

# ***Volunteers Needed for Research***

## **Progressive Retinal Atrophy (PRA)**

### **Background Information about PRA**

PRA or degeneration (PRD) is the name for several eye diseases that are progressive and lead to blindness. It is the most common disorder affecting the retina of the eye in dogs. There are two broad categories of the disease, generalized and centralized. Generalized PRA usually has a late onset, often as late as five to eight years of age. Both eyes are affected and there is progressive vision loss that always ends in complete blindness. Centralized PRA also affects both eyes and is progressive but many dogs retain some vision. **There is no treatment or cure for PRA.**

PRA was first recognized in the early 1900s in Gordon Setters. Since then, this inherited condition has been documented in over 100 breeds and also in mixed breed animals. The most widespread form of PRA is progressive rod-cone degeneration (prcd) and affects many breeds including Poodles, American and English Cockers, Labrador Retrievers, Chesapeake Bay Retrievers, Golden Retrievers, and Portuguese Water Dogs.

**The prcd form of PRA is an inherited trait.** The mode of inheritance is as an “autosomal recessive.” In plain English, this means that if one parent *carries the gene for PRA* and is bred to a *dog that does not carry the gene*, the probability is that half of their offspring will be “carriers” and half will be clear of the gene. Carriers never develop PRA—it is just a mutation that will be passed on from breeding to breeding. If a carrier is bred to a carrier, there is a strong probability that affected animals will be produced. Specifically, probability would tell us that in a litter of 8 puppies from two carriers, 2 puppies should be affected, 4 should be carriers, and 2 should be clear.

The late onset of prcd PRA is particularly devastating to a breed because a sire or dam may have been bred numerous times prior to the onset of symptoms. Only a carrier parent can produce PRA when bred to another carrier. Even if a puppy is not affected, every carrier will produce more carriers. Each carrier will have littermates that are carriers...and parents that were carriers...and grandparents...and offspring.

### **What does this have to do with Flat-coats?**

PRA is rare in Flat-Coats. Based on reports by certified veterinary ophthalmologists, PRA has been diagnosed in no more than 1% of Flat-Coats. This figure probably understates the incidence of PRA since many owners will not have a report submitted to CERF unless they are working with a certified specialist.

Even though this is a rare disease, breeders should still be concerned about PRA and work toward developing a genetic test to identify dogs that are carriers. Carriers do not need to be eliminated from a breeding program. The purpose of identifying carriers is to ensure that a carrier is not bred to another carrier, thus producing affected dogs. In a small gene pool like FCRs, it would be unwise to eliminate carriers as valuable genetic variation could be lost.

Based on countries that openly report statistics about diseases, there is evidence of FCRs that are affected with PRA or are carriers of PRA. Many bloodlines are behind these individuals.

While it is impossible as of yet to identify which bloodlines or individual dogs are passing on this mutation, **some of the foundation dogs for our breed carried or were affected with PRA.** If they were not, PRA could not exist in our breed today.

As the gene pool of FCRs becomes less and less diverse with each generation, the likelihood that mutations such as PRA will surface as we know it is lurking in some of the pedigrees of our long-deceased foundation dogs.

**What can we do about it?**

OptiGen is a company that researches and develops genetic tests for a variety of diseases. They have identified genetic markers for the prcd PRA in Labrador Retrievers, Golden Retrievers and a number of other breeds.

Optigen would like to develop a genetic test for Flat-Coats. What they need are blood samples from just a few affected animals. It is even possible that they could find the genetic marker with just ONE blood sample.

It is known from CERF reports that there are FCRs affected with PRA in the U.S. and in Europe. The FCRSA is doing further work with CERF and the Veterinary Medical Data Base (VMDB) to try to get more precise estimates of the number of affected dogs, including some that may not have had CERF reports.

As long as Optigen gives approval prior to the submission of a sample for this research, the testing is free. Complete confidentiality about the identity of the dog is assured. Test reports are only discussed with the owner. It is up to the owner to decide if those results will be shared with the Sharon Myers Health Committee of the FCRSA.

***If you have an affected dog or are aware of an affected dog, please consider participating in this study. Once Optigen has found a genetic test for FCRs, its availability will be announced. Any FCR that has been examined by a board certified veterinary ophthalmologist and that has been diagnosed with any form of PRA is eligible for FREE TESTING as long as the proper steps are followed for inclusion in the research.***

The Sharon Myers Health Committee would like to thank Mary Young for all her time in researching and writing the article on PRA. We feel that developing the Optigen test for Flat Coats is a way that we can all assure that this devastating disease does not become a problem in our breed. Please be assured of confidentiality in submitting samples directly to Optigen by following the directions on their website [www.optigen.com/opt9\\_research.html](http://www.optigen.com/opt9_research.html) Go to "RESEARCH SAMPLES NEEDED FOR PRA AND CATARACTS" and follow the instructions. A form with further details can also be found in this newsletter. If anyone has any questions or concerns, they may contact me and be assured of confidentiality.

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