

Just Labs[®]

MARCH/APRIL 2010

VOL. 9 • NO. 6

The Healthy Lab

Cornell University
Embarks on New Study

"Out There" Training

Part 3

Blindsided

The Story of Seeker

PLUS:

The Vet Clinic: How It Works – The Sense of Smell
Citizen Lab: Troubleshooting Stay and Down
And Junior's in the garage with JJ and the Mister.



A CELEBRATION OF THE LABRADOR RETRIEVER

\$5.00 U.S.A. \$7.50 Canada/Int'l

The Healthy

Cornell University embarks on a four-year study to archive, beginning with healthy dogs. Their breed

by Paula Piatt

They told us there was nothing they could do for her. The ride home from the University of Montreal Veterinary Hospital was a quiet one. Brooks and I talked. Well, I did anyway. I said I was sorry there wasn't anything I could do. If there was, I would certainly do it. My chance came too late for my 11-year-old yellow Lab. We lost Brooks just two months later, a victim of bone cancer. My chance to help would come in 10 years, almost to the day.

When I first heard of the genetic database being built by Cornell University – one that would help find treatments for canine cancer, among other things – I didn't hesitate for a minute. An Internet search and a few phone calls led me to Dr. Marta Castelhana, one of the medical genetics veterinarians and a research associate at the Cornell Uni-

My tough conversation with Brooks, and what we had to go through, was the inspiration to give something back so that maybe future dogs and owners won't have to go through the same thing.

versity College of Veterinary Medicine in Ithaca, New York. The study, she said, would collect DNA from older, healthy Labrador retrievers. The DNA would then be analyzed and compared with that of diseased dogs they already had in a one-of-a-kind DNA bank. From there new treatments could be created and, maybe, just maybe, the heartache I felt with Brooks could be avoided by other Lab owners.



Cornell University College of Veterinary Medicine (Photo Courtesy of Cornell University)


The \$900,000, four-year grant from the National Institutes of Health will not only have huge implications for our canine friends but, according to veterinarians in charge, could someday help humans. "The dog was considered a good model for a number of human diseases," says Dr. Rory Todhunter, professor of surgery at Cornell who, along with Dr. Castelhana, leads the study. "The dog is a good intermediary between a mouse and a human. And a lot of people have an interest in dogs. We can do the important work on dog health and, hopefully, someone will be able to leverage this for people." The grant has three main objectives: to build the dog DNA archive, to identify and map the genes and markers for inherited diseases, and to publish the information and make the DNA maps available to the scientific community for more research.

The genetics of the Cornell study can be a bit overwhelming if you're not a molecular biologist, but it comes down to comparing the affected and unaffected dogs and searching their DNA for the difference. Those differences can then be isolated and tested, which can create potential cures.

The popular Labrador was the likely choice. "We started

LAB

*build the dog DNA
of choice? You guessed it.*



with Labs because we had many more affected Labs in the bank than other dogs," says Dr. Castelhana. "We then went through our [medical] services and found which inherited diseases appeared the most." They narrowed it down to 10, many of which are predisposed in the Labrador: hip dysplasia, ruptured cranial cruciate ligaments, mast cell tumors, lymphoma, posterior polar cataracts, liver disease, laryngeal paralysis, degenerative myelopathy, heart tricuspid valve dysplasia, and obesity.

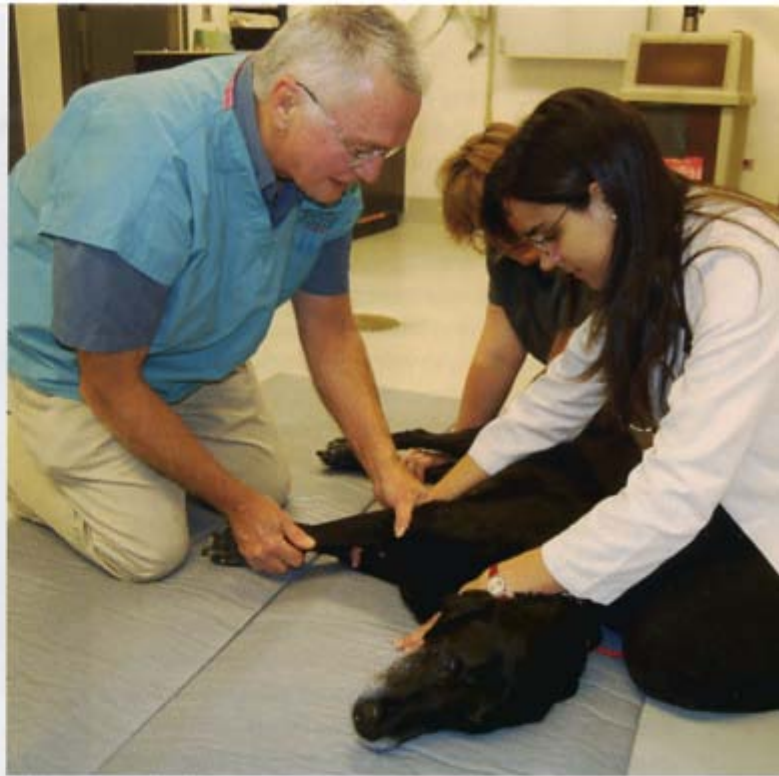
A phone call that started out with, "I may have a dog eligible to help out," turned into, "Why don't you bring all three?" What I thought would be a simple blood test for DNA capture turned into a nine-hour

