

Canine Health Information Center (CHIC)

Eddie Dziuk
Chief Operating Officer
Orthopedic Foundation for Animals (OFA)

Since its official launch at the 2001 CHF conference, CHIC has had valuable news to report back to the Foundation, Eddie Dziuk told participants.

In 2003, CHIC presented a detailed overview of its purpose and potential. The 2005 conference marked the launch of the Center's DNA repository. This year, Dziuk gave the audience a tour of the new online health survey introduced by the OFA.

Canine health databases are a tool to help breeders make more informed breeding decisions, produce healthier dogs, and reduce the incidence of genetic disease. The concept for CHIC originated within the AKC delegate body, and CHF and OFA have sponsored the Center jointly since its inception. Today, CHIC is working with nearly 100 Parent Clubs, representing more than half of the AKC-recognized breeds, and more than 40,000 dogs have been tested. Test results are posted online in a publicly accessible database.

Dziuk emphasized that the test protocols for specific breeds are set by Parent Clubs, not by the CHF or the OFA. "This is the Parent Club driving the process," he said. "This is the Parent Club's recommendation on what the appropriate screening should be for the particular breed."

The purpose of the system is to encourage health testing and awareness, not to define normalcy; a CHIC number does not imply that a dog is free of defective genes. Breeders can do a better job of avoiding undesired traits if they know where to find them in a breed population. CHIC supports that effort by providing a consolidated, central database, with appropriate infrastructure and staff, at no cost to the clubs.

The DNA repository was established to speed the research process by eliminating the 12- to 24-month search for samples that had previously been a necessary first step for canine genetics researchers. The repository offers the research community a standing bank of samples from healthy and diseased dogs, with the optimized family groupings often required for research purposes. The system allows breeders to take advantage of future DNA-based tests as they become available, and fosters a team environment between breeders and researchers that improves the likelihood of genetic discovery.

"It's all working together toward a common goal and finding the genetic marker for a disease," Dziuk said. "Independently, it probably would never happen."

Early on, the repository had to balance the pros and cons of blood versus cheek swab samples. Blood yields more DNA of higher quality and can be used with all scientific applications, including emerging technologies like single nucleotide polymorphism

(SNP). However, blood tests are more invasive, cost more, and cannot be done by a breeder working from home. While swabs yield less DNA of poorer quality, and cannot yet be used with new technology, they cost less, they are non-invasive, and their simplicity drives a higher participation rate.

After considerable discussion, CHIC decided to offer a dual solution and leave it to owners to choose their sampling method. "Blood is much preferred," Dziuk said. However, if it is a choice between representing a dog and not including it at all, "we're certainly interested in having a swab."

The repository was launched two years ago with a "wildly successful program" to collect samples, pedigrees, and health histories for nearly 1,000 dogs. Working with the Golden Retriever Club of America, Dziuk said CHIC collected "a wonderful mix of healthy dogs, diseased dogs, young dogs and old," providing the diversity a researcher requires to launch a health study. Two years later, the repository has samples representing more than 80 breeds, and increased its total sample count from 3,000 in August to 4,000 in October after holding DNA collection clinics at about a dozen breed events.

Although CHIC still considers the repository to be in its infancy, it already has success stories to report. When Drs. Cheryl London and Kerstin Lindblad-Toh needed suitable samples for a study of mast cell tumors in Golden Retrievers, CHIC was able to provide samples, pathology reports, and pedigrees for diseased dogs, as well as a number of animals for the control group.

The benefit to the breeding community was brought home in mid-October 2007, when a breeder approached CHIC for genetic information on a sire that had recently died. The breeder was looking for evidence of Progressive Retinal Atrophy (PRA), and requested a portion of a past sample to test the dog's status.

"What a wonderful tool for this particular breeder," Dziuk said. Rather than having all the offspring tested, the breeder simply went back to the deceased dog's DNA.

Dziuk noted that the DNA repository had been the vision of the late Bob Kelly. He acknowledged Kelly as a close mentor and a good friend and credited him with "the foresight to see this through."

The OFA online survey was introduced in September with two pilot breeds, the Labrador Retriever and the Australian Cattle Dog. Dziuk said each breed survey is distinct—while the Labrador Retriever Club of America asked questions at a 60,000-foot level, the Australian Cattle Dog questionnaire drills down to specific health concerns within the breeder community.

The Labrador Retriever survey received more than 600 responses between Labor Day and late October, while the Australian Cattle Dog site generated more than 275 in its first few weeks of operation.

In the years ahead, Dziuk said he hopes to see a full listing of breed-specific health surveys on the OFA website. The surveys would each be developed by the individual Parent Clubs, enabling owners to answer the most pertinent questions for their breeds.

The centralized approach would give clubs access to technology and technical expertise that might otherwise be beyond their reach, and would eliminate concerns about sharing confidential test results within a group of breeders. Dziuk urged participants to get in touch if they want move quickly in the direction of an online survey. CHIC is a small organization, he said, and the limited resources available for online surveys will be devoted to the breeds that step up first.

Discussion

An OFA staff member said she is tremendously excited about the online survey, noting that her Parent Club's in-house survey had only collected 61 responses for a breed that registers a very large number of dogs per year.

A participant asked whether veterinary clinics had been invited to place patients' blood samples in the DNA repository once definitive diagnosis had been made. Dziuk said CHIC has had limited staff time for outreach and education, and has concentrated its efforts on major teaching hospitals and veterinary schools.

A representative of the Australian Cattle Dog Club of America described the online survey as "an enormous service," particularly for smaller breed clubs. "With good outreach and communications, it is very possible for even the small clubs to get a lot of interested folks" to fill out the survey, she said. "It's almost contagious once it gets going."

A veterinary pathologist urged other participants to allow autopsies after their dogs die, noting that "a tremendous amount of information" would otherwise be lost.

A participant asked for clarification of the different DNA banks in which clubs are invited to participate. Dziuk said the CHIC repository is completely separate from the AKC donor program, which uses a single swab for a 14-marker panel that verifies parentage and provides for studbook integrity. The rules governing the AKC's DNA bank prohibit other uses for the data, including health research—and, in any case, the quantity of DNA is insufficient for research purposes.

The CHIC repository is an alternative to the "sample fatigue" many breeders are experiencing, he said, since it is available to all the researchers who have been requesting DNA for individual studies. Most of the researchers "are wonderful about collaborating" but, before the repository, nobody kept track of the samples available in different labs. "There was no centralized database to report the existence of that sample, and that prevented the collaborative spirit from moving forward."

A participant asked whether her club could arrange CHIC numbers for dogs previously sampled by a university laboratory. Dziuk said arrangements could probably be made,

though CHIC would probably go back to owners to update the dogs' health data and gather additional detail.

A participant pointed out that DNA could be extracted from any tissue and suggested that even material from dewclaws could be added to the database. Dziuk agreed that any cell nucleus will be rich in DNA, but explained that the two laboratories associated with the CHIC repository are optimized for blood samples and cheek swabs.