

## **An Update on Eye Disease in Golden Retrievers Part 2: Pigmentary Uveitis**

*GRCA Health and Genetics Committee*

Pigmentary uveitis, also known as Golden Retriever uveitis, is an important cause of blindness in Golden Retrievers. It was first described in the scientific literature as a cause of blindness in Golden Retrievers in 2000 (Sapienza et al, 2000), but the GRCA Health and Genetics Committee is aware of anecdotal reports which suggest it was a problem in the breed well before this. The American College of Veterinary Ophthalmologists listed Pigmentary uveitis as a condition presumed to be inherited in Golden Retrievers beginning in 2001, which means that prior to that time, dogs diagnosed with Pigmentary uveitis were eligible to receive CERF numbers .

### **Uveitis**

Uveitis is inflammation in the parts of the eye that normally contain the blood vessels, called the uvea, which includes the iris, ciliary body and choroid. Many things can cause uveitis, including infections, cancer, and autoimmune diseases. Blood, inflammatory cells, and clotting factors tend to leak from the blood vessels in affected eyes, and the disease may not only be painful, but may also cause serious secondary conditions including glaucoma, cataracts and blindness.

### **Features of Pigmentary uveitis (Golden Retriever uveitis)**

Pigmentary uveitis is a specific form of uveitis that affects exclusively or almost exclusively Golden Retrievers. Pigmentary uveitis is not associated with any known systemic disease or underlying cause. Pigmentary uveitis is typically a disease of middle-aged or older Goldens, with most diagnosed at five years old and beyond (ACVO, 2007).

The Sapienza paper described an age range of 4.5 to 14.5 years old, and both eyes were involved in most of the cases. This paper also showed that pigmentary uveitis is often associated with iridociliary cysts, can cause cataracts, and frequently progresses to glaucoma, with 46% of the affected eyes becoming blind as a result of glaucoma (Sapienza et al, 2000).

### **Prevalence of Pigmentary Uveitis in Golden Retrievers**

The Health and Genetics Committee is receiving increasing numbers of inquiries about pigmentary uveitis from the GRCA membership. Several members have discussed pigmentary uveitis with ophthalmologists who are also reporting an increased frequency of pigmentary uveitis. However, because pigmentary uveitis is often diagnosed at an ophthalmologist's office due to clinical symptoms instead of at well-dog CERF screening clinics, many or most cases are not tracked at a central database. Therefore, we currently do not have accurate incidence information, and this will be discussed further below.

### **Importance of Early Detection**

Early detection is important for obtaining the most effective treatment. However, signs of pigmentary uveitis are often subtle and may be confused with less serious conditions, such as conjunctivitis. Owners often fail to notice anything different about affected Golden Retrievers until it is too late to save vision. In some cases there are no signs noticed by owners. In other cases, the eyes may be reddened or there may be a mild discharge. Therefore, all Golden Retrievers should have yearly eye examinations by a veterinary ophthalmologist. These exams should begin prior to breeding for breeding dogs, but pet owners may wish to begin these yearly exams at about 4-5 years of age. In addition, Golden Retrievers with unexplained tearing or redness of the eye should be

examined by an ophthalmologist promptly. There are treatments available and because untreated pigmentary uveitis is painful, often progresses to blindness, and treatments vary in effectiveness, early consultation with a veterinary ophthalmologist is important both for obtaining a definitive diagnosis and the best chance for preserving vision.

### **Breeding Considerations**

Because pigmentary uveitis often develops after the prime reproductive years, it is difficult to control in breeding programs. Further, we do not yet understand the mode of inheritance of pigmentary uveitis, so the most prudent prevention strategy is to plan breedings that minimize the genetic contribution of affected dogs and their close relatives. For current breeders, this involves diligent investigation into the results of eye examinations of direct ancestors and their siblings in old age. For owners of all Golden Retrievers that have been bred in the past, this requires that eye examinations are continued throughout the dog's lifetime so that their status is known. And to complete the flow of information between breeders, owners should register normal results with CERF so that the data is available to all subsequent generations via searchable online databases. (Please see <http://grca.org/health/eyes.html> for a more complete policy statement of a breeder's responsibilities regarding lifelong eye examinations.)

