

## **From the AKC Canine Health Foundation News:**

### **A Linked Marker Test for Fanconi Syndrome** [Tuesday, July 31, 2007]

Fanconi Syndrome — a renal tubule disease that affects primarily Basenjis, is a debilitating disease involving the kidneys. Symptoms include the impaired absorption of glucose, phosphate, amino acids, carbonate, uric acid, water, potassium, and sodium into the bloodstream by the kidneys resulting in these compounds being excreted in the urine. Undetected, it can progress to renal failure and will most likely cause a shortened lifespan for the affected dog. Interestingly, Fanconi Syndrome is also found in humans — often affecting children — and can lead to growth failure and Rickets among other symptoms.

The fight against this disease gained a powerful tool this month. The Basenji Health Endowment, the AKC Canine Health Foundation (CHF), and Dr. Gary S. Johnson of the University of Missouri would like to announce the availability of a linked marker DNA test for Fanconi syndrome. This test was developed as part of an ongoing research project to identify the cause of Fanconi syndrome and to eventually eradicate the disease by marker-assisted selective breeding. As with other linked marker tests, the current Fanconi syndrome test is not 100% reliable but is offered as an interim test to provide guidance to those who plan to breed their Basenjis during the 2007-breeding season. Work continues to find the precise genetic cause of Fanconi syndrome and to develop a completely reliable test. Although the test is available for all Basenjis enrolled in the Canine Phenome Project, owners who are not planning to breed their dogs this year are advised to wait until a completely reliable test becomes available. Funds from the Basenji Health Endowment and the CHF have supported development of the interim linked marker test and are supporting the ongoing research.

The Fanconi syndrome linked marker test is now available and may be ordered through the Canine Phenome Project (CPP) at <http://www.caninephenome.org>.

Owners can order the test by performing the following steps:

- Register the dog in the Canine Phenome Project
- Complete the four questionnaires (some questions can be left blank, but all questionnaires must have at least some questions answered)
- Submit blood samples to the CPP. Dogs that have blood samples already submitted to the CPP do not need another sample. Instructions for sample shipping are on the test order form
- Print off the test order form for each dog. The form is on the CPP web site in the section for each dog's individual records
- Mail the form(s) with a check or money order for \$60 (USA funds) per dog, made payable to the University of Missouri. Mailing instructions are on the form

The cost of the test includes listing of the results in the Orthopedic Foundation for Animals' public DNA database ([www.offa.org](http://www.offa.org)). Test results will be provided to the owners by email followed by a mailed report that contains an explanation of the results.

We do ask that breeders indicate on the test request form if the dog in question will be bred in 2007. This allows us to give those dogs priority in testing. Other dogs will be tested, as resources are available, until the testing backlog is processed. Since an estimated 150 dogs can be tested per week, we should be able to reduce the backlog quickly.

The linked marker test is based on DNA sequences at three sites known to reside in a chromosomal region very near the as yet undiscovered mutation responsible for Fanconi syndrome. Certain sequences at these three sites are very common in mutant chromosomes but relatively rare in normal chromosomes. The pattern of sequences at these three sites is used to classify the tested dog as a "probable normal" with two normal chromosomes (one from the sire and one from the dam), a "probable carrier" with one normal chromosome and one mutant chromosome, and a "probable affected" with two mutant chromosomes. Based on preliminary experiments we expect DNA from approximately 10% of the Basenjis to produce a pattern that is in between that expected from normal dogs and that expected from carriers. In this case the reported result will be "indecisive."

"In order to minimize the chances of producing a pup with Fanconi syndrome, we recommend each mating include at least one dog that has tested clear," notes Dr. Johnson. "We would like to thank the members of the Basenji community who made the development of this test possible by donating funds and/or submitting blood samples and information from their Basenjis."