2012 Conference Website Now Live!

It’s hard to believe that it’s already time to get your abstracts, or technician case reports, together and ready to submit for the Annual Conference. Submission opened on May 1st. The conference website is already loaded with information that will make your planning for this year’s conference go very smoothly. Registration opens on June 18th. See page 6 for more details then visit the website.

Remembering Dr. Robert Rosenthal

We were all saddened to hear of Dr. Rosenthal’s death. You can read more about his amazing life on page 4.

In this Issue

- WVCC Congress Recap
- President’s Message
- In Memory
- Conference Information
- Journal Reviews
- Updates and Information
- VTCS Reviews & News
- Onc-Path Working Group
- VCOG Update
- Pet Memorials

Guest Editor: Dr. Kristine Burgess
Editor: Dr. Laura Garrett

2nd World Veterinary Cancer Congress in Paris, France a Success

It was a lovely Springtime in Paris!

The 2nd World Veterinary Cancer Congress, what began as a joint effort of ESVONC and VCS and has grown to include other veterinary organizations, was a very successful Congress with some fabulous keynote speakers, a mini-symposium on familial and breed-related cancers and a very solid collection of scientific abstracts. Nearly 360 people from across the globe joined us in Paris for what turned out to be another wonderful conference. After four years of collaborating with our friends and colleagues from ESVONC and ABROVET, we are proud to say that we were able to present a very well-rounded World Congress.

In terms of the numbers, the United States was well-represented with 68 scientists attending, and overall, 18% of all attendees were VCS members. In addition, just over half of those attending were either members of VCS, ESVONC or ABROVET. The Congress venue, the Pullman Bercy, was very comfortable and convenient to some fun little restaurants and shops as well as being close to the Metro and the more touristy parts of the city.

Our thanks go out to Drs. Malcolm Brearley, Johan De Vos, Patrick Devauchelle and all of the local planning committee including the ESVONC Sandi equivalent, Jacqueline de Zeeuw, and to the French students who worked many long hours at the registration desk. Socially, the congress was also a success, ending with a fantastic cruise and dinner along the Seine River. Special congratulations to Lorella Maniscalco of the University of Turin Department of Animal Pathology who is the winner of the Wim Misdorp Award with her abstract entitled PDGF.

-continued on p 2
receptors: new targeted therapy in canine osteosarcoma. The winner of the poster award was Barbara C. Rutgen, University of Veterinary Medicine, Institute of Immunology, Vienna, Austria with her abstract titled Phenotype reference data of lymph node aspirates from healthy dogs.

Of course, these World Congresses would not take place if it wasn’t for our sponsors and exhibitors who allow us to keep registration fees low for our attendees. Special thanks to Platinum Sponsor, Merial Limited; Diamond Sponsor, Pfizer Animal Health; Gold Sponsor, AB Science; and Silver Sponsor, BD Medical. Their financial support is invaluable to us. Thanks also to our exhibitors, Radiology Oncology Systems, Inc. (USA); Eurobio-AbCys, France; John Wiley & Sons Ltd., United Kingdom; Dechra Veterinary Products SAS, France; and IDEXX Laboratories, France.

The 3rd World Veterinary Cancer Congress will take place in Spring of 2016 in Sao Paolo, Brazil. The local organizing team of Drs. Maria Dagli and Julia Matera have already been doing a lot of work behind the scenes to get ready for this Congress.

There has been interest by other countries to host future World Congress’s and VCS and ESVONC are working on the bid package guidelines required for future Congress’s. This package will be available at our Annual Conference in Las Vegas. Potential host countries will have until mid-2013 to submit their proposal to host the 4th World Veterinary Cancer Congress in 2020.
Welcome to the Spring 2012 edition of our newsletter! This is the second newsletter in our new format of Journal article reviews and hopefully all of you are finding these useful. We welcome your feedback about the article reviews as well as whether you find the new format of an ‘on-line magazine’ easy to use and readable.

With the very sad news of Dr. Bob Rosenthal’s death in early May, I will take this opportunity to consider how he lived his life. Bob was one of the only professors I had as a veterinary student who encouraged me to ask questions and who challenged me to find the answers to them myself. (Of course, when he asked me the next day during lecture whether I had looked for the answer, I had to truthfully reply that I had not…..). Gentleman that he was, he did not hold it against me. He visited Purdue during my residency and though we had little contact since graduation, he took me out to dinner and was truly interested in how things were going for me. He listened to me and befriended my resident mates and was such a great role model for us at the time. I know how lucky I was. He was intellectually curious about so many things, he was boarded in internal medicine and oncology and he went on to become a radiation oncologist as well… and as many have already said via email or online at his memorial page (http://www.legacy.com/guestbook/buffalonews/guestbook.aspx?n=robertrosenthal&pid=157507294&eid=sp_gbupdate@ied=sp_bgupdate), his love for his family and enjoying a wide slice of what this world has to offer—Bob was a great role model not only as an oncologist but as a human being. His untimely passing was a shock and incredibly sad, and for those who worked closely with him, the empty space he has left behind must seem bleak indeed. My heart and thoughts go to you and to his wife and family. We honor Bob on page 5 of our newsletter.

Many of us will be off to ACVIM in just a few short days. VCS will have a booth in the exhibit hall this year, staffed by VTCS President, Jana McAllister and President-Elect, Jo Tootell. Please be sure to stop by and see them while you are in town. As is typical for our Executive Committee, we will hold our first meeting of the year in New Orleans at ACVIM. Our agenda will include reports on VTCS, VCOG and our new group, OPWG. In addition, we will review our budget and financial reports and discuss not just our 2012 Annual Conference, but many of our future conferences as well. The EC is making a strong effort to tweak our Annual Conference so that we are providing quality education for our members. Registration for this year’s conference in Las Vegas, which we will hold alongside ACVR’s Annual Conference, will open on June 18th. Hotel reservations open at that same time and we encourage you to book early as both groups will be sharing the same hotel block this year. We’re sure that this year’s conference is one you won’t want to miss. Finally, we will be discussing nominations for our Executive Committee at this meeting. Some of you have already stepped up and offered to be nominated. If you are interested, please email Sandi Strother at vetcancersociety@yahoo.com.

Please tell us what you think about the newsletter by clicking on the link that you will find on page 20. Thanks and happy spring!
ONCEPT®
Canine Melanoma Vaccine, DNA

The first targeted DNA vaccine fully licensed by the USDA for extending survival time in dogs treated for canine oral melanoma (COM).”¹

*Merial is a proud sponsor of VCS.*
We were stunned to hear about the sudden passing of Dr. Robert “Bob” Rosenthal in early May. The VCS community quickly learned of his sudden passing and shared their thoughts and memories with us.

