British Veterinary Association/Kennel Club/ International Sheepdog Society Eye Scheme

Frequently asked questions

Breeding

1. What should I do if I want to breed from my dog?

It will be necessary to get the latest information on the conditions relevant for your breed. Make sure the dog and bitch to be mated have current eye certificates showing them to be unaffected for the inherited conditions relevant to the breed. As many conditions have to be certified each year, certificates should not usually be more than one year old. The Kennel club publish all results of Schedule A breeds and will be able to tell you over the phone of any dog's current result; provided that you know the dogs KC registered name and / or number. Results for ISDS registered dogs are published by the ISDS so any inquiries about ISDS registered dogs should be directed to the ISDS

Primary Glaucoma/Goniodysgenesis

1. What is primary glaucoma?

Primary glaucoma denotes an inherent defect within the aqueous drainage pathway associated with a pathological increase of the intraocular pressure (pressure within the eye). It is subdivided into two types known as **open angle glaucoma** and **angle closure glaucoma** and both types may be inherited in the breeds at risk (see "making an appointment" for a list of the breeds affected with angle closure glaucoma). In **angle closure glaucoma** the iridocorneal angle does not develop properly (goniodysgenesis) and is of abnormal appearance when examined with a gonioscopy lens. There is no marker that can be examined clinically to identify dogs predisposed to **open angle glaucoma**.

2. How do I go about getting my dogs examined?

The examination for goniodysgenesis is called **gonioscopy** and is usually performed in dogs of 6 months or older in most breeds. Gonioscopy is not a routine part of the eye scheme and arrangements need to be made for this test to be performed before, and in addition to, the routine eye test (see "making an appointment")

3. How is gonioscopy performed?

Gonioscopy is generally performed without dilating the pupil. After applying topical anaesthetic drops to the eye, a special lens is placed

on the front of the cornea to enable the drainage angle to be examined. This is usually performed in both eyes. Some dogs may require sedation for the procedure to be carried out effectively. The fee for sedation would be in addition to the cost of the test.

4. What is the cost of the test?

Gonioscopy is treated as a separate examination and costs the same as a routine eye examination.

Unfortunately, this means for the owners of dogs that need to be checked for conditions apart from goniodysgenesis, having both tests will cost them double. However a dog need only be examined once in its life for goniodysgenesis, so this is not an ongoing process.

Permanent Identification

As from January 1st 2010 all dogs presented for certification under the Eye scheme (but not litter screening) will need to have permanent identification (PI) before they are examined and certified (even if they have been previously examined under the Scheme without PI. It is therefore important to make every effort to ensure that dogs for certification under the Eye Scheme have permanent identification in the form of a microchip or tattoo before they are presented for eye examination. Furthermore it is sensible for owners to ensure that the identification can be read before the dog is taken for eye examination, especially if they are travelling any distance

1. What will happen if your dog is not microchipped/tattooed?

The panellist can microchip the dog and then examine the eyes. There will be a fee for this.

2. What will happen if the microchip or tattoo cannot be read?

If the dog has a tattoo that cannot be read, the panellist can insert a microchip. There will be a fee for this.

If the microchip cannot be read, the entire surface of the dog has been checked and the microchip reader is functioning normally

a. the manufacturer of the microchip will be contacted for advice, if possible
b. you may be re-directed back to your veterinary surgeon for help in solving the problem
c. A new chip can be implanted. There will be a fee for this.

3. What if an owner insists on eye examination without PI?

The panellist can examine the dog, but as a private consultation (with an appropriate referral consultation fee) rather than under the scheme. A written report can be given, but no Certificate of Eye Examination. The results of the examination will not be published

DNA testing for inherited eye diseases in dogs

1. What is DNA testing?

DNA is found within most cells of the body and contains all the genetic information of an animal. We can sample this DNA and test it to find out whether an animal is at risk of developing certain inherited diseases, or is at risk of passing them on to their offspring. This is called DNA testing.

The process usually involves taking a small blood sample from your dog, from which DNA is extracted. DNA can also be found in other cells in the body, so in some cases a mouth swab to collect cells from the inside of the cheek is all that is required.

2. Is DNA testing the same as DNA profiling?

No, DNA profiling describes a different technique that uses differences in DNA inheritance patterns to uniquely identify an animal. DNA profiling is primarily used for paternity testing, not to screen for genetic diseases.

