



## CHF Cardiology Symposium Summary

New Orleans, LA – October 6, 2008

Attended by RHF representative Liz Wertz

Knowing I was scheduled to attend this symposium, I thought it might be a good idea to send out an email broadcast out to Rottweiler folks and ask if they had any particular questions concerning canine heart issues or testing. Since the group of canine cardiology specialists presenting would be a small group, I figured it would be a perfect opportunity to ask some direct questions. Several Rottweiler owners responded to my query. Here are the questions they wanted me to ask:

**1) *Are OFA certifications accurate at 12 months of age? What age is the best time to schedule an OFA heart certification exam?***

Apparently this individual had a puppy who was looked over, even by a heart specialist vet while growing, and when he was went for OFA certification at 14 months, a murmur was found, but never detected while growing up.

**2) *Can heart issues be bred out of a line?***

Learning the presenting veterinarian were mainly young vet cardiologists, I was somewhat unsure of what to expect. Each of them spoke for about half hour. When I had the opportunity to ask questions of them, their answers were rather vague. Fortunately I sat next to a veterinarian not involved in the presentation, MaryDee Sist, DVM. During break, Dr. Sist and I discussed the issues of testing and genetics. Not only is Dr. Sist the owner/practitioner of the Animal Care Clinic in Williamston, Michigan, but an Endocrinologist, DCPAH, CVM at Michigan State University and the President and Director of Saluki Health Research Inc. She was kind enough to give permission to use of some of the interesting information and photos from her Saluki Health newsletter – so look for these online at [www.rottweilerhealth.org](http://www.rottweilerhealth.org).

Here is the gist of what was gathered in my conversation with Dr. Sist:

- Echo is the only way to really test
- Test early (1–2 years) to discover any issues
- Know the familial background, and if you suspect any heart issues may be present, then test, and test again in a year or so.
- Hold off on breeding until as late an age as possible. When I asked MaryDee when she typically breeds a bitch – she said 4–5 years, or later.
- Test again before breeding, and
- Of course, breed only to an echoed heart–clear dog

- It is probably not possible to totally breed heart issues out of a line -- due to the fact that a cleared dog could pass an issue on through a single autosomal *recessively passed* gene. You can come real close, but probably not totally delete the issue. I guess the bottom line is: "you do the best you can."

Below I have summarized some of the research topics a few of the presenting specialists are studying. Of note, I believe you will see some new heart imaging techniques, as well continued studies of how diet, genetics and specific medications can effect overall heart health.

#### **Dr. Bulmer – Cardiovascular Proteomics**

Dr. Bulmer is focused on mitral valve disease. Knowing that proteins are separated by PH level, he is currently investigating protein aberrations in the heart valve. In very early study results, determination of breed predisposition is being compiled, as well how proteins may be created or modified by oxidative stress. *Note: Oxidative stress has been a key topic in medical research, and has been noted as a primary reason for shortened longevity.*

#### **Dr. Cunningham – Endothelial Dysfunction** (*Google this subject and you will find huge results*)

Dr. Cunningham just finished his residency and endothelial dysfunction (ED) is the focus of his research. The endothelium is the thin layer of cells that line the interior surface of blood vessels, forming an interface between circulating blood in the lumen and the rest of the vessel wall. Endothelial cells line the entire circulatory system, from the heart to the smallest capillary. These cells reduce turbulence of the flow of blood allowing the fluid to be pumped farther. (*taken from Wikipedia*)

Endothelial dysfunction is common in cardiovascular disease. A healthy endothelium plays a central role in cardiovascular control. Therefore endothelial dysfunction, which is characterized by an imbalance between relaxing and contracting factors; procoagulant and anticoagulant substances; and between pro-inflammatory and anti-inflammatory mediators, may play a particularly significant role in the pathogenesis of atherosclerosis and cardiovascular disease. (*taken from [www.karger.com/journals](http://www.karger.com/journals)*)

In Dr. Cunningham's research, he tested the flow mediated dilation (FMD) of the brachial artery. Studying dogs after 10-minute acceleration, a cuff was then put to the dog's elbow for three-minutes to measure hyperaemic flow velocity. Testing thus far does not show marked difference between affected and non-affected dogs.

Dr. Cunningham indicated that the manufacturer of FMD equipment, InduTec, announced the availability for on-site testing of the FMD-I software for FMD evaluation. By means of an advanced algorithm, FMD-I automatically detects the artery's walls and the artery maximum dilated diameter providing accurate FMD evaluations. In addition, the software offers easy navigation and logical usability during the patient exam.

