

## **Eye Disease Update in the Toller**

*This article was written by Jane Folkman in consultation with Dr. Sheryl Krohne, DVM, MS, Diplomate ACVO and Genetics Committee CERF Liaison, with technical assistance from Yun Shen and Karen Graham, CERF staff.*

Every year, the Genetics Committee of the American College of Veterinary Ophthalmologists (ACVO) reviews all the new CERF exam reports for each breed and then make recommendations with respect to breeding. These recommendations reflect scientific data and a consensus of opinions based on the clinical experiences of the ACVO Genetics Committee members. Two categories of breeding advice have been established:

**NO:** Substantial evidence exists to indicate an inherited disorder that represents a potential to compromise vision or eye function.

**Breeder's Option:** The eye disorder is suspected to be inherited but does not represent a potential to compromise vision or eye function.

There are currently eight disorders for which the ACVO Genetics Committee has the unequivocal recommendation against breeding in all breeds, including the Toller. These conditions frequently result in blindness or vision loss. They are:

1. Cataract - unless the eye vet has noted "significance of above punctate unknown"
2. Lens luxation or subluxation
3. Glaucoma
4. Persistent hyperplastic primary vitreous
5. Retinal detachment
6. Retinal dysplasia – geographic or detached forms
7. Optic nerve coloboma
8. Progressive Retinal Atrophy or PRA – Breeding is not advised for an animal demonstrating bilaterally symmetric retinal degeneration (considered to be PRA unless proven otherwise)

**Table 1. Eye Disorders Suspected to be Inherited in the NSDTR**

<b>CERF Category</b>	<b>Disorder</b>	<b>Breeding Advice</b>
A. Eyelids	Distichiasis	Breeder Option
A. Eyelids	Entropion	Breeder Option
C. Cornea	Corneal Dystrophy-epithelial/stromal	Breeder Option
C. Cornea	Corneal Dystrophy-endothelial	<b>NO</b>
D. Iris	Iris Cyst	Breeder's Option
D. Iris	Persistent Pupillary Membranes	Breeder's Option
E. Lens	Cataracts – inherited forms	<b>NO</b>
E. Lens	Retinal Atrophy/PRA	<b>NO</b>

G. Fundus	Micropapilla	Breeder's Option
G. Fundus	Optic Nerve Hypoplasia	Breeder's Option
G. Fundus	Retinal Dysplasia/Folds	Breeder's Option

To avoid confusion between a normal animal with no evidence of an inherited eye disorder and one that has a minor fault coming under the advice of Breeder's Option, the Breeder's Option category is printed on the CERF certificate. This is intended to stimulate conversation among breeders about eye conditions of a particular animal. The ACVO does not recommend breeding dogs with similar Breeder's Option conditions to help minimize eye disease. Eye vets have been instructed by CERF to make notations of conditions other than normal in order to track disorders that may be inherited. Therefore, you may see more notations on the exam sheet or Breeder Option categories appearing on CERF certificates.

## **DEFINITIONS**

**Cataracts** – Genetic or inherited cataracts can develop up to 7 years of age, whereas old age cataracts usually don't develop until 11 or 12. Dogs affected with PRA also develop cataracts with a report of one beginning cataract development as early as 3 years of age. The cataracts that develop with PRA affected dogs can be considered an accelerated form of old age cataracts. Most cataracts are inherited and the breeding advice is NO. However some cataracts can be caused by injury or certain other conditions. If the eye vet has checked the space for "significance of above punctate cataract unknown" this is a Breeder's Option category.

**Corneal Dystrophy – endothelial** – A condition when the cornea takes on too much fluid, which clouds the cornea and negatively affects vision. It worsens in the offspring if both sire and dam are affected, so the breeding advice is NO.

**Corneal Dystrophy – epithelial/stromal** – This condition is when white or gray spots are seen in the eye and can be associated with cholesterol or fatty deposits in the cornea. It is a Breeder's Option category because it rarely interferes with vision and it does not tend to get worse with breeding affected dogs.

**Distichiasis** – A condition where eyelashes are ingrown or abnormally located. It can occur any time in a dog's life. This is a Breeder's Option category.

**Entropion** – This condition is when the eyelid rolls out and could lead to eye irritation. It is suspected to be inherited because it occurs in many dog breeds. It is a Breeder's Option category.

**Iris Cyst** – A condition where cysts are formed from cells in the iris of the eye that can become "floaters" or appear as spheres of various sizes. They don't usually cause severe limitations in vision and therefore this is a Breeder's Option condition.

**Persistent Pupillary Membranes** – A condition where blood vessel remnants can remain in the eye that would otherwise disappear in young dogs. In Tollers, the most common forms are iris to iris or iris to lens, which do not cause much if any visual impairment. This condition is a Breeder's Option category.

**Micropapilla** - This Breeder's Option condition is like a mild form of optic nerve hypoplasia and can limit vision if moderate to severe. If dogs with this condition are bred together the disease tends to worsen.

**Optic Nerve Hypoplasia** – This condition occurs in less than 1% of Tollers, but has been determined to be inherited in other breeds. Hypoplasia is when the optic nerve is very small and the animal is blind or visually challenged in that eye. Currently this condition is a Breeder Option category.

