Dr. Phil Bergman
State of the Art Presentation: Melanoma
Melanomas in dogs have extremely diverse biologic behaviors depending on a large variety of factors. A thorough understanding of these factors helps the clinician to delineate in advance the appropriate diagnostic modalities, staging, prognosis and treatments. The primary factors which determine the biologic behavior of a canine melanoma are site, size, stage and histologic parameters. Unfortunately, even with a comprehensive understanding of all of these factors, there are melanomas which have an unreliable biologic behavior; hence the need for additional research into this relatively common, heterogeneous, but frequently extremely malignant tumor. This author will be covering the pathology and adjuvant therapies for melanoma, whereas my colleague Dr. Boston will be covering staging and local tumor control modalities before then moving toward consensus building with the VSSO group.

Dr. Richard Bold
Minimally Invasive Techniques in Human Surgical Oncology
A minimally invasive medical procedure is defined as one that is carried out by entering the body through the skin or through a body cavity or anatomical opening, but with the smallest damage possible to these structures. Specific examples will be discussed that present improved outcomes for the patient as measured by improved staging, decreased pain, decreased hospitalization, decreased complications. Specific examples of laparoscopic approaches with modifications using natural orifice surgery, single incision surgery and robotic units will also be presented.

Dr. Bill Culp
State of the Art Interventional Oncology
The approach to the treatment of cancer in veterinary patients is constantly evolving. Whenever possible and practical, surgery is pursued because it provides the greatest opportunity for tumor control and may result in a cure. Other cancer treatments such as chemotherapy and radiation therapy are common in veterinary medicine, and the data outlining treatment regimens are growing rapidly. An absence of treatment options for veterinary cancer patients, however, has historically existed for some tumors. Interventional oncology options have opened the door to the potential for better therapeutic response and improved patient quality of life.

Dr. Nicole Ehrhart
Osteosarcoma: Things We Know, Things We Think We Know, Things We Believe Are Coming
Canine osteosarcoma is a disease we have been treating for decades. Despite tremendous effort and funding, very few advances have been made to improve prognosis and quality of life. Our physician counterparts are facing the same frustratingly slow progress. Perhaps its time to dissect the common beliefs surrounding our current treatment practices, optimize what we can with the options we currently have, and look to some new advances for what may be hopeful treatments coming our way in the future. This lecture will review evidence, challenge long held beliefs about diagnosis and treatment, and discuss emerging therapies.
Dr. James Farese
Mast Cell Tumors Consensus Discussion
This discussion is intended to inform the veterinary oncology community about the common practices and cutting edge techniques that are being performed on canine cutaneous mast cell tumors by surgical oncologists in both private practice and academic settings. Topics within the discussion are based on questions posted on the VSSO listserv and the responses that were generated. Some of the topics include tumor diagnosis/staging, the use of neoadjuvant therapy, surgical margins, histopathologic evaluation and postoperative decision making. The primary goal of the discussion is to establish areas where there is agreement on common issues and to identify specific areas where important questions remain. It is hoped that the information gained regarding gaps of knowledge in the study of canine cutaneous mast cell tumors will energize the audience and spawn ideas for future prospective and retrospective studies.

Dr. William Hendricks
Keynote Presentation: Personalized Medicine
Cancer is a genetic disease driven by the stepwise accumulation of oncogene and tumor suppressor gene mutations in clonally expanding malignant cell populations. Clinical cancer management has now begun to be transformed by knowledge of genomic catalogues of these mutations and identification of vast inter- and intra-patient genomic heterogeneity. These data fuel biomarker and targeted drug development, study of the genomic basis of drug response, and new approaches to early disease detection, efforts collectively known as “Precision Medicine.” Yet, comprehensive cancer genomic characterization, the tools and resources to enable such characterization, and implementation of Precision Medicine in the clinic are all still in their infancy in canine oncology. In this presentation, I will discuss the foundations of cancer genomics, summarize current knowledge of the spectrum of mutations in human and canine cancers, discuss recent developments in human cancer precision medicine, and present emerging opportunities for such development in veterinary oncology.

Dr. Chand Khanna
Has the Future Arrived? Precision-based, or Personalized Cancer Therapy
"Precision" or "personalized" medicine (PMed) represents a new era in cancer therapy. Advances in the genomic analysis of canine cancers have provided new opportunities to tailor cancer therapy to the individual molecular characteristics of a specific cancer in a specific patient, uncovering precise genetic changes for a given cancer. In many cases, these genetic alterations can be matched to specific therapeutic agents as a means to uniquely improve outcomes for patients. This novel therapeutic approach is now available to veterinary patients through a number of platforms. Tumor samples are collected, preserved, and then analyzed for genetic alterations, which are ultimately matched to an individualized therapeutic recommendations.

