

UK Dachshund Breed Health Plan



Prepared by the Dachshund Breed Council

Version 1.2: February 2013

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Introduction

Background

Most breeds are dependent on Breed Clubs, their members and responsible breeders to ensure a healthy future. They are also dependent on current owners and potential future puppy buyers, without whom a breed is unlikely to be viable in the long-term.

Ensuring a viable long-term future is becoming increasingly challenging in today's climate of:

- ⤴ Rising puppy buyer and pet owner expectations that their dog will live a long and healthy life
- ⤴ Competition from breeders of so-called “designer breeds” who can often sell puppies for as much, or more, than many pedigree breeds
- ⤴ Calls for legislation to control, or ban, the breeding of some pedigree breeds; either because of their conformation/health or their temperaments
- ⤴ Lobbying from campaign groups and individuals who feel strongly about the need to improve the health of pedigree dogs and who feel frustrated by slow progress

The publication of the three reports in 2009 (Bateson, RSPCA & APGAW) makes it clear that breed health improvement is the key issue that we have to address and this is not going to change any time soon.

The establishment of the Independent Advisory Council on the Welfare Issues of Dog Breeding in 2010 further reinforces the importance of having effective Breed Health Improvement Strategies, so we can demonstrate the plans and progress our breed is making.

Developing a Breed Health Improvement Strategy is a process that focuses on understanding what the priorities are in our breed, developing ways to address these and making sure real improvements are achieved. There is no “quick fix”; it will take time and a lot of hard work. Success will only be achieved if everyone can work together for the benefit of our breed.

Purpose of the Breed Health Plan

Our Breed Health Plan is much broader than a plan for addressing a particular health issue (e.g. a single disease such as PRA). It assesses all aspects of the breed's health, including conformation, genetic diversity and specific health conditions.

It is an evidence-based plan, developed by the Health Sub-committee, that describes the state of the breed now and the Breed Council's recommended approach for improving the future health of the breed. The plan contains information that is of relevance to owners, breeders and judges. It is also a document that we can hold up as an example to those outside the Dachshund breed community to demonstrate our commitment to improving Dachshunds so they can be **Fit for Function, Fit for Life**.

This Health Plan is also part of an overall strategy developed by the Breed Council, which comprises:

- ⤴ Leadership by the Council, its Health Sub-committee and our Breed Clubs
- ⤴ An evidence-based approach to assessing health issues in Dachshunds and measuring progress in addressing them
- ⤴ A wide-ranging approach to communicate with and get the support of breeders, owners and others who can influence the health of the breed

This document focuses on the Health Plan, not the overarching strategy. It is based on the good practice guidance template in the Kennel Club's Breed Health Improvement Strategy Guide (2012).

Origins of the Dachshund

History

Very short-legged dogs have been recognised for centuries; in fact the very name Dachshund means “Badger Dog”. “Dachs” translates as “Badger” and “hund” as “dog”. As long as the Dachshund, or Dachshunde, has had this name he has been a badger dog. He has been used as a sporting dog for several centuries, this is well beyond dispute. It has not however yet been proved conclusively which country he originated from.

They have excelled in their tracking abilities, for their work underground and for badger hunting. Their conformation of short legs and oval ribcage, allowing plenty of heart and lung capacity, enables them to work well underground.

Dachshunds were used to dig and drive out the badgers from their sett for the waiting huntsmen with their guns. Badgers make a fierce opponent, especially when cornered, so you realise a Dachshund has to possess powerful jaws and a great deal of courage to confront him.

They are still widely used in Germany to go to ground after a fox and draw him out for the waiting hounds and guns. They are also used in areas of undergrowth to track wounded game and deer and it is said that they have the scenting power of a foxhound. In Germany, the Miniature variety have long been appreciated and small specimens, bred from normal sized parents, appeared from time to time and were used to go into rabbit burrows or enter earths of other animals which were too narrow for larger dogs.



Dr Fitch Daghish did not consider the Long-haired variety had any sort of spaniel blood in the genes, but it is fair to comment that the early pictures show a very spaniel-like type, with longer legs and typical low-set spaniel ears, which can still be seen to this day.

On the continent and in Scandinavia, the Wire-haired variety is by far the most popular and in the UK they make up the majority of the

working “Teckel” community. With their harsh coats and keen sense of smell they are ideally suited to tracking injured deer through the roughest of countryside.



Today, in the UK, Dachshunds come in two sizes, reflecting their original work: Standard - ideal weight: 9-12 kgs (20-26 lbs) and Miniature - ideal weight; 4.5kgs (10lbs); desired maximum weight 5kgs (11lbs).

