

## THE BVA/KC/ISDS EYE SCHEME PRIMARY GLAUCOMA

### What is primary glaucoma?

Primary glaucoma is a painful and blinding disease associated with high intraocular pressure (high pressure inside the eye). It is an inherited condition and is subdivided into two types: **primary open angle glaucoma (POAG)** and **primary closed angle glaucoma (PCAG) / primary angle closure glaucoma (PAGC)**. In both forms, glaucoma results from reduced drainage of the fluid (aqueous humour) that is produced within the eye, resulting in a build-up of intraocular pressure which, in turn, leads to pain and blindness. For closed angle glaucoma (but not open angle glaucoma), a screening technique called gonioscopy can identify dogs at risk.

### Breeds at risk – open angle glaucoma

In the UK, the **Petit Basset Griffon Vendeen**, **Basset Hound** and **Shar Pei** are the breeds certified for primary open angle glaucoma (POAG) under the Eye Scheme. The genetic mutation responsible for the disease in all these breeds was discovered by geneticists at the Kennel Club Genetics Centre at the Animal Health Trust and DNA tests are available. The DNA tests will be invaluable in eliminating the disease from these breeds as there is no predisposing factor that can reliably be screened for by eye examination before the onset of disease. POAG is silent in onset and the usual clinical features of glaucoma are not present initially, or are so subtle as to be easily missed. Whilst tonometry (measurement of intraocular pressure) and regular examination of breeds at risk when they are 3 years of age and older may be helpful, it is DNA testing that is the essential strategy.

Breeds listed for primary open angle glaucoma **under Schedule A** of the Eye Scheme from July 1<sup>st</sup> 2017 are as follows:

Petit Basset Griffon Vendeen  
Basset Hound  
Shar Pei

### Breeds at risk – closed angle glaucoma

Primary closed angle glaucoma (PCAG)/primary angle closure glaucoma (PAGC) is significantly associated with defective development of the drainage angle which is termed **goniodysgenesis** (gonio = angle, dysgenesis = defective development), also known as Pectinate Ligament Dysplasia (PLD) or Pectinate Ligament Abnormality (PLA). Goniodysgenesis is inherited in several breeds and is tested for using a technique called **gonioscopy**. It was originally believed that the degree of goniodysgenesis did not progress after birth and so a 'one-off' test before breeding was advised for dogs of certified breeds. However, recent research has provided evidence of progression of goniodysgenesis with age in several breeds, namely the Flat Coated Retriever, Welsh Springer Spaniel, Dandie Dinmont Terrier, Basset Hound and Leonberger. In consequence, the advice on gonioscopy has been updated for all breeds in which gonioscopy is performed. It is advised that for Schedule A breeds gonioscopy should be carried out every 3 years, unless any evidence to the contrary emerges. The first test can be performed in dogs from 6 months of age onwards and current advice is that gonioscopy is performed at approximately 1, 4 and 7-8 years of age. Repeat testing should provide much needed longitudinal information about the risk of developing glaucoma in later life and, in conjunction with Breed Clubs, will enable breed-specific recommendations to be developed.

A simple grading scheme (0-3) for gonioscopy was agreed by the Eye Panel Working Party in 2016; it is being **piloted** from July 2017 with the aim of being formally adopted, with or without any revisions, if analysis of the results supports this approach. Initial analysis will take place at around the time of the next Eye Panel Working Party (EPWP) meeting in November 2017. The grading scheme will be used to complement - and may ultimately replace - the 'Clinically Unaffected' or 'Clinically Affected' classification that currently records the results of examination. The EPWP has proposed that a grading system reflects more accurately what the Panellist observes and is better able to inform the potential risk of developing glaucoma in later life. It will provide owners with useful information to aid breeding decisions. The grading

proposal is, in part, also a recognition that 'Clinically Unaffected' cannot be an accurate description unless the gonioscopic findings are entirely normal.

The Kennel Club database is not set up to record grades at present, so the pilot gonioscopy grading project will run in parallel with the existing layout of the Certificate of Eye Examination. The recording of results as 'Clinically Unaffected' and 'Clinically Affected' under Goniodysgenesis (G) continues as before for the benefit of the Kennel Club and the results will be published as they are at present. The **grades** will be recorded and collated by the BVA.

## Protocol to be followed for the Pilot Grading Project

### On the Certificate of Eye Examination

#### Second section: EXAMINATION OF THE EYE AND ADNEXA

#### Gonioscopy grading recorded under Descriptive Comments

#### Simply record as GRADE 0, 1, 2 or 3

Once the Certificates of Eye Examination are updated a table will be used for recording the grade.

