

# **Hereditary eye disease in dogs**

**A guide for dog owners**

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Reprinted from



for the  
British Veterinary Association  
(Canine Health Schemes)  
7 Mansfield Street  
London  
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## **Eye disease comes under the spotlight**

Perhaps the most important sense to us is sight. That goes for animals too, but in some cases they have other well-developed abilities which make up for

any deficiency. Just like us animals get old and have difficulty focusing, may get cataracts or receive injuries which can blind. Of more significance though are eye conditions of an inherited nature (those which are passed down from parents to young). Complete blindness from birth or developing in young adulthood can make getting about and finding food a bit difficult, however well-tuned their noses and ears are. It's for these reasons that a scheme was jointly developed by the British Veterinary Association (BVA), the Kennel Club (KC) and the International Sheep Dog Society (ISDS) in an attempt to find those dogs affected by recognised inherited eye diseases which should not be bred from.

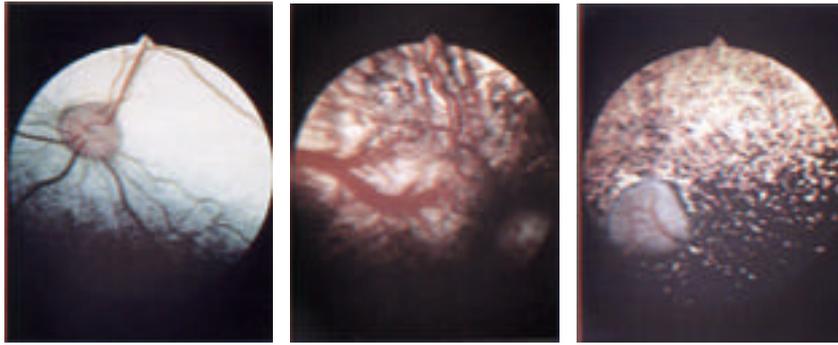
Unfortunately for dogs there are many inherited eye diseases from which they may suffer. Some cause only minor problems such as discomfort or distorted vision, while others lead to progressive blindness, severe and sudden sight loss or pain. To make matters worse these diseases go by long and strange sounding names. Before discussing some of these inherited eye diseases a little basic anatomy will help draw a clearer picture. Then by passing through how these bits work and on to how dogs are affected we can tie all the information together.

### ***Structure and function***

The eyeball is a remarkable thing. It starts life as a piece of brain, borrows a bit of skin to make the lids and the 'window' of the eye, called the cornea, turns itself inside out and in dogs is ready to see things within 11 weeks of conception. Now, that's magic!

We all know what the eyelids do. They protect the eye and sweep tears over the cornea to stop it drying out. The cornea is an extension of the sclera (the white part of the eye) but with perfectly arranged cells so that light travels through unhindered. If we follow this imaginary shaft of light deeper into the eye, it travels through a liquid, the aqueous humour, to the lens. The lens focuses the light, or more correctly the image, onto the retina which is where everything really happens. All the other eyeball structures have but one purpose \_ to get that light beam to the retina in as perfect a form as possible and continuously. So, just like film in a camera, the retina acts as the receiver of the moving image and transmits it down the line to the brain.

*Using an ophthalmoscope an ophthalmologist can view the back portion of the interior of the eyeball, known as the fundus. On the right is a normal fundus. Below left is the fundus of a dog with generalised progressive retinal atrophy and the fundus below right has chorio-retinal dysplasia*



Even after this description there are some parts that have not been mentioned. Overall, the eye's make up is similar to an onion. It has several skins, more correctly referred to as 'coats', which contain and feed the important internal functions. One part of the latter is the iris, that fascinating circle of colour so popular with poets as well as ophthalmologists. Last, but by no means least, is the vitreous humour, a jelly-like substance occupying the largest space within the eyeball and in a sense keeping it 'inflated'.

### ***Important inherited eye diseases***

There are common diseases of the eye and there are important diseases of the eye, but fortunately no common important diseases of the eye. That's common' in the sense of affecting a large proportion of dogdom. That's not to say when any of them do occur they're not significant, because they are for the individual sufferer and for the owner or breeder of the dog.

Having said that, one of the better known inherited eye diseases is referred to as PRA. These letters stand for progressive retinal atrophy, a form of worsening blindness affecting the light-sensitive portion of the eye.



*This dog is suffering from glaucoma*

Two other worrying conditions occur in the same area and can be equally blinding but are not progressive (meaning advancing). One is called Collie eye anomaly and the other retinal dysplasia; and this is where we get into problems with terminology.

Much as expected, the first affects the Collie breeds and is seen as a distortion in the normal anatomy of the retina and other deeper structures. It's called an anomaly' because its appearance is of a gross irregularity, even to the point of holes or pockets appearing where they certainly shouldn't be. Retinal dysplasia, sometimes called 'folding', is different again. Put crudely it appears much as a room wall looks after the work of a poor quality paper-hanger bubbled.

As described in 'structure and function', further forward in the eye lies the lens.

The dog, curiously enough, doesn't really needs its lens for seeing; it doesn't read newspapers, watch much TV, or drive a car.