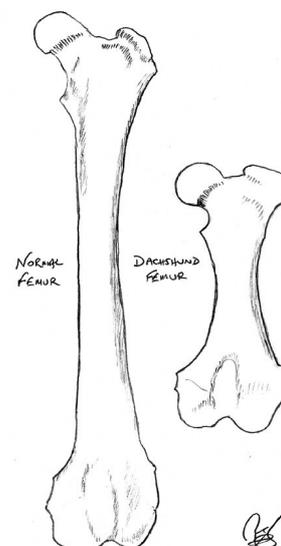
Why Dachshunds are the shape they are

About 10,000 years ago a mutation occurred in one puppy that fundamentally changed the shape of this animal and its descendants. This puppy was the ancestor of all the short leg dog breeds to be seen in the world today. This puppy had a duplicate, but somewhat abnormal, copy of a gene that codes for a growth-promoting protein called Fibroblast Growth Factor 4 (also known as FGF4) (Parker, 2009). This growth factor is important in determining when bones stop growing.

The mutation caused a form of dwarfing with short legs but a normal head, chest and body. The

technical terms used for this are rather confusing as they have been borrowed from medical terminology:

- ▲ **Chondrodysplasia** is a term often used in describing Dachshunds, but in humans the type of dwarfism this term is used for involves bones other than the legs and arms.
- ▲ **Hypochondroplasia** is a better term for dogs as humans with this condition look relatively normal apart from shortened limbs, just like Dachshunds, although both the human conditions are results of abnormalities in a slightly different place in the bone growth control system (Fibroblast Growth Factor Receptor 3).
- ▲ **Achondroplasia** is probably the best term for Dachshunds as it indicates a general abnormality in cartilage development (Stoppler, 2009).



Two of the long bones in each leg grow in pairs, parallel to each other. These are the Radius and Ulna and the Tibia and Fibula. If growth of these bones stops at slightly different times in the two bones, the legs develop a twist – as is seen in Dachshunds and Bassets (Lappalainen, 2001).

Today, the gene responsible for the short legs is found in more than 20 breeds. Interestingly, hunting breeds predominate in the current list of breeds that includes hounds, terriers and cattle dogs. There may well be other breeds to add as not all breeds have been investigated for this gene.

At present, the breeds known to have the FGF4 mutation include the six breeds of Dachshund (of course), Basset Hound, Grand and Petit Basset Griffon Vendeen, Cairn Terrier, Dandie Dinmont Terrier, Glen of Imaal Terrier, Lancashire Heeler, Norwich Terrier, Scottish Terrier, Skye Terrier, West Highland White Terrier, and Yorkshire Terrier, Cardigan Welsh Corgi, Pembroke Welsh Corgi, and Swedish Valhund. The list also includes some toy breeds: Chihuahua, Havanese, Japanese Chin, Pekingese, Shih Tzu and Tibetan Spaniel (Parker, 2009).

Thus it can be seen that Dachshunds (and their cousins) actually haven't got long backs, they have short legs. When looking at a Dachshund you should always bear in mind its working origins; it should be able to "do a day's work". Exaggeration of any form is to be avoided. The Dachshund is not a breed where "more" is "better". Exaggeration of size, length, lowness to ground, or too level a back can all lead to health problems and create a dog that is not fit for its original purpose and is equally unsuitable for life today, as a family companion.

Temperament and behaviour

The Breed Standard clause for *Characteristics and Temperament* says:

Intelligent, lively, courageous to the point of rashness, obedient. Especially suited to going to ground because of low build, very strong forequarters, and forelegs, long strong jaw, and immense power of bite and hold. Excellent nose, persevering hunter and trackers. Essential that functional build is retained to ensure working ability. Faithful, versatile and good tempered.