Bob Rosenthal died Saturday May 5, 2012 of a heart attack during a fishing trip near Maryland. Bob was a pioneer who remained active in the field of Veterinary Oncology at the Universities of Illinois and Wisconsin and later in private practice in Rochester New York (Veterinary Specialists of Rochester), Virginia (South Paws Veterinary Specialists), and most recently in Seattle (Animal Cancer Specialists). Bob received his DVM from Michigan State University, as well as a MS and PhD from the University of Illinois. He obtained triple board certification as a Diplomate of the American College of Veterinary Internal Medicine (ACVIM) in Internal Medicine and Oncology, and of the American College of Veterinary Radiology in Radiation Oncology. Bob actively mentored and helped numerous interns, residents, undergraduate and graduate students, and veterinarians to achieve their goals and aspirations while expounding the importance of evidence-based veterinary medicine. In addition, Bob helped propel veterinary oncology forward by serving the ACVIM Oncology subspecialty and the Veterinary Cancer Society (VCS) and acting as a consultant on the Veterinary Information Network (VIN). When not practicing veterinary medicine, Bob was an avid reader, banjo and fiddle player, fly fisher, canoeist, and contra dancer (square dancing with more complicated geometry). Later in life, he obtained a MS from George Mason University studying environmental concerns for future generations of people (and fish).

Through many of his eclectic expeditions Bob was actively supported by his wife of over 40 years Barbara (Bobbie) and their son Sam and daughter Leah. Lately, Bob and Bobbie moved to Seattle to be on the same coast as their children and to actively share in the joy of their grandchildren (Elias and Isaac, the sons of Sam and Ivy). With the ACVIM forum in Seattle next year Bob was looking with great anticipation to the ACVIM coming to his new hometown. Many will find it appropriate that Bob left us while following one of his many vocations, i.e. chasing the wiley trout. When you look up “joie de vivre” in the dictionary (or now on Wikipedia) you’ll see a picture of Bob. With his passing we shall miss him dearly but his spirit lives on in us.

"Bob always served as a great example of the principle of "work hard, play hard." He remains an inspiration to me in my quest for work/life balance. It was an honor to work with someone who tried every day to make the world a better place," said Dr. Karri Meleo of Animal Cancer Specialists in Seattle where Bob had been working.

“If Bob Rosenthal was known by many of us as someone who loved laughing, contra dancing, banjo playing and bull dogs. He was not only a dedicated medical and radiation oncologist, he was a loving husband and father and a great friend to many of us. We will miss him,” said VCS President, Dr. Ruthanne Chun.

If you would like to honor Bob’s legacy by supporting one of his favorite organizations, please visit the Dr. Erwin Small Scholarship Endowment Fund at http://vetmed.illinois.edu/advancement/giving.html, Trout Unlimited at http://www.tu.org/, or the Jewish Family Service of Seattle at http://www.jfsseattle.org/.
KEY CONFERENCE DATES
May 1 - Abstract & Case Report submission open
June 18 - Conference and hotel registration open
July 8 - Last day to submit an abstract
August 10 - Presenters notified of assignment
August 20 - Last day to accept assignment
September 1 - Final grid posted online
October 16 - All oral presentations uploaded

MORE INFORMATION AT
http://www.vetcancersociety.org/conference

Dr. Landis Griffeth
Friday Keynote Speaker

Dr. Bruce Chabner
Saturday Keynote Speaker

Dr. Julius Liptak
Sunday Keynote Speaker
Computed tomography of the pharynx in a closed vs. open mouth position.


Visualization of structural abnormalities, including cancer, in the oro- and naso-pharyngeal regions on CT images can be difficult. The purpose of this study was to determine whether an open mouth position during CT allows for improved imaging of pharyngeal structures and whether it can improve the confidence of radiologists interpreting these images. Eight animals (6 cats and 2 dogs) underwent 2 CT scans with identical imaging plans, slice width, and patient positioning with the exception of an open mouth (to a 30-45 degree angle) in one CT scan. Images were reviewed by 4 individuals and anatomic structures were rated as normal or abnormal with a degree of confidence based on visibility of that structure. Mean visibility scores were higher for the open mouth images. The oropharynx and ventral margin of the soft palate were the regions most affected by mouth position. Classification certainty was also better for the open mouth images with 28.9% of determinations being rated unsure in a closed mouth position compared to 2.3% with an open mouth position. The results of this study suggest that open mouth position may be superior for CT scanning of patients with suspected oropharyngeal or soft palate diseases or tumors.

Reviewed by Katherine Skorupski, DVM, DACVIM (Oncology)

Completeness of reporting of radiation therapy planning, dose, and delivery in veterinary radiation oncology manuscripts from 2005 to 2010.


Specific and detailed information on treatment planning and administration is often lacking in veterinary oncologic publications. This is thought to be particularly common in veterinary radiation therapy publications. Therefore, the purpose of this study was to describe the reporting of radiation therapy planning methods, dose and delivery in manuscripts published over a defined recent timeframe. Publications were included if at least 1/3 of the patients in the study were treated with external beam radiation and only if dogs and/or cats were the patient population. Good reporting was defined as at least 80% of publications reporting the specific reporting item in question. Forty-six manuscripts met entry criteria. Of 50 check-listed reporting items, only 18% of those items had good reporting across publications. Tumor site and prescribed radiation protocol information had good reporting. Information was severely lacking on multiple variables including absorbed dose, dose variation range, and quality assurance practices. Individual articles reported a median of 44% of check-listed items with a range of 8%-76%. Reporting percentage did not vary by year of publication or journal of publication. The results of this study suggest that most radiation therapy publications do not adequately report therapeutic information necessary to assess or reproduce the treatment plan. Increased adherence to ICRU recommendations in publications is warranted.

Reviewed by Katherine Skorupski, DVM, DACVIM (Oncology)
Prospective trial of metronomic chlorambucil chemotherapy in dogs with naturally occurring cancer.

Leach, T.N. et al (2011) Veterinary and Comparative Oncology

The use of low dose, continuous or so-called metronomic chemotherapy has been the subject of interest in both human and veterinary cancer management. In veterinary oncology, results using various alkylating agents alone or in combination with non-steroidal anti-inflammatory drugs have been reported previously by different authors (cyclophosphamide: Elmslie et al, 2008; lomustine: Tripp et al, 2011). The drug under study here was chlorambucil used at a daily dose of 4 mg/m². The drug is cheap, readily available and typically associated with minimal gastrointestinal and haematological toxicity making it an attractive choice. Problems would arise in treating smaller patients as the drug is only available in 2mg tablet sizes that cannot be split. Reformulation may, therefore, be required.

