

## Put It in the Bank . . .

### *the DNA Bank, That Is*

by Patti McDowell

*Portions of this article used with permission of OFA.*

**P**rior to breeding a litter, responsible breeders gather health information about potential sires and dams through the use of currently available tools, such as x-rays, cardiac screenings, and blood tests. With the exception of DNA testing for cystinuria, these tests provide no guarantee of what a dog will eventually produce in his or her offspring. True predictability rests with additional yet-to-be-developed genetic tests. Only research will make these tests a reality, and research will never happen without health data and DNA.

The CHIC (Canine Health Information Center) DNA Repository began in September 2005 as a pilot program with the Golden Retriever Club of America. It is co-sponsored by the Orthopedic Foundation for Animals (OFA) and the AKC Canine Health Foundation (CHF). The repository collects and stores canine DNA samples, along with corresponding pedigree and health history information, to facilitate research and testing aimed at reducing the incidence of inherited disease

in dogs. This repository has four main objectives: 1) to facilitate more rapid research by expediting the sample collection process and allowing investigators access to a bank of DNA information; 2) to provide researchers with optimized family groups needed for research; 3) to allow breeders to take advantage of future DNA-based disease tests as they become available; and 4) to improve the likelihood of genetic discovery by fostering collaboration between breeders and owners and the research community.

Every dog is important for DNA research, those that have problems and those that appear perfectly healthy. Healthy dogs might be related to dogs with problems, making their DNA valuable for comparison or as control samples. A healthy dog may someday tear a cruciate ligament, bloat or develop cancer, or may have a relative that develops these problems. Therefore, it is critically important to have every possible dog in the database, particularly entire families.

Blood is the gold standard for genetic material, and the yield of DNA extracted from blood is sufficient for all

research methods, including technologies on the horizon. Moreover, the stability and purity of blood DNA is of the highest caliber, which offers many benefits. The drawback of banking blood samples is cost—drawing, shipping, storing, and extracting DNA from blood are more expensive than other alternatives. In addition to the submission kit fee of \$20, there may be a cost for drawing the blood (some veterinarians do not charge for this because it is for research) and the mailing costs. The cost, however, is minimal when compared to the benefits. The \$20 submission fee is the total cost for storage of the DNA blood sample, and rebates are available. (See box) There are no annual storage fees after submission. All other costs are being absorbed by the CHIC.

Cheek swab-derived DNA is an option for DNA banking. The collection process is less costly, but cheek swabs have a shelf life of only 10 to 12 years, even if properly stored. Also, the yield and purity of this DNA is inferior to that obtained from blood. Blood samples are stored frozen and last indefinitely. In addition blood sample collections are good for hundreds of studies, while cheek swab collections are good for one or two studies. Because many studies may not take place for years, blood is clearly the preferred method of collection and storage. The Animal Molecular Genetics Lab at the University of

Missouri will receive and store all blood samples. (Frozen semen straws are a source of DNA for deceased dogs.)

Since many diseases are late onset, the bank recognizes that periodic updates to the health records of each dog are important. Owners will be



Future generations will benefit from the DNA we submit today. They are counting on us.

contacted approximately every two years to determine if there are any health updates. However, owners are encouraged to proactively contact the CHIC DNA Bank to update the health status of their dog(s) whenever there are significant changes.

Participation by Newf owners and breeders began slowly, with very few dogs having DNA stored in the

**DEPOSIT CHECKLIST**

- Register dog with AKC
- Get repository application
- Complete application and request blood collection kit
- Use kit to collect and send blood; send health survey and pedigree
- Tell others to do the same

first year. As awareness of the program has increased, participation by the Newfoundland community has taken off in a huge way. The reduced cost clinic at the last National Specialty was a tremendous success and every slot was filled. Each week more and more Newfs appear in the OFA database, showing that their DNA has been stored for canine genetic research.

**How the Process Works**

**Step 1:** Register the dog with the AKC. This is necessary because dogs are stored in the DNA database by AKC registration name and registration number, allowing them to be matched with sires, dams, littermates, and other relatives.

**Step 2:** Get the "Application for DNA Repository" by downloading it from <http://www.caninehealthinfo.org/dnaapp.pdf> or by calling OFA at 800-442-0418.

**Step 3:** Complete the form and check the box requesting a Blood Collection Kit. Return the form to the appropriate address and include your check for payment. Although the form asks for tattoo

or microchip information, that is not a prerequisite for submitting a sample.

**Step 4:** When the kit arrives, it will include instructions and a health survey. Have a blood sample drawn and submit it to the appropriate address, listed on the form. Remember, there is no one to accept samples on the weekend, so please do your collection and shipment early in the week. Send the completed survey and a three-generation pedigree to the appropriate address, listed on the survey, which will be different from where the blood is sent.

It is important to realize that every dog is important. The value of each and every dog's DNA increases the value of all of the others in the database. Breeders and owners can submit samples on each dog they own. Breeders can require puppy buyers to submit DNA by providing the new owners with their AKC individual dog registration papers and a completed form for a blood sample DNA kit at the time they take their new puppy home. The owners can then have a sample drawn at one of the puppy's check-ups.

Breeders can also contact owners of dogs from past litters with a letter explaining the program and its importance, and provide them with a form to mail to obtain a kit. Breeders can keep track of which dogs have been submitted by periodically checking the OFA website at [offa.org](http://offa.org).

As the amount of material in the repository increases, researchers will begin to look at it as a valuable resource. The breeds with the greatest amount of material will be the ones sending a strong message to the scientific community. It is up to Newfoundland owners and breeders to make certain the Newfoundland breed is in the "front of the line" when research projects are selected. It is up to each of us to make certain that our "actions speak as loud as our words."

One dog at a time. One owner at a time. One breeder at a time. It should

be the goal of each and every one of us to make certain that Newfoundlands become the number one breed in DNA stored for research, and that we remain number one permanently by instituting DNA collection as a part of our normal way of doing things.

We can help to make a difference in the future health of the breed we cherish through research. DNA is unique; DNA is irreplaceable. Every dog, every sample is important. Please order your kits today.

**NEWS FLASH! REBATE PROGRAM ANNOUNCED!**

The NCA Charitable Trust announces a rebate program to subsidize the submission of DNA to the DNA Repository. The rebate of \$20 per dog, which is the current cost, is for blood samples only; cheek swab submissions are not eligible. This rebate may **not** be used in conjunction with discount programs, such as those conducted at specialties. In addition, the program is limited to purebred Newfoundlands, registered with the AKC or any official registry recognized by the AKC, and to the first 500 rebate requests.

To apply for a rebate, duplicate the certificate sent by CHIC/OFA that verifies receipt of the blood sample. Send this copy, along with a self-addressed stamped envelope, to Kathy Paxton, 3101 Benjamin Drive, Taneytown, MD 21787-2755. Rebate checks will be issued to the owners listed on the certificates.

This program was proposed by the Health and Longevity Committee and is being funded by the Newfoundland Health Challenge.

Newfoundland DNA: Totally unique; completely irreplaceable!