Background.

Canine hemangiosarcoma is a very aggressive cancer with a high rate of metastasis and a poor overall prognosis. Hemangiosarcoma tumor cells are derived from endothelial cells (blood vessel cells).This tumor shares many similarities with the aggressive human cancer angiosarcoma. Canine hemangiosarcoma can develop in any part of the body but most commonly arises in the spleen and is often associated with an emergency presentation following splenic tumor rupture and hemoabdomen. For such a splenic tumor, surgery to remove the spleen is an initial treatment, with reported survival times ranging from 30-90 days from the time of surgery. Survival in dogs following splenectomy is usually this poor due to metastasis of this cancer to other parts of the body both within and beyond the abdomen. Numerous studies have evaluated the use of chemotherapy as an adjuvant treatment to surgery. Most of these protocols are doxorubicin-based and are associated with survival times, ranging from 140 to 202 days. Despite the use of chemotherapy, most dogs continue to develop fatal metastatic disease. Identification of new treatment modalities to improve quality of life and prolong overall survival is clearly needed. Because surgery (most commonly splenectomy) is a component of standard of care, there is an opportunity to collect tissue and blood samples to understand the molecular and genomic features of this tumor and potentially deliver improved treatment outcomes.

Precision (a.k.a.. personalized) medicine describes the use of molecular analysis of tumor or other patient samples (i.e. cell free tumor DNA in the blood) to define "actionable" disease targets that may be matched to specific therapeutics, with the over-riding intent to modulate "drivers" of the cancer, and in so doing improve patient outcomes. The promise of this approach to cancer therapy has been suggested in recent human studies, and has prompted further evaluation in several ongoing prospective human trials. We recently reported that these approaches are scientifically and clinically feasible in dogs with cancer.

The Perseus Foundation is partially funding a study that will collect tumor samples collected from dogs to be analyzed on a recently developed precision

medicine(amplicon) platform developed for dogs. This analysis will for the first time provide a detailed molecular characterization of canine hemangiosarcoma. This characterization will be useful for cross species mapping with human Therapeutic drug matching will be delivered through personalized medicine drug matching algorithm. The clinical outcome of dogs treated in this prospective personalized medicine trial will be followed to assess the value of randomized trials of this novel approach to treatment in both dogs an humans with sarcoma.