This was a prospective multicenter study although most of the cases were from The University of Purdue over a 3 year period. Inclusion criteria included dogs with measurable disease, failure of previous treatment including surgery, chemotherapy and radiotherapy, predicted survival greater than 6 weeks and no other concurrent treatment with chemotherapy agents or radiotherapy. Patients receiving Cox-inhibitor medication for pain relief were maintained on their therapy. No dogs were started on these medications concurrent with chlorambucil, as the authors were interested in examining the effects of this drug alone.

A variety of tumors were represented including carcinomas, soft tissue sarcomas and haemangiosarcoma, mast cell tumor and neuroendocrine tumors. There were no lymphoma patients in the study. Interestingly, 55% of the patients had not received previous chemotherapy.

The drug was well-tolerated with no haematological toxicity and only grade 1-2 gastrointestinal toxicity. There were 3 CR (mast cell tumor, soft tissue sarcoma, thyroid carcinoma) and 1 PR (histiocytic sarcoma) with an ORR of 11%. 47% of dogs experienced SD although the rate of PD may have been underestimated as the authors defined PD as an increase in tumor volume >=50% rather than the more conventional threshold of 25%. The median PFI was 61 days and the MST was 153 days with presence of metastases at diagnosis, tumor type and tumor grade having no influence on these measured parameters. Whether the dog received Cox-inhibitors or not had no influence either on PFI or MST. Nine dogs were alive at the conclusion of the study after median follow-up up of 442 days.

As the authors point out, one would not expect a complete tumor response with metronomic chemotherapy as theoretically the drug is targeting rapidly dividing endothelial cells in newly forming vessels rather than causing regression of established tumor vasculature. Metronomic therapy is also proposed to be immunomodulatory, however, suppressing levels of CD4+, CD25+ regulatory T cells thereby potentially upregulating anti-tumor T cell responses that could account for the tumor regression observed. It is also worthy of comment that 4 mg/m2 PO SID could represent a cytotoxic dose of chlorambucil (0.1-0.2mg/kg PO SID, 2-8mg/m² PO SID being reported extensively in the long term management of CLL in dogs.) The response in the MCT may be potentially associated with cytotoxicity, although it is hard to account for this with respect to the response observed in the patients with soft tissue sarcoma or thyroid carcinoma.

Chlorambucil is well tolerated and demonstrates some interesting results in various tumor types reported here making its use as a continuous therapy for tumors (other than CLL) worthy of further clinical investigation.

Reviewed by Iain Grant, BVSc, DACVIM (Oncology)

Human cancer patients undergoing localized external beam radiation may experience declines in peripheral blood cell counts, but these hematologic changes have not previously been described in canine patients. The purpose of this study was to evaluate CBC data retrospectively in a large cohort of dogs that underwent definitive therapy with external beam radiation. Dogs treated with $^{60}$Cobalt that had CBC data available before treatment, halfway through treatment, and after treatment were included. Dogs with hematopoietic tumors or any previous history of chemotherapy were excluded and blood was drawn on un-anesthetized animals only. One hundred and three dogs were included with a variety of tumor types and radiation sites. Total prescribed doses ranged from 50-60 Gray. Hematocrit, total WBC count, neutrophil count, eosinophils, monocytes, lymphocytes and platelets decreased significantly during the course of treatment, though most values remained within reference intervals. Dogs with extremity radiation fields were less likely to experience hematologic changes than dogs with head/neck, truncal, or pelvic radiation fields. Field size and corticosteroid use were not assessed in this study. The results of this study suggest that, while statistically significant changes in hematologic variables occur in dogs receiving localized external beam radiation, these changes are usually mild and may not be clinically relevant.

Reviewed by Katherine Skorupski, DVM, DACVIM (Oncology)

Lansoprazole as a rescue agent in chemoresistant tumors

The accumulation of anticancer drugs within cancer cells is dependent on numerous factors. Although the pH of the extracellular microenvironment may play an important role, relatively little is known about the role of tumor acidity in determining the chemosensitivity of cancer cells. It is thought that the heightened acidity of tumor cells may promote more aggressive cancer cell phenotypes and promote drug resistance. Due to these considerations, the authors of this article postulate that proton pump inhibitors (PPIs) may have either direct anti-tumor effects and/or may help to sensitize cancer cells to the effects of other chemotherapy drugs. This study intended to investigate the efficacy and safety of lansoprazole (Prevacid) as a rescue agent for dogs and cats with chemoresistant tumors.

27 dogs and 7 cats with spontaneous, chemotherapy-resistant histologically-confirmed malignancies were enrolled in this trial. Patients were excluded due to abnormal kidney function, other ongoing life-threatening diseases, or a modified Karnowsky performance score of 3 or 4 (i.e. completely disabled). All patients were appropriately staged before and at 2 month intervals during therapy. Patients were treated with 5mg/kg/day lansoprazole for 3 days after chemotherapy treatment and then 1mg/kg/day for 4 days. For patients with lymphoma, lansoprazole was given concurrently with MOPP therapy. For most of the patients with solid tumors, lansoprazole was given with mitoxantrone therapy.

Of the 27 dogs enrolled, 11 had lymphoma, 3 had osteosarcoma, 3 had mammary carcinoma and the remainder had a variety of common malignancies. All of the patients with lymphoma had previously received CHOP (or COP) and MOPP. Dogs with solid tumors had...
generally failed platino and/or anthracycline therapies although prior treatments did vary substantially. 23 of the 27 dogs had no apparent toxicity from the PPI, while four dogs had reported flatulence, diarrhea and/or vomiting. Three of these dogs were withdrawn from the trial. There was no apparent increase in hematologic toxicity secondary to the chemotherapy in dogs receiving the PPI. 19 of the 27 dogs had a documented response during the trial, including 9 of 11 dogs with lymphoma who had partial or complete responses ranging from 3-12 months.

Of the 7 cats in the study, 4 were noted to have responses to chemotherapy with concurrent lansoprazole. 1 cat with oral squamous cell carcinoma and one with lymphoma had complete responses. Partial responses were noted in one cat with nasal lymphoma and 1 with mammary carcinoma. Response durations ranged from 3-6 months. All of the cats tolerated the PPI/chemotherapy reasonably well aside from 1 patient who developed febrile neutropenia.