In addition, the Health and Genetics Committee strongly recommends that all ophthalmology examinations (other than perhaps for trauma) include a Canine Eye Registration Foundation (CERF) report. If the dog has genetic eye disease and is ineligible for a CERF number, the owner does not need to submit the owner copy to CERF, but the ophthalmologist will submit the CERF copy. CERF does not disclose the identity of affected dogs. However, these reports allow CERF and GRCA to track the

frequency of eye disease in general, as well as the frequency of specific forms of eye disease, such as pigmentary uveitis, in Golden Retrievers. This aggregate information helps us better understand how eye diseases impact the breed, may help us become more rapidly aware of emerging diseases, and aids in funding decisions regarding research projects. Owners and breeders can search the CERF database to verify whether or not a dog of interest has passed an ophthalmologist's exam and is in the database (search engine is online at <http://www.vmdb.org/verify.html>).

## **Research**

We have been very fortunate to have veterinary ophthalmologist Dr. Wendy Townsend, Assistant Professor of Comparative Ophthalmology at Michigan State University, investigating pigmentary uveitis. And we are very grateful to the owners of dogs with pigmentary uveitis who have submitted DNA samples, pedigrees, and diagnostic information to Dr Townsend. At this time, Dr Townsend is no longer collecting DNA samples because the project is in the analysis stage, and we look forward to her findings. However, there will still be much work to be done, and we urgently request that owners of affected dogs submit blood samples to the Canine Health Information Center (CHIC) DNA repository for use in future research. The CHIC DNA repository collects DNA samples, pedigrees and health histories from dogs for use in approved research projects and is an effort designed to reduce inherited diseases in dogs. More information on the CHIC DNA repository is available online at <http://www.caninehealthinfo.org/dnabank.html>. Sample submission is free for affected dogs, and arrangements should be made through Eddie Dzuik at [EDziuk@OFFA.org](mailto:EDziuk@OFFA.org). In addition, it is usually very helpful to researchers to have DNA samples from unaffected

first degree relatives (parents, siblings, offspring). This disease is extremely challenging to control without a DNA test, so owner participation in research is vital to the control of pigmentary uveitis.

## **References**

ACVO (American College of Veterinary Ophthalmologists). Ocular Disorders Presumed to be Inherited in Purebred Dogs, Fifth Edition. ACVO. West Lafayette, IN, 2007

Sapienza J, Simo FJ, Prade-Sapienza A. Golden Retriever Uveitis: 75 cases (1994-1999). Vet Ophthal. 4:241-246, 2000.

## **Pigmentary Uveitis: Frequently Asked Questions**

Dr. Wendy Townsend, Assistant Professor of Comparative Ophthalmology at Michigan State University and a pigmentary uveitis researcher has graciously agreed to answer some of the questions commonly asked about pigmentary uveitis.

**Many dogs diagnosed with PU come from lines with a long pedigree history of normal eye examinations and no known prior PU. How certain are ophthalmologists that this is an inherited disease, and on what is this based?**

*We strongly suspect that the disease is inherited because we don't see a condition that really looks exactly like this in any other breed. If we were dealing with an infectious cause, etc. we would expect to see it in other breeds. Also from my discussion with ophthalmologists in the UK, the condition is very infrequently seen in the Golden Retriever population there. We also have pedigrees in which we can trace the condition for several generations. In those pedigrees in which there are large gaps (or long histories of normal) it could be that we have some individuals that were going to express the disease but unfortunately died due to other conditions before pigmentary uveitis could develop.*

**Is there any additional information or comments that you would like to share with our membership and other Golden owners?**

*Because Golden retrievers with pigmentary uveitis often have iris cysts, if iris cysts are noted on a CERF examination, those dogs should be monitored very closely. While the presence of iris cysts does not mean that an individual will go on to develop pigmentary uveitis, almost all Golden retrievers with pigmentary uveitis do have the iris cysts. Therefore I recommend owners of those dogs have their eyes examined every 6 months or sooner if they notice any redness, discharge, etc. as those may signal early signs of pigmentary uveitis.*