3. Which eye conditions can be screened for with DNA testing?

Currently, DNA tests are available for the following eye conditions that are listed on Schedule A or B of the BVA/KC/ISDS Eye Scheme:

- **Collie Eye Anomaly (CEA)** in the Border Collie; Collie (Rough); Collie (Smooth); Lancashire Heeler; Shetland Sheepdog
- **Hereditary cataract (HC**) in the Australian Shepherd; Boston Terrier (early onset); French Bulldog; Staffordshire Bull Terrier (early onset)
- **Generalised Progressive Retinal Atrophy (GPRA)** in the Australian Cattle Dog; Collie (Rough); Dachshund (Miniature Long-Haired); Dachshund (Miniature Smooth-Haired); Finnish Lapphund; Irish Setter; Miniature Schnauzer; Norwegian Elkhound; Poodle (Miniature); Poodle (Toy); Retriever (Chesapeake Bay); Retriever (Golden); Retriever (Labrador); Retriever (Nova Scotia Duck Tolling); Spaniel (American Cocker); Spaniel (Cocker); Spaniel (English Springer); Welsh Corgi (Cardigan); Yorkshire Terrier
- **Primary Lens Luxation (PLL)** in the Bull Terrier (Miniature); Lancashire Heeler; Parson Russell Terrier; Sealyham Terrier; Tibetan Terrier

Please note that research is ongoing and so new tests are constantly being developed.

4. What are the benefits of DNA testing?

There are three main benefits of DNA testing:

1. It identifies 'at risk' animals before they develop clinical signs of the disease itself. Since many inherited eye diseases

develop relatively late in life, this allows us to identify affected dogs before they reach breeding age
2. It allows us to identify carrier animals (which do not develop the disease themselves but may pass it onto their offspring)
3. It identifies genetically clear dogs that will be guaranteed not to pass the condition to any of their offspring and so can be used safely in a breeding programme

5. How does DNA testing compare with eye testing under the BVA Eye Scheme?

A DNA test only checks for a single inherited condition, whereas an eye examination screens your dog for a wide range of eye diseases. For example, the Labrador Retriever is known to be affected by 5 inherited eye diseases, but there is at present a DNA test available for only one of these (GPRA). Because of this we would strongly advise you to continue to bring your dog for regular eye examinations.

As well as detecting breed specific certified eye diseases, eye testing also plays an important surveillance role in identifying new inherited eye diseases within breeds, before they become an established problem. It also provides an expert health check for your dog's eyes, and can yield information about other, non-inherited, diseases of importance.

6. How do I get my dog DNA tested for inherited eye diseases?

DNA testing for some inherited eye conditions involves taking a blood sample, for others a mouth swab is sufficient – see next section for details.

Where a blood sample is needed, contact your own veterinary surgeon to arrange this. 2mls blood is required, taken into an EDTA blood tube that should be labelled with the owner's name, dog's name, the breed and the date.

Where a mouth swab is needed, a sterile cytobrush/applicator should be used. Some testing laboratories may be able to supply these to your veterinary surgeon, or advise them on where they can be purchased. It is important that your pet is not fed or given water for an hour prior to the swab, to reduce the risk of contamination.

7. Where should the samples be sent to?

The Animal Health Trust accepts the following samples for DNA testing:

- *Cheek swabs* for hereditary cataract in the Australian Shepherd, Boston Terrier, French Bulldog and Staffordshire Bull Terrier
- *Cheek swabs* for GPRA in the English Springer Spaniel, Miniature Long-Haired Dachshund and Miniature Smooth-Haired Dachshund

- *Cheek swabs* for primary lens luxation in the Bull Terrier (Miniature); Lancashire Heeler; Parson Russell Terrier; Sealyham Terrier; Tibetan Terrier
- *EDTA blood samples* for GPRA in the Irish Setter

Submission forms can be downloaded from their website (www.aht.org.uk)

All the other DNA tests are performed by Optigen (www.optigen.com). *Optigen request EDTA blood samples.* Samples either can be sent directly by your veterinary surgeon to the Optigen laboratory in the USA, or via van Haeringen Laboratorium in the Netherlands (email: info@vhlgenetics.com; website: www.vhlgenetics.com). Submission forms and instructions on packing/ shipping can be downloaded from the relevant web sites.

8. Can the DNA test result ever be at odds with the eye test result?

In the majority of cases the answer is no. However there are a few scenarios which may result in a discrepancy between DNA test and eye test results:

- An erroneous diagnosis during the eye test or a laboratory mistake during the DNA testing procedure could lead to conflicting results
- A dog affected with a 'late-onset' condition could have been DNA tested as a young dog, showing that it is genetically affected, but have clear eye examination results in the early part of its life before the onset of clinical signs
- On occasion, genetic eye diseases may show 'variable expression'. This means that some dogs, which according to the DNA test are affected, never go on to develop the disease. In such cases we presume that there must be something in the rest of these dogs' genetic makeup that is delaying or preventing the onset of clinical signs. However, from a breeding selection standpoint, the genetic result must take precedence; the dogs will pass the genetic mutation to their offspring, and these offspring will be at risk of developing the disease at the expected age
- It is also possible that future dual testing will reveal a scenario of a dog that, on its eye test, shows clinical signs typical of a particular inherited condition, but yet the DNA test is clear. Under such circumstances we would have to consider the possibility that there might be at least two different genetic causes of the disease in the breed