The authors conclude that lansoprazole-induced chemosensitization may provide a novel method for improving the outcome of chemotherapy in veterinary patients with solid and lymphoid malignancies and that this study may pave the way for studies in humans.

Reviewed by Andrew Vaughan, DVM, DACVIM (Oncology)

**Phase I study to determine the maximal tolerated dose and dose-limiting toxicities of orally administered idarubicin in dogs with lymphoma.**


Idarubicin is an anthracycline analog of daunorubicin, licensed for the treatment of non-lymphoblastic leukemia and advanced breast cancers in people. Although idarubicin seems equivalent to or less effective than doxorubicin for human patients with various forms of lymphoma, the lessened cardiotoxicity, heightened lipophilicity, and ease of administration make it an appealing alternative to doxorubicin. This study directly intended to delineate the dose limiting toxicities (DLTs) and maximally tolerated dose (MTD) for idarubicin in dogs. Expansion of the MTD cohort was also utilized to evaluate anti-tumor efficacy.

31 dogs with histologically-confirmed lymphoma were enrolled in the study. Inclusion criteria included patient age (>1 year), stage (II-V), substage (a), and body weight (>15kg). The study was conducted as an open label, prospective, phase I dose-cohort (3+3) escalation design starting at 12.5mg/m2. Hematologic and biochemical evaluation was performed on days 0, 7 and 21.

24 dogs (77%) completed the 21 day study, while 5 dogs had progressive disease and were given alternative therapies and 2 dogs died within this period. The MTD was found to be 22mg/m2 after completion of five dosing cohorts with dose de-escalation from the maximally delivered dose of 25mg/m2. Neutropenia (grade III or IV) and/or thrombocytopenia (grade IV) were found to be the DLTs in 3/13 dogs treated within an expanded cohort at 22mg/m2. Increases in serum bilirubin were noted in 5 dogs in the study.

In the 19 dogs treated at the DLT or higher (22 or 25mg/m2), 11 (58%) were documented to have either a partial or complete response (distinction not provided). The majority of the 11 responders were treatment naive (n=9) and had B-cell lymphoma (n=9).

The authors concluded that idarubicin therapy is well-tolerated and may hold promise as an alternative treatment for lymphoma in dogs. Further assessment in a repeated dose, randomized trial will be needed to further evaluate the long-term effectiveness and potential cumulative toxicities of the drug.

Reviewed by Andrew Vaughan, DVM, DACVIM (Oncology)
**Comparative oncology: ErbB-1 and ErbB-2 homologues in canine cancer are susceptible to cetuximab and trastuzumab targeting.**


Epithelial growth factor receptor (EGFR, ErbB-1) and the related receptor ErbB-2 (Her2/neu) are overexpressed in many human colon cancers and breast cancers respectively, and convey a more guarded prognosis due to their impact on proliferation and genomic instability. Targeting of these receptors with antibodies (e.g. trastuzumab for Her2/neu expressing cancers and cetuximab for EGFR expressing cancers) has led to some improvement in the prognosis for people afflicted by these aggressive cancers. Although ErbB-1 and ErbB-2 homologues are expressed in canine mammary carcinomas their expression pattern, molecular structure and biological function remain unclear in dogs. The purpose of this study was to assess differences between ErbB-1 and 2 in dogs and people and to investigate the specificity of trastuzumab and cetuximab for the analogous canine targets.

Strong ErbB-1 and ErbB-2 expression was identified immunohistochemically in 3/10 and 4/10 canine mammary tumor samples respectively using TissueFAX technology. Two of the samples were strongly positive for both receptors. Amino acid sequence homologies of 91 and 92% were found between the canine and human ErbB-1 and ErbB-2 genes respectively using the BLAST program. Using computerized crystal structure modeling, the canine ErbB-1 molecule was predicted to have great structural homology to the human counterpart. The cetuximab binding site was also highly conserved with only 4 amino acid differences in this region, 2 of which were considered to be conservative in nature. Canine ErbB-2 was also predicted to be highly structurally similar to the human molecule with only one amino acid difference within the trastuzumab binding site.

Flow cytometric evaluation of monoclonal antibody binding to canine mammary cancers confirmed high levels of binding of both antibodies to the 4 different ErbB-1 and 2-expressing cell lines studied, although trastuzumab binding was higher in 3 of these samples. The two cell lines with the highest affinity antibody binding in the flow cytometric study were chosen to assess the impact of the antibodies on cell viability using a tetrazolium based cell proliferation assay. After 48 hours of incubation with either antibody, significant cell growth inhibition was noted in the two cell lines (Sh1b and P114). Quantitative immunofluorescence indicated, however, that the number of ErbB molecules of either class were substantially lower on the canine cell lines than on human reference cells by 20 - 100 times and the concentration of each antibody required to suppress cycling was much higher (by 10 times) than that typically required for human cancer cell lines.

In summary, this study indicates a high degree of sequential and structural homology between human and canine ErbB-1 and ErbB-2 with highly conserved epitopes for therapeutic antibody binding. The authors speculate that these findings, and those of the flow cytometric and cell proliferation assays, indicate that "caninized" trastuzumab and cetuximab antibodies may be useful for treating ErbB-expressing canine mammary cancers.

Reviewed by Andrew Vaughan, DVM, DACVIM (Oncology)
Angiogenic markers in canine lymphoma do not predict survival times in chemotherapy treated dogs.

Wolfesberger, B. et al. (2012)
Res Vet Sci Jun; 92(3): 444-450

In this manuscript, the authors evaluate immuno-histochemical expression of vascular endothelial growth factor (VEGF), its receptors VEGFR-1 and VEGFR-2 and tumor microvessel density (MVD) in 34 canine lymphoma biopsy specimens and evaluate their prognostic significance in terms of patient survival.

Samples were collected at The University of Vienna, Austria. Dogs had disease of varying stage, grade, classification and phenotype as would be expected in any canine lymphoma study. Chemotherapy protocol was very specific to the centre, and did not follow the more commonly recognised COP or CHOP based protocol. Ommision of vincristine in first line therapy and multiple dosing with L-asparaginase was of most note. Some patients with low grade lymphoma received dose intense chemotherapy; 59% of dogs had intermediate grade lymphoma; some dogs received 1 or 2 rescue chemotherapy protocols. VEGF, VEGFR-1 and VEGFR2 expression was examined using either rabbit polyclonal or mouse monoclonal antibodies with positive controls: human, canine and feline placenta, canine mammary carcinoma and human angiosarcoma. Tumor MVD was assessed using an unbiased systematic uniform random sampling technique assessing the vessel density in 50 random fields per slide (5.68mm²) and the results were expressed in terms of microvessel profiles per mm². Intensity of antibody staining was scored 1 (<10% neoplastic cells staining) or 2 (>10% neoplastic cell staining).