0		1		2		3	
---	--	---	--	---	--	---	--

Should there be disparity between the grade assessments in each eye, it is the higher value that is recorded on the Certificate of Eye Examination under Descriptive comments.

#### Third section: INHERITED EYE DISEASE STATUS – SCHEDULE A BREEDS ONLY

CLINICALLY UNAFFECTED      CLINICALLY AFFECTED

#### (G) Goniodysgenesis

                    

Tick one box as at present

#### Summary

Grade	Gonioscopic findings	Advice
0	Normal iridocorneal angle (ICA) with no/minimal (0%-<1%) pectinate ligament abnormality (PLA)	<b>Advice:</b> Normal iridocorneal angle -highly unlikely to develop primary glaucoma  <b>Inherited Eye Disease status</b> currently classified for KC publication as 'Clinically Unaffected'
1	1-25% of ICA affected by PLA	<b>Advice:</b> mildly affected - unlikely to develop primary glaucoma  <b>Inherited Eye Disease status</b> currently classified for KC publication as 'Clinically Unaffected'
2	26-75% of ICA affected by PLA	<b>Advice:</b> moderately affected - low risk of developing primary glaucoma  <b>Inherited Eye Disease status</b> currently classified for KC publication as 'Clinically Unaffected'
3	>75% of ICA affected, and/or severe narrowing of ICA	<b>Advice:</b> severely affected - highest risk of developing primary glaucoma, breeding not recommended  <b>Inherited Eye Disease status</b> currently classified for KC publication as 'Clinically Affected'

Breeds currently certified for goniodysgenesis **under Schedule A** of the Eye Scheme are as follows:

- Basset Hound (now under Schedule A for POAG **and** goniodysgenesis)
- Japanese Shiba Inu
- Retriever (Flat Coated)
- Siberian Husky
- Spaniel (American Cocker)
- Spaniel (Cocker)
- Spaniel (English Springer)
- Spaniel (Welsh Springer)
- Spanish Water Dog

As from January 1<sup>st</sup> 2018 the Dandie Dinmont Terrier (goniodysgenesis) and Leonberger (goniodysgenesis) will be added to Schedule A.

There are also several breeds where goniodysgenesis is ***suspected of being inherited***, and these breeds are listed **under Schedule B**. The current list is as follows and is kept under constant review.

- Border Collie
- Great Dane
- Hungarian Vizsla
- Retriever (Golden)
- Welsh Terrier

### How do I go about having my dogs examined?

Performing gonioscopy requires certain expertise and specialised equipment and it is for these reasons that gonioscopic examinations are *not a routine part of the eye scheme and are not available from every member of the BVA/KC/ISDS Eye Panel*. A list of the BVA/KC/ISDS eye panellists is available from the British Veterinary Association or The Kennel Club. However, when telephoning a panellist to book an appointment, owners of the breeds listed above, who wish to have gonioscopy performed should check whether this is available.

### How is gonioscopy performed?

Gonioscopy is generally performed without dilating the pupil. After application of local anaesthetic drops to the eye, a special lens (goniolens) is placed on the surface of the cornea to enable the drainage angle to be examined. The test is then repeated on the other eye. Some dogs require sedation for the procedure to be carried out effectively. The fee for sedation is in addition to the cost of the test.

The panellist who performs gonioscopy on your dog should be able to answer any questions that you may have about the findings. There is a set procedure for appealing against the results of an eye examination should you wish to do so and the panellist will supply the requisite leaflet, which is also available on the BVA Website entitled **Information for Owners Leaflet**. Appeals must be lodged in writing with the BVA within 30 days of the examination.

### What is the cost of the test?

Gonioscopy is treated as a separate examination, but the fee is reduced if gonioscopy is done at the same time as routine eye examination. If gonioscopy alone is performed it costs the same as a routine eye examination although, unlike the routine examination, there is no discount for testing multiple dogs. The scale of fees, as well as a detailed leaflet on all of the conditions covered by the BVA/KC/ISDS Eye Scheme, is available from the British Veterinary Association <https://www.bva.co.uk/Canine-Health-Schemes/Eye-scheme>

Canine Health Schemes  
British Veterinary Association  
7 Mansfield Street  
London W1G 9NQ  
Telephone: 020 7980 6380

The Kennel Club  
Clarges Street  
Piccadilly  
London W1J 8AB  
Telephone: 01296 318540

International Sheep Dog Society  
Clifton House  
4a Goldington Road  
Bedford MK4 3NF  
Telephone: 01234 352672