odyssey for our whole pack. Because of the nature of the study, Cornell veterinarians had to know for sure that all of them were indeed healthy and that meant tests – nine in all – to look for the diseases targeted in the study.

"An owner can tell us that their Lab is healthy, but until we have our specialists examine the dog, we can't say for sure," says Dr. Castelhana, listing the complimentary tests the dogs would have that day – a full blood and chemistry panel, urinalysis, a general physical exam, orthopedic and ophthalmological exams, an oncological body map, neurology and nutritional consultations, a cardiac exam and echocardiogram, and a gait analysis.

I would be lying if I said the thought that they might find something wrong didn't cross my mind. With three dogs and all of those tests, what were the chances that we'd walk out of there with a clean bill of health? Ben, 13, did have some "old age" problems, including the laryngeal paralysis they were looking for. But this was also *for* Ben, I reminded myself when a little doubt about the whole trip crept into my mind.

The first exam was orthopedic, and I cringed as they laid him down and examined each and every joint. As Dr.



Dr. Rory Todhunter, Natalia Andrade, and Laura Barlow examine Ben.

Todhunter manipulated, pushed, and pulled, I winced right along with our 13-year-old "retired athlete" as he came to be known. We go out of our way to help him avoid joint pain, and I could tell this wasn't easy for him, yet he was the only one of the three to tough it out and lay down on his side for the full workup. That's our Ben.

The same thought came during the echocardiogram. For this test, the dogs were laid on their side and the probe applied through a hole in the bottom of the table. As he laid there, Dr. Marc Kraus and a number of vet students examined his heart while I watched the blue, red, and green pulses on the screen. This wasn't the first day of pheasant season Ben

Dr. Eric Ledbetter and Natalia Andrade give Ben his eye exam.



was used to, but being a tolerant Lab, he put up with it. I was doing fine, too – until our eyes met. It may have been the hardest mental photo I've ever taken, and it was even harder to walk out of the room and leave him there.

Under normal circumstances, owners don't accompany their pets into the inner workings of the hospital – and for good reason. As Maddie was put through her gait analysis paces on the force plate equipment, she was more interested in getting to me than giving vet student Ingrid Rhinehart a good reading. In theory, Maddie would simply walk along the walkway at a normal pace. As she passed over the pressure plates built into the walkway, technicians could get a very specific reading of the weight she bore on each leg and how her paw and leg rolled through the stride. Her walking would trip a video camera to capture her gait. Veterinarians can use that information in a number of ways, including study of gait abnormalities among breeds and in assessing the value of certain treatments. Maddie wasn't interested in helping science; she just wanted to run to Mom. Not exactly what scientists had in mind when they created that complicated network of pressure plates and video wires.

And who would have thought Hailey's toughest assignment would be the urinalysis test, which may have ultimately told them more about her psychological condition than her urine's specific gravity. By about 11 o'clock, technician Laura and student Vera came to me with a not-so-small request. "Can you get her to pee?"

Apparently, they had tried everything and now brought the bouncy Lab to Mom, along with a ladle and a plastic cup.



Ingrid Rhinehart and Dr. Jeremy Rawlinson attempt force plate gait analysis with Maddie and then examine the video on the computer.

"We've tried several times, but she wouldn't go outside when it was raining. When it stopped, she wouldn't pee on the wet grass." Welcome to my world, I thought.

After a few minutes of walking around in familiar circles, she squatted and Laura ran to her backside with the cup. It seems she had been holding up progress – and her own breakfast – with her "quirks." I'm not sure how they'll catalog Hailey in the DNA bank, or how those "quirks" show up in her genetics, but it was a light moment in the midst of some pretty heavy science.

Though there were a lot of tests and the dogs spent an entire day in a clinic, the atmosphere was not altogether clinical. "It is a full day for the dogs, but they get a lot of love. They don't seem to mind it too much," says Dr. Castelhana. Indeed, technicians and clinicians at Cornell enjoy the visitors. At the animal hospital, they aren't used to seeing healthy animals walk through the door. "We have some sad days," she says. "We love seeing the healthy puppies coming in with their tails wagging." At the end of the day, even our youngest black Lab was asleep before we left the parking lot for home.