Median survival time of all patients was 266 days (range 4-1244 days). The majority of samples scored 2 in terms of VEGF expression and expression of VEGFR-1; 88% of samples scored 1 for VEGFR-2 expression. There was no significant association between expression of VEGF, VEGFR-1, VEGFR-2 and survival time. There was no association between VEGFR-1 or VEGFR-2 expression and tumor MVD. Tumor MVD varied widely with a mean of 323 +/- 161 MVP/mm² [a previous study, Wolfesberger (2008) indicated MVD was higher in lymphomatous versus normal lymph node.] There was no significant association between expression of VEGF, VEGFR-1, VEGFR-2 and survival time.

There was no association between VEGFR-1 or VEGFR-2 expression and tumor MVD. Tumor MVD varied widely with a mean of 323 +/- 161 MVP/mm² [a previous study, Wolfesberger (2008) indicated MVD was higher in lymphomatous versus normal lymph node.] There was no significant association between expression of VEGF, VEGFR-1, VEGFR-2 and survival time. There was no association between MVD and survival time.

The results here mimic results of human studies, where most studies show either no significant correlation or conflicting results regarding expression of VEGF, VEGFR-1, VEGFR-2 and tumor MVD and survival time in human lymphoma patients. Use of Bevacazimub, a human anti-VEGF-A Ab is under investigation in human patients as an adjunctive therapy to chemotherapy, results do suggest that other mediators of angiogenesis may be more promising targets or at least need further investigation.

Reviewed by Iain Grant, BVSc, DACVIM (Oncology)

Evaluation of tyrosinase expression in canine and equine melanocytic tumors.

Am J Vet Res 73(2); 272-278

The authors used quantitative RT-PCR in this study to quantify gene expression of tyrosinase and MHC-I in 47 formalin fixed tissue samples from melanocytic tumors in dogs and horses. Sixteen non tumor samples were similarly analysed.

This was a retrospective study from the The University of Tennessee using archived tissue blocks collected over a 10 year period. Tyrosinase, an enzyme essential to melanin synthesis has been identified to be constitutively increased in all malignant melanocytic tumors and is the target for the widely available xenogeneic tyrosinase vaccine. Despite the availability of the vaccine, no large
scale gene expression analysis has been carried out in canine tumor tissue samples, representing proof of target for the vaccine, nor in equine tumor tissue samples, potentially identifying a new species where targeted immunotherapy may be appropriate. The MHC-I gene complex is commonly down regulated in tumor tissue and down regulation may correlate with resistance to targeted immunotherapies. The secondary aim of the study was therefore to examine expression of this gene complex in the tissue samples under interrogation.

Thirty nine canine tumor samples were analysed from oral and non oral sites including melanotic and amelanotic tumors and histologically benign and malignant lesions. Control samples were from pigmented and non pigmented oral and non oral sites unaffected with neoplasia, and rather peculiarly from 2 sarcomas. Only 8 equine tumor samples were available from dermal, ocular and nodal sites in gray and non-gray horses including benign and malignant lesions and control samples were collected from pigmented and non-pigmented skin in gray and non-gray horses.

All canine tumor samples had significantly increased expression of tyrosinase gene product over controls, however there was no statistically significant difference amongst tumors whether benign or malignant, oral or non-oral or melanotic or amelanotic malignant tumors. The lowest expression of tyrosinase RNA in a tumor was in a low grade oral melanoma of the gingiva and the highest was in a histologically anaplastic amelanotic oral melanoma (tyrosinase expression was increased 4-4,800 fold over control for oral tumors). For non-oral tumors, tyrosinase expression was increased 21-2,100 fold over controls. In equine samples, all tumors had increased expression over control whether benign, malignant, solitary or multifocal. Control levels were low in gray and non-gray horses.

For expression of MHC-I gene complex, there were no statistical differences between benign and malignant, oral versus non-oral and control versus tumor samples. There was no correlation between MHC-I expression and tyrosinase expression. There were too few equine samples analysed for significant results to be gathered.

This study yielded some interesting results. Certainly there were small numbers but it would appear that tyrosinase could be a useful target for immunotherapy in horses based on the increased expression in tumor tissues. In dogs, the results would suggest proof of target for the currently available vaccine. What I found interesting was that the level of expression was increased in both benign and malignant tumors, was higher in benign cutaneous versus histologically low grade oral tumors and was increased in both melanotic and amelanotic lesions. This would suggest usefulness of vaccine therapy even in animals with amelanotic lesions. The lack of difference in gene expression between benign and malignant tumors does create a dilemma as the clinical decision to employ expensive immunotherapy in canine patients at the current time depends on adequacy of loco-regional tumor control and histological examination of tumor samples. To put gene expression analysis into context, and as the authors point out, what would also be of interest therefore would be to correlate relative expression with outcome helping to guide treatment decisions. Further canine and equine samples need to be evaluated in follow up studies.

Reviewed by Iain Grant, BVSc, DACVIM (Oncology)
Pfizer Animal Health
Committed to Innovation in Veterinary Medicine

We're on a mission at Pfizer Animal Health.
A mission to protect the health of animals. A mission to partner with veterinarians to provide the medicines they need. And a mission to help improve quality of life for your pets.
We can do this because we have a passion for the health and wellness of animals and a persevering dedication to research that leads the industry – and makes a difference.

www.pfizerah.com
INTERESTED IN SERVING ON THE EC?
VCS is seeking for nominations for President-Elect, Secretary, Treasurer and two members at large this year. Members-at-Large, Secretary and Treasurer all serve for two years. The President-Elect serves for two years, followed by two years as President and two years as Past-President. If you are interested in serving on the Executive Committee in 2013 please email vetcancersociety@yahoo.com.

VCS/VTCS EXHIBITING AT ACVIM and VSSO
VTCS President, Jana McAllister and VTCS President-Elect, Jo Tootell will be staffing a VCS/VTCS exhibit booth at ACVIM this year. If you will be in New Orleans at ACVIM, please stop by and say hello. In addition, VCS President, Dr. Ruthanne Chun and Executive Director, Sandi Strother, will staff an exhibit booth at the first VSSO conference to be held in Ft. Collins, Colorado in May.

VCS News Publication Information
Published: Quarterly
Publisher: Veterinary Cancer Society
PO Box 30855
Columbia, MO 65205
Phone: 573-823-8497
Fax: 573-445-0353
Email: vetcancersociety@yahoo.com
Next issue: September 2012
Guest Editor: Dr. Andrew Vaughan
Deadlines: August 1 - Advertising & Articles
The articles published in this newsletter should be treated as personal communication and cited only as such with the consent of the author.

