & Wes Fitz in honor of Roxy
Jane Freeman in honor of the PWD PSG
Kimberly J. Gage
Kimberly J. Gage in honor of the PWD PSG
Glenllyn Kennels in honor of the PWD PSG
Donna Gottdenker in memory of BISS CAN AM CH Windsong Bold And Brassy
Bruce & Elizabeth Grant
Mary Guziak & Linda Shultz in memory of CH Benhils R-N-R Hard Alee "Chico"
Dale & Carmen Hall
Robert Hall & Sue Wilcox-Hall in honor of the PWD PSG
Petro Haring, Sandstone Portuguese Water Dogs
Angela Harding in honor of the PWD PSG
Christine Harris in honor of the PWD PSG
Belinda Harvey in honor of the PWD PSG
Jean Hassebroek
Melinda Hatton
Kelly & Grant Hetherington
Pat Hogan in honor of the PWD PSG
Suzann & Brian Holte
Linda & Krista Hunt in memory of "C.J." Neocles Calimel Cracker Jack
Chip & Bev Ironside in memory of Max & Ghillie
Chip & Bev Ironside in honor of the PWD PSG
Sandra L. Iwasko
Kate Jackson in honor of Mary & Billy
Ann & Alan Koehler
Carol Konkol in honor of Pepper, Dee Dee, and Mara
Jim Knisley in honor of Emme C. Dog.
In memory of Cully, Dinah, Lovey (PWDs)
Bobbe Kurtz in memory of CH Starview's Yestrella CD
Haven & Alan Lane in memory of C.J. – Neocles Calimel Cracker Jack
Sarah Leatherman in honor of "Yeager" (MACH CH Tradewind's Lunar Eclipse, TD, MX, MXJ, CWDX) and Sue Zgol's MACH
Keith Mabrey
Cynthia Maritato
Paula & Joe Markiewicz in memory of Arabella
Janet & Andrew Masetti in memory of Brinca
Dixie Matson - Adia Bay PWDs
Carole & John McIvor
Carole & John McIvor in honor of Ginnie Santoli
Roni Merbler in honor of Healthy PWD's
Kathryn Monroe in honor of the PWD PSG
Ana O'Brien
Barbara Paul
Kristi & Mike Portugue in honor of Neptune
Sue Rosenstein in honor of the PWD PSG
John & Maria Scrofani in memory of Carl Scrofani
Sealsle Portuguese Water Dogs
Nanci Zoe Shelton in honor of the PWD PSG
Linda Shooer in honor of My First PWD, Oreo Bay Prince of Tides "Leo"
Victoria Shulman in honor of Benjamin
Magnus, Contessa & Hanes Silva in memory of CNSand's Buzzy Goin" As Fast As I Can
Cheryl & David Smith in honor of the PWD PSG
Joan L. Snyder in memory of Fereniki's Captain Nemo – The Most Beautiful and Best
Art & Martha Stern
Deborah Vaccaro in honor of the PWD PSG
Nancy Vener
Janet Warnsdorfer-Galaxy Portuguese Water Dogs in honor of the PWD PSG
Lisa Wilkinson in memory of Sam
Elana Winsberg & Michael Barber in memory of "Bessie"
Robert Yellowlees
Matthew & Kendra Yociss in honor of Ferncliff Thunder By The Sea ("Thunder")
In memory of Chaucer, Dancer and all our faithful dogs
Phyllis Zusman in honor of the PWD PSG

DECKHAND (up to $49)