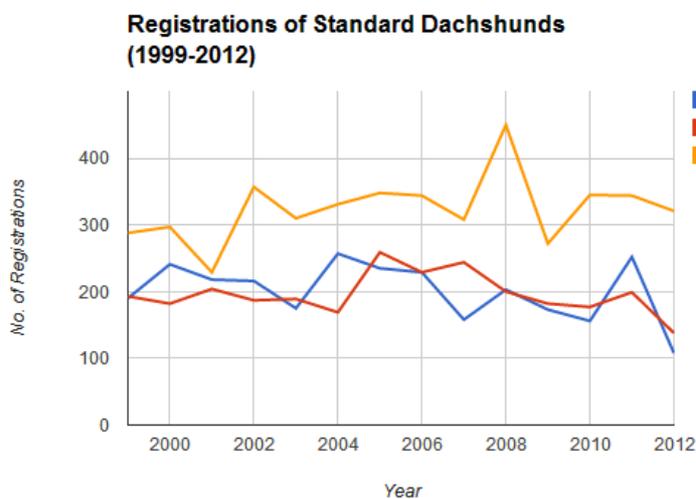
Dachshunds should be good tempered. They should be bold and outgoing. Given that the "function" of the majority of Dachshunds today is to be family pets, temperament has to be one of the most important considerations of any breeder. Nervous dogs are no fun to live with and they cannot be living fulfilled lives themselves if they are forever worried or stressed by things they come across in

their daily routine. In the show-ring, dogs that are nervous or aggressive should be seriously penalised by judges.

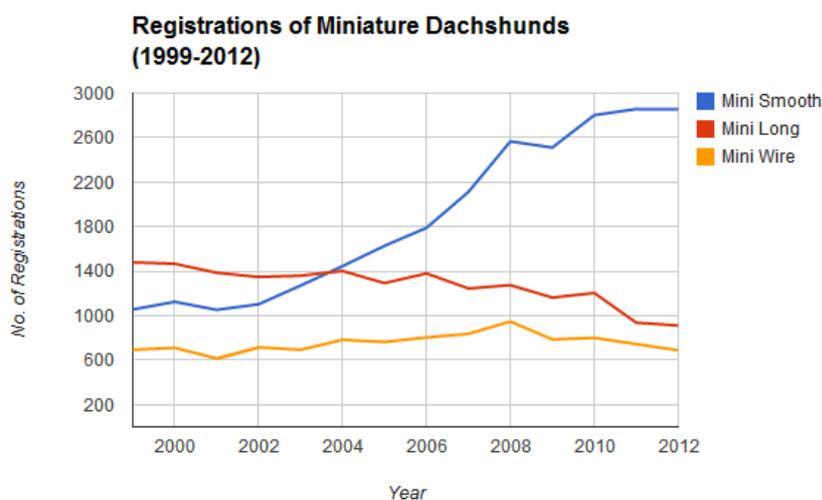
In our Dachs-Life 2012 survey, 85% of Dachshunds were described by owners as “always or often outgoing and friendly” with only 2% recorded as never behaving in this way. On the other hand, nearly one third (32%) were recorded as being “aggressive with other dogs to some extent” and 10% “to some extent, aggressive with people”. We tend to describe Dachshunds as being a noisy breed, after all they were originally developed to have a loud bark. In the same survey, 15% of owners said that their Always or Often barks excessively or persistently”. Whilst such behaviour is likely to be influenced by inadvertent reinforcement by owners, breeders should be doing all they can to minimise passing on such undesirable traits.

Registrations

The six varieties of Dachshund make up more or less a third of the Hound Group registrations with the UK Kennel Club. It is a popular dog to own, especially Miniature Smooths who have gained in popularity with the general public. The breed itself has not suddenly become very popular and then lost its popularity with the general public as has happened with some other breeds.



Registrations of all three Standard varieties have remained fairly stable over the past ten years.



Registrations of Mini Smooths have increased significantly over the past ten years and it is becoming something of a “commercial” breed with a number of high-volume breeders producing poor quality dogs for the “pet market”.

The popularity of Mini Longs has decreased over the past ten years by about one third.

In all six varieties, responsible breeders have brought in a number of new bloodlines from America, Canada, Australia, Scandinavia and Europe which has helped to extend the gene pool for the good of the breed.

Breed Health Today

Dachshund Longevity

The Kennel Club Health Survey in 2004 provided data on 509 live dogs and the causes of death of 245 more dogs. The median age at death for Dachshunds was 12 years and 8 months (min = 4 months, max = 19 years). The major causes of death reported in 2004 were:

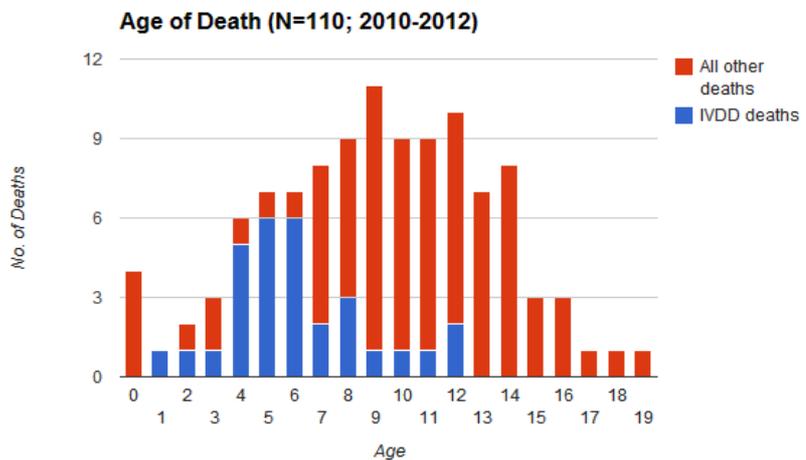
- ▲ Old age (22%)
- ▲ Cancers and Tumours (17%)
- ▲ Cardiac diseases (14%)
- ▲ Neurological diseases, including IVDD and Epilepsy (11%)

The Breed Council has been collecting on-line health reports about diseases and causes of death. The following data are from our on-line health reports of 110 dogs who have died between 1st January 2010 and 31st December 2012 (for conditions where there are 5 or more reports):

- ▲ The median age of death for “old age” reports was 14.5 (8 dogs, oldest = 18)
- ▲ The median age of death due to Cardiac conditions was 10.0 (17 dogs)
- ▲ The median age of death due to Hepatic system conditions was 11.8 (5 dogs)
- ▲ The median age of death due to IVDD conditions was 5.0 (34 dogs)
- ▲ The median age of death due to Neurological (non-IVDD) conditions was 9.0 (9 dogs)
- ▲ The median age of death due to Cancer conditions was 11.0 (17 dogs)

The histogram on the right shows the age of death profile for IVDD deaths (27%) and all other causes (83%).

Back Disease (IVDD) is the major cause of death for young Dachshunds, between the ages of 4 and 6 (typically euthanised as a result of major paralysis).



Our Dachs-Life 2012 Survey recorded the deaths of 27 dogs with a median age of death of 11.8 (from 27 dogs who died between Jan. 1st and Mar 31st 2012).

Overall, for Dachshunds that are not euthanised at a young age as a result of IVDD, we can confidently say that Standard Dachshunds would be expected to live to between 10 and 12 years old and Miniatures to between 12 and 14 years old.

Health Survey Data

The major focus of our health surveillance in 2012 was our Dachs-Life 2012 Survey. This achieved a response of more than 1500 forms; well above our expectations. It was particularly pleasing to receive about a third of the responses from people outside the breed club and show community, who simply have Dachshunds as pets.

Three reports have been published, from the data:

- ▲ An initial analysis of all the health conditions reported ([available on-line here](#))
- ▲ A report on behaviour and temperament ([available on-line here](#))
- ▲ A comparison of the responses of “pet” and “show” owners ([available on-line here](#))

The main report ended with this summary:

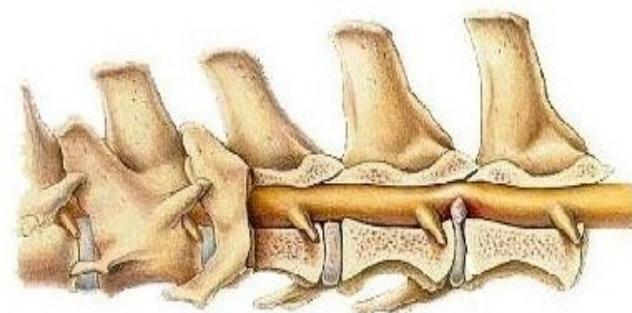
1. Back Disease is the number one issue we need to address and our research programme with the Animal Health Trust is a key part of that.
 - The prevalence of back problems in dogs over the age of 5, particularly in the Smooth, Mini Smooth and Mini Wire varieties is a particular concern.
 - The fact that the other three varieties have lower rates of back disease is encouraging and may help provide a DNA differentiator which will be of use to us.
2. Heart Disease in Standard Wires is an issue that is significantly more prevalent than in the other varieties. It may be sensible to reinstate the WHDC Cardiac Screening programme.
3. Epilepsy in Mini Longs is significantly more prevalent than in any of the other varieties. This has been mentioned anecdotally, but we now have quantified evidence of a problem that needs to be investigated further.
 - The previous worries about Epilepsy in Wires appears no longer to be a concern.
4. Lafora Disease in Mini Wires is already being addressed by the WHDC Screening Programme and will continue to be a priority until we can be confident that Affected puppies are no longer being bred.
5. All the Miniature varieties suffer from eye diseases to a greater extent than the Standards. Clinical eye testing (preferably annually) should become the norm for all six varieties.
 - A research programme into Distichiasis in Mini Longs is currently being planned.
6. Compared with many other breeds, cancer is not a major issue in Dachshunds. Mammary Tumours are the only form of cancer highlighted in our survey and it may be useful to investigate this further to identify age of onset and the impact of spaying.
7. It was interesting to note a small number of cases of Patellar Luxation in the Miniature Smooth and Miniature Long varieties which may also be worth investigating further with a research screening exercise using the established Putnam 1968 method (which does not require anaesthesia).