VCS Executive Committee
President: Ruthanne Chun, DVM, DACVIM
President-Elect: Laura Garrett, DVM, DACVIM
Secretary/Treasurer: Barbara Biller, DVM, PhD, DACVIM
Members At Large: Kristine Burgess, DVM, DACVIM
Iain Grant, BVSc, DACVIM
Andrew Vaughan, DVM, DACVIM
Katherine Skorupski, DVM, DACVIM
Past-President: Barbara Kitchell, DVM, DACVIM
Executive Director: Sandi Strother

RADIATION ONCOLOGY SYSTEMS SUPPORTS VCS CONFERENCE
Radiation Oncology Systems (ROS) has been an active supporter of VCS each year by exhibiting at, or sponsoring, our annual conferences. This year, Greg Bare and ROS have offered to donate 3% of their veterinary sales up until the annual conference to VCS for purposes of supporting the VCS Annual Conference. We thank ROS for their continued support of VCS.

SPECIAL THANKS TO DR. GAIL MASON AND PORTLAND VETERINARY SPECIALISTS
The Portland Veterinary Specialists held yet another successful fundraising event with some of the proceeds benefitting VCS. “Pet Rock In the Park,” held May 20th, featured live music, food vendors, pet products and services and staff from area animal shelters and rescues. This is not the first fundraiser that Dr. Mason’s clinic have hosted and we appreciate their support of VCS.

Mark Your Calendar
2013 VCS Annual Conference
October 17-20
Minneapolis Marriott City Center
Minneapolis, Minnesota

2014 VCS Mid-Year Conference
March 16-19
Grove Park Inn
Asheville, North Carolina

2014 VCS Annual Conference
October 9-12
Hyatt Regency St. Louis at the Arch
St. Louis, Missouri

NEW!!! 2015 VCS Annual Conference
October 15-18
Sheraton Premiere at Tysons Corner
(just outside Washington DC)
Vienna, VA
One-Stop Shopping for Your Veterinary Oncology Needs

Wholesale
No Minimum Quantities

Adriamycin
Alkeran
Carboplatin
Cisplatin
Cosmegen
Cytoxan
Doxorubicin
Elspar
Flurouracil
Gemcitabine
Hydroxyurea
Leukeran
Lomustine
Lysodren
Mitoxantrone
Mustargen
Prednisone
Procarbazine
Vinblastine
Vincristine

Compounded Prescriptions

Oncology Medicines
Individualized strengths
Species appropriate dosage forms
- Capsules
- Liquids
- Transdermals

Pain Medications
- Butorphanol
- Buprenorphine
- Codeine
- Morphine Sulfate

Adjunct Medications
- ACTH Gel
- Cisapride
- Cyclosporin
- Dexamethasone
- Piroxicam
- Prednisolone
- Prednisolone Acetate

If you don’t see it listed here, please call us toll free.

Complete Internet Order & Delivery Service
- Shipping via Priority Mail
- Internet tracking of your prescription
- Delivery within 4 working days
- All major credit cards are accepted
- Toll-free phone and fax lines are always open

Our pharmacists are always available to answer your questions.

It is said that work, well done, is art. At Diamondback Drugs, we continually strive to perfect the art and science of pharmaceutical compounding.

Diamondback Drugs
www.diamondbackdrugs.com

Toll Free 1.866.646.2223
Arizona: 480.946.2223 ■ Toll Free Fax 1.866.646.2235
2930 North Hayden Road, Scottsdale AZ 85251
My fellow oncology technicians, I am certain that prior to reaching this page you have made note of the significant change in the format of the Veterinary Cancer Society Newsletter. In an effort to bring current research and oncology breakthroughs to an audience with a voracious appetite for knowledge and little time to immerse ourselves in it, the Executive Committee has decided to assist its readership by using the newsletter as an opportunity to review journal articles from a wide breadth of peer-reviewed sources. In this manner, the professional spending the majority of a day caring for the oncology patient and their owner may not be delayed in acquiring knowledge of pertinent scientific development as published in multiple relevant journals due to the amount of expansive time necessary to study all of the available titles. As Veterinary Oncology Technicians, we should be no less aware of the impacts of emerging therapies, current clinical study statistics, and oncological related research. Much of the information disseminated to our specialist Veterinarians has the potential to affect change in our daily practices of nursing. To that end, the VTCS Executive Committee has made the decision to follow the lead of VCS in this format change. We will be reviewing the articles contained herein, only from a standpoint of the potential influence on technician practices. This will be a bit of a developing period as subscriptions for many of the Journals are not insignificant, but we are working on a procedure to receive the articles intended for review in a manner that allows us to meet the publication deadlines. We will also be reviewing articles from other technician oriented journals and publications, specifically in order to present articles with particular significance to oncology.

This change by no means should reflect a desire for us to no longer receive articles and case reports from our members. Indeed, we hope to see our VTCS membership grow in numbers and involvement and we encourage you to send any submissions to our society contact vettechcancersociety@gmail.com. You can also send any feedback or suggestions regarding the format change to that same address, and we would love to hear your thoughts!

**Computed tomography of the pharynx in a closed vs. open mouth position.**

In many specialty practices, oncology technicians have some level of involvement in CT imaging of patients with visually identified or suspected oro- or nasopharyngeal lesions. Particularly in cases where CT is the modality chosen specifically to combine potential radiation planning images as well as affirmative diagnosis, the oncology technician should be at the very least referred to by an imaging technician for the purposes of consistency in patient positioning for radiation therapy. This study determined that open mouth position during CT scanning provides superior imaging for the purposes of visibility of structures and increased confidence in image interpretation. This was achieved using 8 animals with identical imaging scans and positioning, inking a mouth open to a 30-45 degree angle.

**Completeness of reporting of radiation therapy planning, dose, and delivery in veterinary radiation oncology manuscripts from 2005 to 2010.**

A great number of scientific studies are retrospec-
tive and therefore require vast amounts of accurate
Consistency and completeness in record keeping for the administration of many therapies is key to understanding and evaluating results. This article found that reviewing manuscript data, when held to a criteria checklist of 50 items as recommended by the International Commission on Radiation Units and Measurements (ICRU), that only 18% followed good reporting guidelines. One topic of particularly poor reporting was quality assurance practices. In the majority of clinics providing external beam radiation, oncology technicians are responsible for maintaining regular quality assurance on in-house linear accelerators. If a machine is showing a difference to reported calibration, calculations should be performed by the physicist or Radiation Oncologist to determine the potential effect on absorbed dose and dose variation ranges. It is vital that this information be accessible for the records of any patient receiving treatment. It may be well worth the consideration of the technician to determine the most appropriate way to ensure that radiation records are as inclusive as possible for each individual patient.