Andy & Kay Andrade in memory of Misha
Rita Araujo
Karen Kirby Ash in honor of the PWD PSG
Karen & Jim Ash & The SaltyDawgPWDs wishing a
Happy Birthday to the second litter of Tater Tots
Karen & Jim Ash & The SaltyDawgPWDs wishing a Happy Birthday
to CH Eden Captain Nemo of Charkit UD, TD, AWD, CGC, SROM
Carol & Barry Asness & Sasha
Randi, Rolf, Ruby & Henry Astrom in memory of
C.J. – Neocles Calimel Cracker Jack &
to Debbie & Jery; wishing you memories that you can cherish forever!
Pam Barnett & Jan Shirreffs in memory of Donny
Sharon & James Barrett
Marianne Beesley
Barbara Belicose
Deb Bender in honor of the PWD PSG
Judy Berger
Leanne Bertino in memory of Sasha
Alisa D. Bonnette in honor of the PWD PSG
Mia Bracht in honor of the PWD PSG
Maxine Brainer in honor of Cutwater Harley & Hannah
Brenda Brown in honor of the PWD PSG
Michael & Susan Burke
Camlin Seadancer PWDs in honor of the PWD PSG
Terry & Frank Cardillino in memory of Neocles Calimel
Cracker Jack "C.J." for Hemangiosarcoma Research
Susan Chase in memory of Sam, much loved pet of Judy Murray
Rosanne & Lorri Cherkinsky in honor of everyone who
helped in the search to find "Sunny". The list of people
would be too numerous! Thank you! Thank you! Thank you!
Barb Crowther
John & Susan Cucura in honor of the PWD PSG
Lori Decheine
Deep Peninsula Dog Training Club in memory of
"Bela" – Amarinhar's Bela Mira, CDX, NA, NAP, NAJ, RN, WWD
Kathy Denote in honor of the PWD PSG
Gail & David Diehl
Lucia Dudley in honor of Ruth Garcia & her PWDs
Lucia Dudley in memory of Sam
Amanda Ford in honor of the PWD PSG
Verne K. Foster in honor of the PWD PSG
Jane Freeman
Greg Gilliom
Jenn Greene in memory of Sam
Bill & Linda Grubessi
Bill & Linda Grubessi in honor of the PWD PSG
Barbara Gutshall in memory of Bucky
Laura Hardman in honor of the PWD PSG
Jean Hassebroek in honor of the PWD PSG
Terry Herman in honor of the PWD PSFG
Jennifer Hirsch
Dr. Paul Holman in honor of Osita
Linda K. Hunt in honor of the PWD PSG
Linda & Krista Hunt in memory of "Radar" CH Neocles
Radiar Estrela UDX, WWD, OA, OAP, OAJ, NJP, GROM
Carolyn Iraggi in memory of Ashley
Carolyn Iraggi in memory of Chiclet & Kara
Carolyn Iraggi in memory of Sam
Carolyn Iraggi in memory of William Augustine
Bea Jennings
Thank you Gail!
Maria Johansson in honor of the PWD PSG
Carter & Colleen Kerk in honor of Olive
Karen Lopez in honor of Timber Oaks Sonatina Turner Lopez
The Mighty Quinn in honor of the PWD PSG
Dixie Matson in honor of the PWD PSG
Carol Mattingley & Ann Bowley in memory of Ashley Rubin
Carol Mattingley & Ann Bowley in memory of Sam
C. Sue Mautz in honor of Zoey, Samantha & Fanny

DECKHAND (up to $49)

Pamela J. Miller
Kathryn Monroe in honor of the PWD PSG
Diane Moore
Norm & Jan Mosher in honor of the PWD PSG
Judy Murray
Marilu Novy
Linda Otey
Ana P. Belo O'Brien in honor of the PWD PSG
Ann & Peter Paige in honor of the PWD PSG
Karen & Walter Paulick
Steve & Peggy Perkins in memory of
Amarinhar's Bela Mira, CDX, NA, NAP, NAJ, RN, WWD "Bela"
Steve & Peggy Perkins in memory of Madeira's Baru of Redwing - Muffie
Peggy and Pups in memory of Our buddy, Boomer
Merle Piro in memory of C.J. - beloved friend to Jerry & Deb
Sandy Pond in honor of the PWD PSG
Dan Racht & Elaine Selsberg in memory of Ozzie Starrels Wasserman
Candace Riggs in honor of the PWD PSG
Debbie Rotenberg
Debbie Rubin
Ruff Wave PWD's
Donna Reif Sack in honor of the PWD PSG
Charles & Marge Schreiber in memory of Sam
Charles & Marge Schreiber in memory of Sparky
Randall & Elizabeth Shannon in honor of the PWD PSG
Sheila & Allen Silver/CocoaPort in honor of the PWD PSG
Dr. Cindy Tanenbaum Simon
Kathleen Skeels in honor of Della - Superdog
Kathy Souza in honor of the PWD PSG
J.L. Stagner in memory of CH Neocles Realizer D'Brilho
Barb Stanek
Suzanne Steele in honor of the PWD PSG
Art & Martha Stern in honor of the PWD PSG
Cindy Thorson
Dr. Elizabeth F. Trainor in honor of the PWD PSG
Tamara Trostle in memory of Neocles Calimel Cracker Jack
Troy & Marybeth (Betsy) Turner in honor of the PWD PSG
Lily Wang in honor of Gail Browne-McDonald
Janice Watts in honor of the PWD PSG
Lisa Wiley in honor of the PWD PSG
Kristina Winkler
Peggy Wireman
Theresa Zorad in honor of the PWD PSG

In Memory of...

In Honor of...

Looking for reasons (or excuses) to support the PWD Foundation and health research throughout the year? You can show your support and at the same time acknowledge a human or PWD friend or family member? Send a donation to honor that friend or a memorial donation in the memory of a departed friend. The PWD Foundation will send a nice card embossed with our logo acknowledging your generosity to the person or family you designate.