The UK Dachshund population is estimated at around 60,000 dogs (based on approx. 5000 KC registrations p.a. and an average Age of Death of 12 years). Therefore, the 1464 reports analysed in the Dachs-Life 2012 survey represents 2.4% of the UK population.

The larger the sample size, the more sure you can be that the survey answers truly reflect the wider population. Statisticians use the terms “Confidence Level” and “Confidence Interval” when referring to results of surveys. Based on our 1464 results, at the 95% Confidence Level we can report a Confidence Interval of 2.5. So, for example if 10% of Dachshunds in our survey were reported to have a particular health condition we could be confident 95% of the time that between 7.5% and 12.5% of the wider population would also have that health condition (i.e. 10% +/- 2.5%). All tests for significance in the report are made at the 95% Confidence Level.

Intervertebral Disc Disease

IVDD is the number one health issue in Dachshunds and a significant cause of death among young dogs (who are euthanised). In the KC's 2004 survey, IVDD was included in the Neurological category, which also included reports of Epilepsy. The prevalence for that category in 2004 was 6.9%. In Dachs-Life 2012, the overall IVDD prevalence is 6.8% (5.8% Back and 1.0% Neck). Dachs-Life 2012 data are summarised below:



	IVDD – Back	IVDD – Neck	Totals	%	Prevalence
Smooth	19	2	21	21%	15.3%
Long	2		2	2%	1.4%
Wire	8		8	8%	3.5%
Mini Smooth	24	3	27	27%	7.7%
Mini Long	13	1	14	14%	4.3%
Mini Wire	19	8	27	27%	9.7%
Totals	85	14	99	100%	6.8%
Prevalence	5.8%	1.0%	6.8%		
Avg. Age	8.8	9.7			

Although we can identify the prevalence of back disease in our sample, we do not know the age of onset or diagnosis for any of these reports.

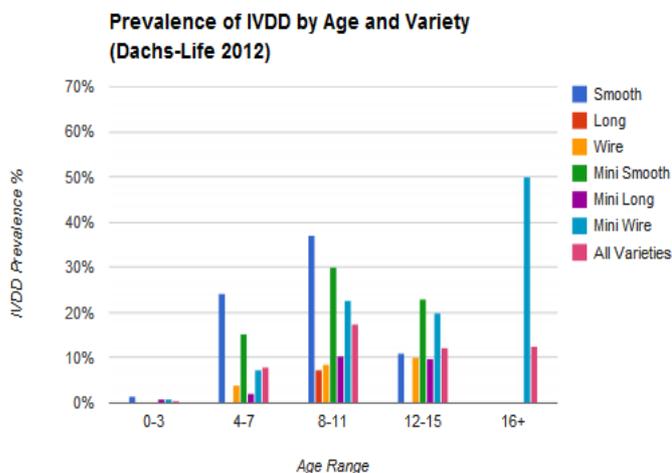
The 15.3% prevalence rate in Smooths is a statistically significant difference from the rates in Longs and Wires.

The average age of Smooths with IVDD - Back was 8.3. For Longs it was 11.5. For Wires it was 9.0. The average age of Mini Smooths with IVDD - Back was 7.9, for Mini Longs it was 9.9 and Mini Wires it was 9.5. All of these averages are older than we know the typical age of onset to be (4-7) and it is therefore clear that these are dogs that have suffered some degree of back disease and either been operated on successfully, or treated successfully with drugs and cage rest.

When analysed by age, the differences in prevalence are more interesting. For Smooth and Mini

Smooth Dachshunds over the age of 5, and Mini Wires over the age of 10, the figures are much closer to those typically quoted in the veterinary research into IVDD (i.e. that 20-25% of Dachshunds will suffer some degree of back disease during their lives). The following table shows the IVDD prevalence for each variety of Dachshund, split into four age-bands.