**Canine Transmissible Venereal Tumor.**
Weidele R.; NAVTA Journal. 2012 Jan/Feb;50-51A

Technician working with the Mazunte Turtle Project providing small animal spay and neuter for the purpose of wildlife protection, submitted a case report concerning the incidence of TVT in the canine population of New Mexico. Though TVT or Canine Transmissible Venereal Sarcoma (CTVS) are not in a high rate of incidence within well controlled populations of US metropolitan areas it continues to be a persistent problem globally and is more common in temperate climates and areas with large stray populations or unaltered populations. New Mexico, Arizona, Louisiana, and Tijuana particularly see CTVT/S in a large percentage of un-owned populations of canines. TVT is one of three known transmissible tumors, where the mutated cells do not originate from the patient’s own genetic material, but the tumor cells are in and of themselves infectious agents. Recognition of lesions approximate to genitalia in unaltered patients should be discussed with the oncologist and care should be taken by the technician to restrict interaction with other patients in order to decrease the possibility of spread through sexual contact or grooming behavior. Although primary treatment of choice is surgical, location often makes excision difficult. Orthovoltage and Cobalt radiotherapy have been described, but most effective reported treatment reported has been chemotherapy with cytostatic agents such as Vincristine. Immunological treatments are currently being researched. Metastasis has been reported. The greatest treatment of CTVT is prevention through spay/neuter and the oncology technician should take a proactive role in educating clientele and the wider pet-owning public concerning this verifiable risk of uncontrolled sexual behavior among canine populations.


We also invite you to make plans to attend the VCS Annual Conference where the VTCS will host a two day workshop as well as a half-day wet lab. Find details at [http://www.vetcancersociety.org/conference/technicians/](http://www.vetcancersociety.org/conference/technicians/)
VTCS WELCOMES NEW MEMBER-AT-LARGE
The VTCS Executive committee is pleased to announce that Lisa Donimari has been elected to fill a vacated position of Member-at-Large. Lisa has been a member of VTCS for many years and we are grateful for her addition to the board.

DISCUSSION AND NEWS FORUM LAUNCH IMMINENT
VTCS will be launching a new discussion forum as a members only benefit in early June. All members will receive an invite to the site via e-mail on June first. Please make certain your email address is correct and up to date with VCS so that we can ensure your ability to participate ASAP. The forum is being sponsored heavily by the VCS, so if you know VCS Executive Committee member, please be sure to thank them for their support of a tool that we feel will be of great value and benefit to technicians.

WET LAB FOR TECHNICIANS AT LAS VEGAS MEETING
For the first time, the Technician workshop will have an optional wet lab at this year’s annual VCS meeting. The wet lab will take place at the beautiful and innovative Oquendo Center. Registration for the wet lab will be limited, so we urge you to register early. Transportation to and from the site will be provided. The wet lab will take place on Sunday morning, so as not to take away from an exciting two-day workshop for all registered members.

SUBMIT YOUR CASE REPORTS TODAY
This year, VTCS is proud to be holding a session of peer-reviewed case reports. The case reports must be submitted to vettechcancersociety@gmail.com by July 8. Case Reports will be chosen from submission by the executive board for presentation at the workshop. Presentations will be judged by a panel, and the top chosen presentation will receive a $150.00 award. Please see the 2012 Annual Conference page for details and key dates.

VTCS/VCS EXHIBITING AT ACVIM
Your VTCS President, Jana McAllister, and President –Elect, Jo Tootell, will be staffing an exhibition booth at ACVIM in New Orleans in early June. If you will be attending, please stop by our booth and say hello. We hope to have some great discourse as a result of the VCS general business meeting and we look forward to meeting our members personally for feedback, suggestions, and comments about the current direction of VTCS.
Mark your calendars! The next Oncology-Pathology Working Group (OPWG) meeting will be Saturday, October 20 from 12:00-1:00 in Las Vegas, NV during the Annual VCS Conference. As the meeting will be held over the lunch hour, (no more waking at the crack of dawn for a 7:00 am meeting) an optional boxed lunch will be available for purchase. You must pre-order your lunch when you register for the conference anytime beginning June 18th at http://www.vetcancersociety.org/conference/registrations/.

In other news….it’s almost here!

To facilitate communication and discussions amongst OPWG members, VCS has been working diligently with us to establish an OPWG listserve. The good news is that it’s almost here. The even better news is that it’s more than a listserve! Ultimately, it’s a social networking site within VCS, much like a mini Facebook but with a focus on the discussion boards/forums to adequately address topics at hand. Any OPWG member, after creating a profile, will have access to, and be able to actively participate in, all discussions.

To that mention, access to this forum is considered a benefit of membership in VCS. As we embark upon this new endeavor, however, and to foster involvement of oncologists and pathologists alike, the VCS Executive Committee has generously offered to allow interested non-VCS members access to this forum for the first year. Subsequent to the first year, VCS membership will be required to participate. If you have colleagues you believe may be interested in the mission of the OPWG but are not current VCS members, please have them contact Erin Malone at Erin_Malone1@yahoo.com with their name, specialty, place of employment, email address and phone number. While VCS membership will not be required for the first year, individuals do need to be listed as OPWG members to access the forum site. Be on the lookout for an email in June providing detailed information about how to set up your profile and how to access and participate in the soon-to-launch first ever OPWG online forum.

Until the time the forum is launched, information, including the mission statement and goals of the OPWG can be found at http://www.vetcancersociety.org/opwg/. Minutes from the last OPWG meeting in Albuquerque, NM can be accessed there as well.

We hope to see all of you on the OPWG discussion forum site soon as well as at the next Oncology-Pathology Working Group meeting in Las Vegas, NV where VCS is Raising The Stakes Against Cancer!

Oncology-Pathology Working Group
Because we can do better!
The annual VCOG meeting took place during the VCS conference held in Albuquerque last November. Discussion primarily centered on what the role of VCOG should be during the coming years. Historically the organization has helped organize primarily retrospective analyses involving canine and feline cancers, although the number of such studies has diminished substantially in the recent past. The consensus of most in attendance was that VCOG should work to generate consensus papers that will help guide the field of veterinary oncology as it grows. Significant past accomplishments include the development of VCOG-Common Terminology Criteria for Adverse Events originally published in 2004 and updated in 2011 and the VCOG Response Evaluation Criteria for Peripheral Nodal Lymphoma in Dogs (v1.0) published in 2009. Consensus papers that are in progress include those addressing chemotherapy safety (led by Drs. Andi Flory and Annette Smith) and adaptation of response evaluation criteria in solid tumors (RECIST) for veterinary oncology (led by Drs. Sandra Barnard and Cheryl London). It is expected that these papers will be published by 2013.