The potential success of this approach has received widespread recognition in the human field. Furthermore, we have published on the clinical feasibility of this approach in dogs. Precision medicine now represents a cutting edge opportunity in veterinary cancer care. Ongoing studies will allow us to learn what cancer types are best targeted with this new approach to therapy, and what additional evidence is needed to escort this approach into the mainstream.
Dr. Matti Kiupel
Prognostic Evaluation of Canine Cutaneous Mast Cell Tumors

The prognostic evaluation of canine cutaneous mast cell tumors (MCTs) is based on the assessment of complete surgical removal, their histologic appearance, including grade, proliferation index and c-Kit mutation analysis and clinical stage, especially local lymph node involvement. While different dimensions of surgical margins have been recommended for different grades of MCTs, inconsistencies in margin evaluation make it difficult to compare published methods. We recommend margin evaluation using a combination of complete tangential margins for “cleanliness” and assessing distance of neoplastic cells to these margins based on radial sectioning of the MCT. We also recommend using the 2-tier system for MCT grading since it is currently the only system that has been shown in a number of independent studies to produce consistent results while accurately predicting biological behavior. Regardless, as with any histologic grading system, not all aggressive MCTs can be identified by histologic grading alone and we also recommend proliferation analysis based on the combined AgNORxKi67 (Ag67) value, analysis of the KIT pattern and detection of ITD mutations of c-Kit in exons 8 and 11 to identify those 5 to 15% of low grade MCTs that may behave more aggressively. When combining margin assessment with histologic grading, proliferation analysis (Ag67), analysis of the KIT pattern and detection of ITD mutations of c-Kit in exons 8 and 11, dogs can be divided into different categories. Dogs with low grade MCTs with a low Ag67 index that have clean margins do not require additional local or systemic therapy. In a number of studies it has been further shown that dogs with low grade MCTs with a low Ag67 index that have dirty margins will have a local recurrence rate that is similar to dogs with low grade MCTs with clean margins. Therefore, such dogs may also not require additional local therapy. In contrast, dogs with high grade MCTs or with low grade MCTs with a high Ag67 index or an internal tandem duplication (ITD) mutation in exon 11 have a high likelihood of systemic disease and local recurrence regardless of the margin status. While ITD mutations in exon 11 have been associated with a more aggressive biological behavior, dogs with MCTs with such mutation have also been shown to respond to therapy with tyrosine kinase inhibitors (TKIs). In contrast, mutations in exon 8 occur primarily in low grade MCTs with a low proliferation index and have not been associated with more aggressive behavior. Occurrence of such mutations has been suggested to indicate the potential response of such MCTs to TKIs. Similarly, the KIT pattern of a cutaneous MCT will also help to determine its biological behavior and dogs with a KIT pattern 2 or 3 are more likely to have a mutation in c-Kit and therefore are more likely to respond to TKIs. Evaluation of the tributary lymph node for metastasis can be challenging. Detection of sentinel nodes has been shown to more accurately determine those nodes that may potentially contain neoplastic cells. Neither cytology or histology have been able to provide consistent results regarding the local lymph node spread and different schemes have been proposed to classify those nodes that contain small numbers of mast cells that may represent early metastatic spread. We are currently completing a study to develop a lymph node metastatic check test based on determining quantitative expression of a number of RNAs commonly detected in neoplastic mast cells. We would be grateful of submissions of at least 5 unstained, unfixed slides from fine needle aspirates in combination with the formalin fixed excised node to finalize validation of this methods. Regardless, we can also perform testing for c-Kit mutations or aberrant KIT staining in lymph node samples to determine the therapeutic response.
Dr. Julius Liptak

State of the Art Presentation: Mast Cell Tumors

The aim of this lecture is to discuss my personal approach to the surgical management of cutaneous and subcutaneous mast cell tumors (MCTs) in dogs. This approach is based on the published literature and personal preferences. While the title of this lecture includes the word “consensus” and the intention of this meeting is to develop a consensus on the management of MCTs in dogs, an in-depth discussion of all of the facets of MCTs is beyond the scope of a single lecture, especially when the management of MCT potentially involves a number of different specialties, including surgeons, medical oncologists, radiation oncologists, and pathologists. For this reason, I will limit my lecture to some aspects of the clinical staging and surgical management of cutaneous and subcutaneous MCTs in dogs. This will involve an in-depth discussion on the importance of staging for lymph node involvement using sentinel lymph node mapping techniques; a discussion of surgical margins (especially metric versus proportional margin systems for lateral margins) for excision of cutaneous and subcutaneous MCTs; and a discussion of the relevance of the so-called clean-but-close or narrow histologic margins with reference to the residual tumor classification scheme used in human surgical oncology.
Dr. Phil Mayhew  
State of the Art Presentation: Minimally Invasive Surgery  
The role of minimally invasive surgery in human surgical oncology is well established in certain fields but remains very controversial in others. In veterinary medicine minimally invasive surgery is starting to be used for management of solid tumors in both the thorax and abdomen. Evidence-based principles must be used to scrutinize these interventions to avoid our enthusiasm for new technologies and procedures to proceed unchecked. In this lecture procedures at the interface of surgical oncology and advanced minimally invasive surgery will be described and outcomes for these procedures will be critically analyzed.

Dr. Andre Spiguel  
Keynote Presentation: Osteosarcoma  
I will be giving a general overview of osteosarcoma and it’s treatment in humans. I will discuss the history of osteosarcoma, from the earliest descriptions, to the evolution of treatment. From the advances in surgical techniques and limb salvage to the advances in chemotherapy and medical management. I will discuss decision making in operative interventions using case examples to discuss some difficult decisions and attractive operative alternative to amputations. I will finish with some ideas of how we can possibly improve our outcomes and discuss some of the advances that we have made in our osteosarcoma lab at the University of Florida, specifically the idea of malignant reversion.

Dr. Summer Youker  
Keynote Presentation: Melanoma  
Melanoma in humans is always considered malignant. The most important prognostic indicator for human melanoma is the maximum depth of invasion, not the clinical size of the lesion. Surgery is the first-line therapy for melanoma but clear surgical margins can sometimes be difficult to obtain with wide local excision. Given the frequency of significant subclinical epidermal spread, Mohs micrographic surgery is often used to obtain better local cure rates. In human medicine, Mohs surgery is considered the gold standard for treatment of cutaneous malignancies.