Age	0-3	4-7	8-11	12-15
Smooth	1%	24%	37%	11%
Long	0%	0%	7%	0%
Wire	0%	4%	9%	10%
Mini Smooth	0%	15%	30%	23%
Mini Long	1%	2%	10%	10%
Mini Wire	1%	7%	25%	20%
Breed Prevalence	0%	8%	18%	12%



There was no difference in the prevalence of Back Disease between Dogs and Bitches.

Back problems, specifically Intervertebral Disc Disease (IVDD), are considered by many people to be a result of the “long backs” creating mechanical problems. But, as we have explained above, Dachshunds actually have short legs and so their backs should be normal. The situation is more subtle than that and is, in part, due to the mutation that causes the short legs which also causes an abnormality in the biochemistry of the intervertebral discs. This cannot be the whole story, though, as there are breeds with this mutation that apparently do not have back problems.

The intervertebral discs are disc-shaped fibrous sacs full of jelly-like material. They are found between the vertebrae and these act as shock absorbers and allow flexibility in the back. As dogs get older, the discs degenerate in all breeds of dogs, but in Dachshunds this happens at a much earlier age than other breeds. The degeneration can be seen on X-ray as calcification of the gel in the centre of the disc in Dachshunds as young as 12 to 18 months (Jensen and Ersboll, 2000). Symptoms of disc disease can appear soon after this.

As noted above, not all dogs with the FGF4 mutation have a tendency to develop back problems though. As well as Dachshunds, the Basset Hound, Dandie Dinmont, and Pekingese have recognised predisposition to disc disease, but this is not seen as a serious problem in the other breeds. Even within the Dachshund group, some lines seem to have back problems more than others (Lappalainen, 2001). Our Dachs-Life 2012 survey also shows considerable variations in IVDD prevalence between the six varieties. All these dogs have the FGF4 mutation though, so there must be other factors involved in the predisposition to IVDD, and some would seem to have a genetic basis (Mogensen, 2011). Because of this, work is currently going on to identify the genes involved in these and it is hoped that a genetic test can be developed in the not too distant future, and the incidence of IVDD can be reduced by using this to inform breeding programmes.

There are, of course, other reasons for back problems, some of which may be heritable. The Beagle, for instance, which gets IVDD problems does not seem to have the FGF4 mutation (Meij, 2005).

Lafora Disease

Lafora Disease is an inherited form of epilepsy that affects Miniature Wirehaired Dachshunds and has also been reported in some other breeds. Myoclonus (jerking) is a feature of the disease and characteristically this can be induced by flashing lights, sudden sounds and movement, especially when close to the dog's head. Generalised or complex partial seizures may be seen in some dogs. The disease progresses slowly over many years and gradually other neurological symptoms such as ataxia, blindness and dementia occur.



The condition typically only becomes apparent any time from the age of 5 onwards and can affect both dogs and bitches.

Although Lafora is caused by an autosomal recessive genetic mutation, DNA testing is not as simple as in the case of cord1 Retinal Degeneration. At the end of 2010 we reported the completion of the Wirehaired Dachshund Club's (WHDC) test screening programme which identified approx. 10% of Miniature Wirehaired Dachshunds (MWHDs) carrying two copies of the Lafora EPM2B mutation (i.e. "Affected"). The other 90% of dogs tested were classified as "Not Affected", but could either be "Clear" or "Carriers".

As a result, the WHDC agreed to proceed with the implementation of a programme to make a full Clear/Carrier/Affected test available. We identified a laboratory in Germany (Centogene) that offered Carrier testing for the human form of Lafora Disease and contracted with them to carry out screening for UK MWHDs.

The announcement of this programme was well-supported by MWHD breeders in 2011 and well over 200 samples were submitted for analysis. The initial batch of samples confirmed the prevalence found in the 2010 results, with 10% of dogs being "Affected". Unfortunately, Centogene were unable to isolate the Clears from the Carriers in the majority of samples and were therefore only able to report "Not affected" for the other 90% of samples.

During 2012 we have been working with Dr. Minassian's lab in Canada to find a way to perfect the Carrier test. A batch of blood and saliva samples was analysed and the lab was able to differentiate between Clear and Carrier results. At the end of December 2012 Dr. Minassian's lab was still working on the test method in order to come up with a viable and efficient method for conducting the necessary tests, for the high volume of samples we expect to need to test.