Lastly, the VCOG members voted Dr. Andi Flory as the president elect for the coming year. The next VCOG business meeting will be held during the Annual VCS Conference in Las Vegas on Friday, October 19th at 12 noon. We hope to see you there.

Just a reminder that VCOG has a page on the Veterinary Cancer Society’s webpage. You will find it at http://www.vetcancersociety.org/cooperative-oncology-group/.

TELL US WHAT YOU THINK OF THE NEWSLETTER!

Please click on the following link and answer 3 short questions about the newsletter once you have read it. Your responses will be greatly appreciated and will help us to make the changes that our members want!

http://www.surveymonkey.com/s/2012news

INTERESTED IN SUBMITTING INFORMATION FOR THE SUMMER NEWSLETTER?
WANT TO SHARE INFORMATION ABOUT ONGOING TRIALS OR THERAPIES?

If you would like to share information with the VCS membership in the Summer 2012 newsletter please submit that information in WORD format no later than May 1st to vetcancersociety@yahoo.com. All submissions will be reviewed by the Guest Editor and Editor for appropriateness prior to publication. No advertisement of products or therapies through editorial means will be allowed.
Pet Memorials

In honor of all the amazing animals who have sadly passed away from cancer, and to the Doctors and Technicians that cared for them. VCS honors them, and their families, below.

**Donor: Dr. Sarah Gillings**
Summit Veterinary Referral Center

- In memory of JD
  Loved by Robert & Cathy Gronenthal

- In memory of Crusher
  Loved by Corinne Wanits & Steve Horton

- In memory of Diamond
  Loved by Dennise & Deidre Richards

- In memory of Elsa Mae
  Loved by Erika Morgan

- In memory of Titan
  Loved by Ricki & Ryan Grafstrom

- In memory of Squeaky
  Loved by Felicia & Larry King

- In memory of Tawny
  Loved by Pat Malone

- In memory of Armstrong
  Loved by Nancy & Bob Van Horne

- In memory of Chloe
  Loved by Brian & Kelly Nelson

- In memory of Yoda
  Loved by Joyce & Gary Fell

- In memory Tommy
  Loved by Donna Bockenkamp

- In memory of Pixie
  Loved by Karen Thomason

- In memory of Lucy
  Loved by Harry & Laura Tolen

- In memory of Boo Boo
  Loved by Miguel Rico & Kelly Christopherson

- In memory of Tess
  Loved by Nicole Pilarski

- In memory of Oliver
  Loved by Joseph & Judi Quilici

- In memory of Heide
  Loved by Ruth & Allen Walton

- In memory of Nellie
  Loved by Kent Bolden

- In memory of Ernestine
  Loved by Ruth Laird

- In memory of Vegas
  Loved by Mark & Kara Sanchez

- In memory of Ginnie
  Loved by Joan & Carl Seidlitz

- In memory of Shasta
  Loved by Ewa & Herman Weideli

- In memory of Cirrus
  Loved by Brandon & Christy Chambers

- In memory of Peanut Butter
  Loved by Debra & Steve Dernel

- In memory of Rio
  Loved by Micki & Bryan Monroe

- In memory of Porsche
  Loved by Dina & Aaron Weiss

- In memory of Lucy
  Loved by Bob Demark

- In memory of Boomer
  Loved by Kathy & Lance Cook

- In memory of Butters
  Loved by Marian & Dennis Tillman

- In memory of Cooper
  Loved by Angelique & Marc Lash

- In memory of Gracie
  Loved by Abbie Deleers & Thad Hitchcock

- In memory of J.D.
  Loved by Josh Tackett

**Donor: Dr. Jennifer Arthur**
Veterinary Oncology & Referral Clinic

- In memory of Beau
  Loved by John & Lisa Ammons

- In memory of Bud
  Loved by Todd Stevens
Pet Memorials

**Donor: Dr. Cheryl Harris**  
**Veterinary Oncology & Referral Clinic**

In memory of Munson  
Loved by Emily Birkemeier

In memory of Chewy  
Loved by Denise Rudy

In memory of Jinx  
Loved by Cheryl Dorschug

In memory of Onxy  
Loved by Stuart Goldberg

In memory of Tucker  
Loved by Jerry Stephens

In memory of Hanna  
Loved by Susan Smith

In memory of Smokey  
Loved by Ton Kanis

In memory of Boswell  
Loved by James Downie

In memory of Gretchen  
Loved by Trudy Larkin.

In memory of Mochi  
Loved by Martin Levy

In memory of Taco  
Loved by Margaret Engelman

In memory of Nellie  
Loved by Megan Lynch

**Donor: Dr. Lynda Beaver**  
**Southwest Veterinary Oncology**

In memory of Angel  
Loved by Shawna Rae & Kenneth Brown

In memory of Rufus  
Loved by Stephanie Schlachter, DVM & Parker Stevens

**Donor: Dr. Avenelle Turner**  
**Veterinary Cancer Group**

In memory of Hogan  
Loved by Jennifer & Joe LaFortune

In memory of Chewey  
Loved by Frank & Regina Vaia

In memory of Sparky  
Loved by John Blakley

In memory of Kenya  
Loved by Julia MacDougal

In memory of Sophie  
Loved by Judy & John Dhuse

In memory of Bella  
Loved by John & Judy Dhuse

In memory of Zara  
Loved by Susan & Bob Wall

In memory of Magnus  
Loved by Cynthia Giesler

In memory of Kasey  
Loved by Tracy Zell

In memory of Baron  
Loved by Sylvia & Brad Boesel

In memory of Rocky  
Loved by Curtis & Patricia VanMale

**Donor: Dr. Sue Downing**  
**Animal Surgical & Emergency Center**

In memory of Shaina  
Loved by Jill Croce

In memory of Jack  
Loved by Krista & Jerry Del Colliano

In memory of Bailey  
Loved by Michelle Thomas

In memory of Buggy  
Loved by Gregory, Michelle & Olivia Vanger

In memory of Travis  
Loved by Ed & Joe Brassel

**Donor: Ms. Caren Weingart**

In honor of her cat, Claude.