And as much as we Lab owners may not want to believe it, it's not just about Labrador retrievers. The disease markers researchers find will also help other breeds. While the first year is devoted to the Labs, other breeds will be studied in the coming three years. According to Dr. Castelhana, they are looking for 100 control animals in each year of the study. "We'll go back to our database and look for the next largest number of affected dogs," she says. "We may even continue



Dr. Marc Kraus and students perform Ben's heart exams.

to do Labs; they are a very important breed in terms of our hospital population." Many dogs share the same problems, however, and finding, for example, the hip dysplasia marker in the Lab will help other large breeds. "We can work with one breed and find one or two markers," says Dr. Todhunter. "If large dogs all get hip dysplasia, there are markers that are going to be common across the breeds."

The genotypes, or the dogs' genetic composition, collected through the study will be available indefinitely to researchers at Cornell and elsewhere. The actual DNA is stored in a freezer at the university, along with a medical database that lists the information and physical characteristics associated with that sample. A searchable database allows researchers to pull out DNA samples for other studies.

The medical services at the hospital are finding additional useful information during the daylong exams. "Some of the things that stand out on these tests we're finding are normal for an older Lab, and they can live with these things for the rest of their lives. We now know these things are more common," Dr. Castelhana says. Indeed, after a full 60-minute recap of the dogs' blood work and urinalysis, there were some readings out of the "normal" range, but it's turning out that for a geriatric Lab, they are normal. Ben's anemia is really

faces or chew their paws regularly. When they wanted to know where the dogs slept, thankfully, they never asked if they prefer a memory foam mattress or the traditional coil boxspring. (I'm not sure they've decided yet; we're still in the "testing" phase).

The study has also taught Dr. Castelhana the passion of the Lab owner. "The response has been overwhelming," says the researcher, who has yet to jump into the Lab ownership fray herself, although this study is slowly convincing her that the breed is right for her. "Lab owners are great to work with overall. There hasn't been a week that goes by that we haven't had calls. In fact, we've had to write a special protocol for accepting them because I would be on the phone all day.

"I've found [Lab people] to be very educated owners, and the breeders are interested because they care about the breed and share all of their information freely," she says, adding there's a lot of potential in the breed. "Someday, you could see a 20-year-old Labrador," although both Drs. Todhunter and Castelhana admit that's a long way down the road.

"I think market forces will control a lot of that," Dr. Todhunter says, realizing the full potential of the genetic study. "People don't select a dog based on one feature, and [the study] will affect how quickly things change. And the market is going to decide what people can afford. Not everyone is going to be able to afford this kind of testing. As we identify the dogs without the form of the genes that lead to disease, they are going to become more valuable."

But if breeders can reduce the incidence of cancer as opposed to say, giving green eyes to yellow Labs, how does that not help the breed? Sitting in the waiting room as Ben, Maddie, and Hailey were put through their paces, we saw it all – three-legged dogs, e-collars galore, and one large yellow Lab whose nose, and various other spots, had been removed because of cancer. Through it all, the owners were smiling and loving their dogs, hoping someone could help. Why shouldn't it have been us, blessed with three still-healthy family members? It really was, as Dr. Castelhana said, a legacy

that we could leave the breed.

Dog after dog left the hospital that day; I'm sure the news was not good in all the cases. Some were about to experience the same ride I had a decade ago. There may not be anything they can do today, but someday, they'll have to opportunity to help. It might take 10 hours in a car, an overnight with three dogs in a small motel room, a 5:30 wake-up call, no breakfast for anyone, pages of probing questions, nine hours in a waiting room, and getting your dog to pee...but it will be worth it, to finally be able to do something.



Anyone interested in finding out more about the study can contact Dr. Castelhana via e-mail at dnabank@cornell.edu or at the Cornell University Companion Animal Hospital at (607) 253-3060.



not anything to worry about; they're finding it more and more common as the dogs age.

Hailey's echocardiogram, however, was not completely normal for a dog of her age. The "findings consistent with very early stage of chronic valve disease," did, of course, raise a red flag for the doting parents. While it's not "usual," it's not something to constantly worry about Dr. Castelhana told us. Another echocardiogram next year will tell us if we need to follow-up with more aggressive treatment.

To get a full measure of the "dog's life" they lead, we (the owners) were also put to the test with questionnaires on behaviors, dermatology, and oncology, as well as environmental questions that asked about pesticide use, how the dogs reacted to strangers, and when (or if) they paw their