Overall, testing has identified 28 affected from a sample of 261, which is an incidence of 10.7%

The trial sample of 41 tests sent to Canada, showed an incidence of:

- ▲ 3 affected (7.1%)
- ▲ 10 carriers (23.8%)
- ▲ 28 clear (66.6%)

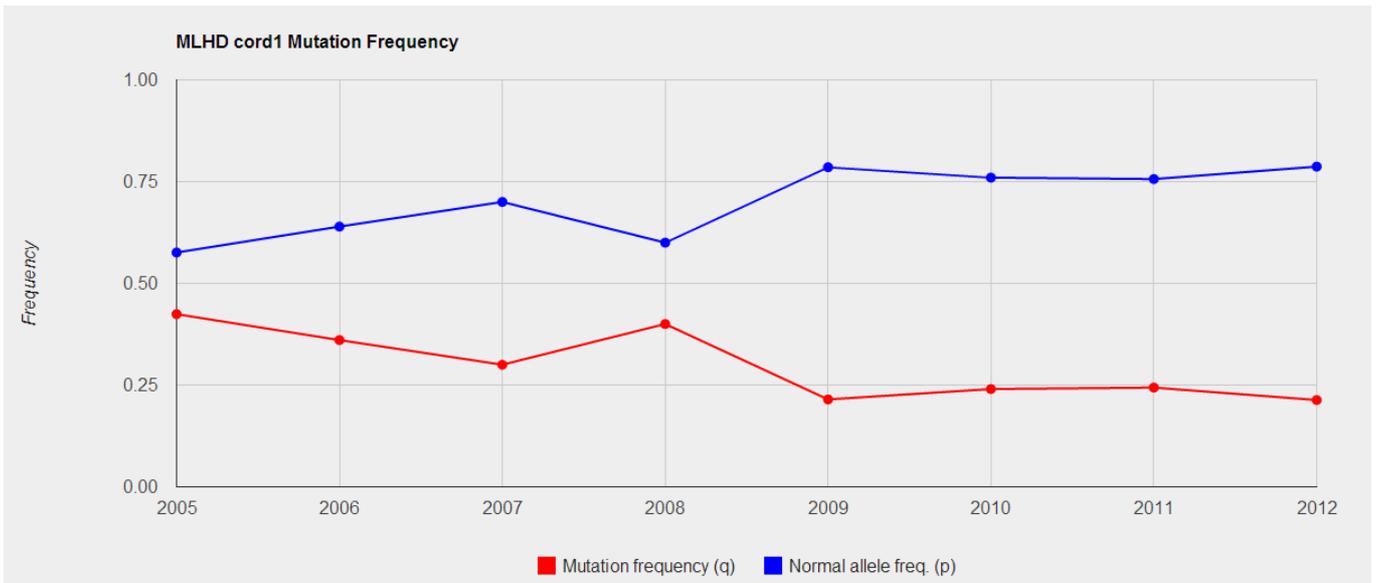
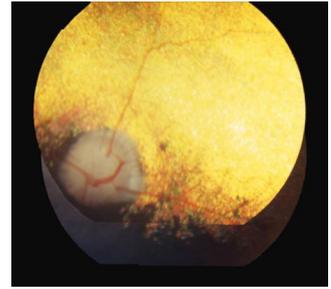
Dachs-Life 2012 found a 3.6% prevalence rate which is lower than has been found in the 2010 and 2011 DNA screening programmes. However, Lafora is a late onset disease and therefore the overall prevalence rate is skewed by the number of young dogs in the survey sample and the small number that have actually been DNA tested.

7 of the 10 dogs reported in Dachs-Life 2012 were aged 5 or over and the prevalence of Lafora in that age group is 7.6%. Given the margin of error for this sample, we can be confident that the population prevalence of Lafora Disease lies in the range 5-10%.