The measurement of FMD via ultrasound has been established as a reliable non-invasive measurement of endothelial function and has been shown to correlate with invasive testing of coronary artery endothelial function. Numerous interventions that improve cardiovascular risk factors and reduce cardiovascular morbidity and mortality have been shown to increase brachial artery reactivity measured by FMD, thus improving endothelial function.

Dr. Cunningham is also investigating the potential of statins improving quality/survival of a dog in heart failure. He noted that short-term statin therapy has shown beneficial for various heart issues, which seems to mimic human heart therapies. Statins improve endothelial function, acts as an anti-inflammatory, and offer an antioxidant effect. High dose statins have demonstrated increased circulatory bone marrow stem cells.

#### **Dr. Cote – Dilated Cardiomyopathy**

Dr. Cote's research was based on the hypothesis that mutations in sarcomeric and cytoskeletal proteins may cause cardiomyopathy (CMP).

He spoke of a seven-month Portuguese Water Dog with suspected juvenile-dilated cardiomyopathy. Upon surgical investigation, ventricular dilation and thinning with fibrosis was found. He mentioned juvenile CMP in Dobs has different biopsy findings; and in Toy Manchester Terriers, usually males with a monochrid tendency were affected between 3-10 months, with symptoms of pulmonary edema and increased fibrosis of heart tissue.

#### **Dr. Fine – Therapeutic Approach to Pulmonary Hypertension (PHT)**

In his research, when Dr. Fine used [pimobendan](#) on dogs with cardiomyopathy or valve disease, a survival rate of 319 versus 196 days was realized.

[Pimobendan](#) (Vetmedin—Boehringer Ingelheim), a benzimidazole-pyridazinone drug, is classified as an inodilator because of its nonsympathomimetic, nonglycoside positive inotropic (through myocardial calcium sensitization) and vasodilator properties. As such, [Pimobendan](#) increases ventricular contractility and reduces preload and afterload in patients with advanced cardiac insufficiency. When used in conjunction with other cardiac drugs, [pimobendan](#), may benefit dogs with congestive heart failure secondary to dilated cardiomyopathy or valvular insufficiency. [Pimobendan](#) is administered along with other cardiac drugs, such as ACE inhibitors, [furosemide](#), or [digoxin](#). It should not be used as sole therapy. It is given orally at a dosage of 0.2 to 0.6 mg/kg daily divided into two doses given 12 hours apart. Few adverse effects have been observed in dogs receiving the drug. (*taken from [www.veterinarymedicine.dvm360.com](http://www.veterinarymedicine.dvm360.com)*)

Dr. Fine spoke of the use of a Brain Natriuretic Peptide (BNP) test which measures the amount of the BNP hormone in blood. BNP is made by your heart and indicates how well your heart is

working. Normally, only a low amount of BNP is found in your blood. However, if your heart has to work harder than usual over a long period of time, such as from heart failure, the heart releases more BNP, increasing the blood level of BNP. The BNP level will drop when treatment for heart failure is working. The medication [spironolactone](#) was used to treat fluid retention in dogs with dilated cardiomyopathy.

[Sotalol](#) has been shown to be effective to treat dogs with rhythm disturbances (cardiac arrhythmias) of the heart.

### **Pariant – Canine Arrhythmias**

Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) was formerly known as Boxer Cardiomyopathy. ARVC is a genetic disease that runs in families and causes substantial illness and death in young dogs, especially Boxers. It has been reported in humans and recently in cats too. The genetic defect is transmitted as an autosomal dominant trait. For this reason it is strongly recommended that dogs with this congenital defect not be bred.

RyR2, the predominant isoform in cardiac myocytes, or heart muscle cells, comprises a macromolecular complex that includes calstabin2. Protection from cardiac arrhythmia through ryanodine receptor–stabilizing protein Calstabin2 was noted. Furthermore, using wild-type and genetically altered murine models of heart failure induced by myocardial infarction, and manipulating the stoichiometry, or the quantities of reactants and products in a chemical reaction, between calstabin2 and RyR2 can restore normal cardiac function in vivo. (*taken from [www.pnas.org](http://www.pnas.org)*)

Dr. Pariant also mentioned that accurate holter interpretation takes an average of 6.4 hours.