Most seeing is done by the focusing effect of the cornea; it's only for close accurate work you need a lot of lens activity. Nevertheless, if there is any distortion or opacity in the lens then sight can be severely upset. One such affliction is cataract.

Cataract is the clouding of the lens and when taken to the extreme looks as though the pupil has become bluish or greyish, or even has the texture of mother- of-pearl. Inherited cataract is seen in a large number of breeds and can be non-progressive, and therefore minimally sight-affecting, or can be progressive and blinding.



*Cataract is the clouding of the lens and can be blinding*

The last important condition to be looked for is glaucoma. Glaucoma is where the pressure of the aqueous humour within the eye rises above its normal level mainly due to the fluid's inability to escape into the bloodstream. It is a painful and sight- disturbing condition which, left untreated will eventually be blinding.

Inherited eye diseases are in the main transmitted by both parents, only rarely by either the mother or the father, so it's not fair to go besmirching the reputation of one or the other alone. By mentioning only five inherited diseases I may have given a false impression, because in reality there are many other inherited eye diseases to watch out for.

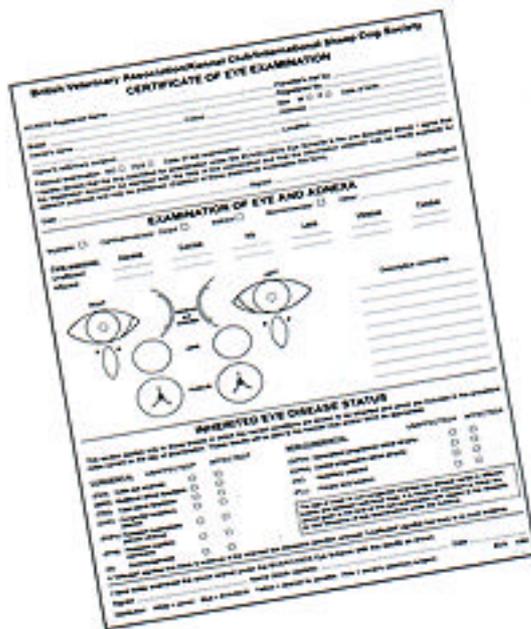
### ***Need I be worried?***

Most breeds have some eye abnormalities, of greater or lesser importance. Understandably, the more abnormality is looked for, the more is found, so

there is little room for complacency. At the same time there is absolutely no point in burying one's head in the sand and pretending it will all go away or that it doesn't exist. It's far better to get that litter, or that bitch you've always fancied having pups from, checked sooner rather than later.

### ***How do I get my dog's eyes examined?***

There are 40 or so BVA panellists throughout the country and their names and locations will be known to vets in practice. Should you need to have your registered dog examined under the scheme, first consult your own vet, who may wish to carry out the initial examination. He or she will be able to tell you about the next steps: making an appointment with the panellist and taking the dog's registration documents with you; the need to have time in hand for the journey \_ it may mean going 50 or more miles, and once there having to wait while drops are put in the dog's eyes and allow them time to work to make the pupil large enough to see all the structures within.



*The certificate of eye examination*

### **The BVA/IKC/ISDS eye scheme**

THE detailed eye examination is performed by veterinary surgeons, generally in practice, who are specially appointed panellists by the British Veterinary Association. The examination is designed to identify *all the abnormalities within* the eyeball and associated structures, including the eyelids (of which the dog has three \_ upper, lower and one called the nictitans or 'haw'). Additionally the size and positioning of the eyes is recorded. 'All abnormalities' covers known inherited, congenital, non-inherited and acquired problems, diseases and deviations from anatomic normality.

Pedigree dogs registered with the Kennel Club, and dogs registered with the International Sheep Dog Society are eligible under the scheme. Puppies can be tested up to the age of 12 weeks and should be retested annually as some diseases become detectable with age.

Details of the BVA/KC/ISDS Eye Scheme including breeds affected, conditions and a list of panellists is available from the BVA, 7 Mansfield Street, London W1M 0AT.

## **Eye testing success**

It is now over 20 years since the International Sheep Dog Society initiated its Eye Testing Scheme and in those early days the incidence of the progressive retinal atrophy (PRA) in dogs tested was higher than 14 percent. After 20 years of testing the incidence is now less than one quarter of 1 percent. Almost 10 years ago the Society introduced testing for Collie eye anomaly (CEA) and although the figures have remained fairly consistent over the years, it had been anticipated that there might well be an explosion in the number of dogs failing the test. The current rate of CEA is approximately 1 percent.

Over the years the Society has gradually tightened its requirements on eye testing and today no puppies can be registered from parents, if those parents are more than three years of age, unless the parents have been eye tested and passed the examination.

All dogs competing at National Sheep Dog Trials and the International Sheep Dog Trial are not only required to have passed the test but are also tested annually at these trials themselves. When you consider that the 600 dogs competing at the National Trials are the tip of the breeding pyramid, you can appreciate the impact that this programme has had and why the achievements are as they are.

This is an undoubted success story, a success attributable to the BVA and its eye panellists on the one hand, and the members of the ISDS on the other. When you consider that most of these members are farmers and shepherds, the success is perhaps all the more remarkable.