



## What is PRA-prcd ?

Progressive Retinal Atrophy, called PRA-prcd (progressive rod-code degeneration), is just one type of retinal defect.

**Affected** dogs (P/P) become night-blind. This is very often the first symptom that dog owners recognize. Dogs usually will have poor sense of direction and start to crash into things. Pupil is widely open even when direct ray of light hit the eye (dogs have shining eyes in pictures). Later, cones start degenerating which will eventually lead to total blindness. The disease is progressive, meaning the dog will gradually go blind. The speed at which total blindness is achieved varies with each individual dog.

## How do dogs get the disease?

PRA-prcd (often called just PRA) is a hereditary disease. This inherited gene mutation is an autosomal recessive trait. That means the disease affects dogs with P/P genotype only. The dogs with P/N genotype are considered carriers of the disease (heterozygotes) but do not have the disease themselves.

## What does P/N and P/P and N/N mean?

These letters describe a dogs genotype, meaning a dog is either affected with the disease, a carrier of the disease or clear of the disease causing gene (not affected and not a carrier) Once you have your dog tested, the results will be one of these sets of letters.

**P/P** means dog is '**affected**' with the disease.

**P/N** means dog is a healthy '**carrier**' of the disease and does not have the disease itself. This dog can pass the disease on to their offspring only if bred with another P/N or P/P dog.

**N/N** means dog is '**clear**' and does not have the disease, and does not carry the mutant gene for the disease. This dog cannot pass the disease on to its offspring.

## How does a breeding pair of dogs pass along the PRA gene?

Each parent has a pair of genes. (A set of 2.) One from each parent is given to each puppy. This means each puppy gets one 'letter' from each parent.

### For example.

Bella's genotype is N/P and the dog she is being bred to, Max, his genotype is N/N

In this example a few things can happen. Its all chance. Bella can give her puppy either the "N" part or the "P" part.

Max only has "N's" to give, so each puppy he will give an "N"

Therefore...all the puppies will have an “N” as one part of the gene they get.

Some puppies will get Bella’s “N” and therefore their genotype will be N/N (These puppies will be clear of the disease)

Some puppies will get Bella’s “P” and therefore their genotype will be “N/P” (These puppies will be healthy carriers and will not have the disease themselves.

So therefore...breeding N/P dog to a N/N results in all healthy dogs.

**Another example:**

Sasha’s genotype is N/P, Rufus’ genotype is N/P. If these dogs are bred with each other:

Again, each dog gives a letter to the puppy.

Some of the puppies will be N/N (These puppies are clear of the disease)

Some of the puppies will be N/P (These puppies will be healthy carriers and will not have the disease themselves)

And some of the puppies will be P/P. These puppies will be affected by the disease.

Because of the risk of producing affected puppies, breeding an N/P dog to an N/P dog is not recommended.

**This chart may help you understand what results you would get if you bred an N/P dog to an N/P dog.**

		Parent Heterozygote (P/N)	
		P	N
Parent Heterozygote (P/N)	P	P/P	P/N
	N	P/N	N/N

The disease cannot be cured, but it is possible to eliminate dogs having the disease, by genetic testing of breeding dogs and proper choice of breeding pairs.

A DNA test is an advisable alternative to the clinical examination. The test need only be performed once in life of the animal, because the genotype does not change with age. DNA samples can be obtained from blood, tissue or cheek swab.

There are several companies that you can use to test your dogs.

Information in this article gathered from: <http://www.prcdtest.com/en/>

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