**Retinal Atrophy/PRA** – A simple recessive disorder that occurs in about 7% of Tollers. Breeder recommendation is NO.

**Retinal Dysplasia – folds** - This condition results from a different rate of growth in the inner membranes of the eye, which causes a wrinkle that could lead to a tiny blind spot. All retrievers have this genetic problem, but the mode of inheritance is not known. This is a Breeder's Option category.

### **How Some Breeders Deal with Breeder's Option Categories**

Pat Kinsley's Ginger's Persistent Pupillary Membranes (PPM) did not show up until her CERF exam at 4 years of age. The ophthalmologist told Pat there are many degrees of PPM and that Ginger's form was very mild and would not lead to any eye problems for her. As far as breeding, the eye doctor said there was no issue, but suggested Pat not breed Ginger to another dog with PPM. Pat had Ginger's last litter evaluated at Cornell and PPM was found in a few of the pups, but it was mild and would most likely disappear before 6 months of age. The eye vet did not feel breeding these pups would be an issue, but once again suggested that any breeding be done with CERF clear mates.

Pat checked her recent litter at such an early age because several were going to potential breed homes who had experienced Toller eye diseases before. Pat chose to test them all and told me she will do this again in future litters as it is relatively inexpensive and does give good information. Of course, it helps that she lives only an hour from Cornell!

Marile's Waterstraat's Henna has a couple of distichia and she asks the potential stud owner (and checks his CERF papers) to see if he has the same condition. She would not want to double up on the condition as that is apt to make it more severe. In grown lashes can appear and then fall out. It often depends on the timing of the eye exam. Some dogs can CERF clear many times and then have this condition noted. This was this case with my Sadie, who CERFed clear three years in a row, but then the appearance of an ingrown eyelash triggered this Breeder's Option category on her current CERF certificate.

Sue Dorcheid's Roy had normal CERF exams until just this past year when the punctate cataract – significance unknown category surfaced at 9 years old. The ophthalmologist indicated it was safe to still breed Roy, but it is not something Sue would double on. Sue was told it could be from injury, and noted Roy has scratched his cornea several times from being in the field or had plant seeds stuck under the third eyelid. More than likely his situation is due to wear and tear on the eye and not a condition deemed inherited. Sue mentioned most people quit CERFing dogs at 8 years old but Roy was almost 10 when the cataract was found and he had a clear CERF at 8. She keeps CERFing to see if anything that comes up that might be treatable and make the old guys more comfortable.

Gretchen Botner called me a few years ago just after her Cedar had his annual CERF exam. Despite CERFing clear for many years, this particular vet diagnosed Cedar with nucleus diffuse, a category for which CERF will not issue a certificate. Gretchen was told that Cedar's condition would worsen with time, he would develop cataracts and his vision would be diminished. Gretchen was devastated. Upon further research, I found only one report of this particular disorder in Tollers ever before. I contacted Dr. Krohne for her advice and she strongly recommended a second opinion for Cedar.

Gretchen sought the second opinion from a noted vet ophthalmologist who disagreed with the first diagnosis. The second vet said that the improved equipment being used today can better detect differences in the eye, but that Cedar's faint spots were definitely not nucleus diffuse. The ophthalmologist found that Cedar has very faint "scratches" in the nucleus of his corneas but was able to "see through the scratches". They are not dense which would indicate nucleus cataracts. This condition is seen quite often in German Shepherds and if you don't know what to look for it, you might not see it or perhaps mistake it for a more serious problem. It is a problem a dog is "born with" but does not cause vision problems. Cedar's retinas were in excellent condition - according to the doctor. Gretchen agrees and tells me Cedar can still spot a squirrel a football field away at the age of 9 1/2. Gretchen continues to CERF Cedar yearly.

Of course I was personally interested as Cedar is the grandfather to my Winston and my sister's Lola. The dialog between Gretchen and I and her other stud users was honest and direct. Gretchen contacted her list of breeders that had used Cedar as stud to inform them of the situation. She wanted to let them know should any of his offspring have similar eye exam reports.

The ACVO recommends that you CERF breeding stock early to detect eye disorders. Sheryl Krohne, DVM recommends that CERF exams be done on young potential breeding stock like Pat Kinsley did, because it is a fast, easy examination that can detect potentially blinding or inherited disorders. She also recommends that you seek a second opinion if your dog should come up with a disorder that a CERF certificate would not be issued for. In this way you can either confirm or refute the diagnosis as in Gretchen's experience with Cedar. Sometimes a misdiagnosis could limit a good dog from breeding. And even if a dog is retired or over 8 years of age, it is still desirable to continue to CERF to see if an eye disorder appears in later life like Sue has done with Roy.

### **For More Information**

<http://www.vmdb.org/cerf.html> - Canine Eye Registration Foundation website – provided in-depth explanations of eye diseases. You can search for CERF information for a particular dog

<http://www.eyevet.ca/infocentre.html> - The Veterinary Ophthalmology Information Centre – provides information on various eye disorders and diseases