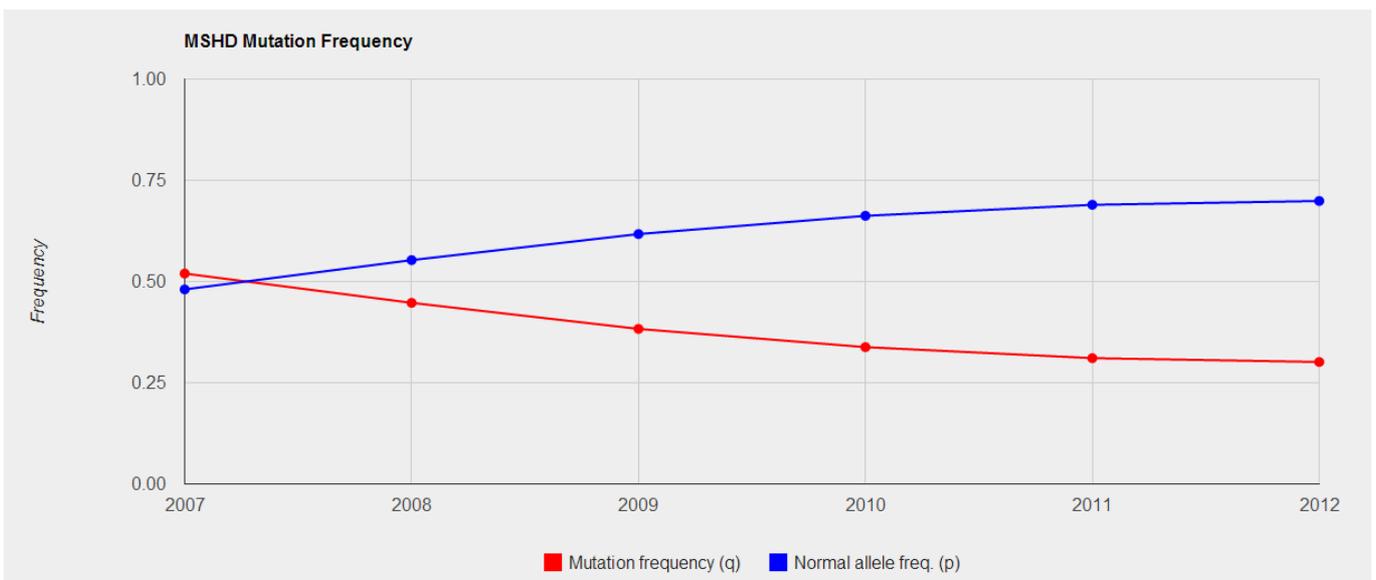
Retinal Degeneration (cord1 PRA)

The cord1 PRA mutation was originally identified in MLHDs in 2005 and their breeders have been making use of the DNA test ever since. In 2008, MSHDs were added to the screening requirement and MWHDs were added in 2011.

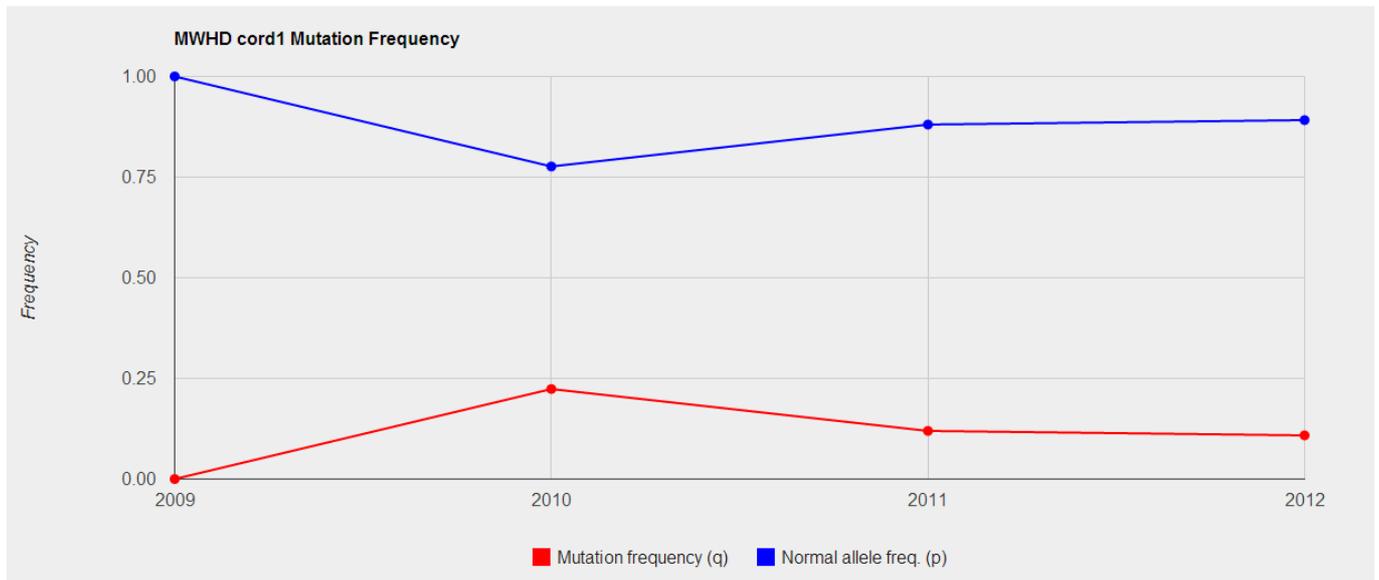
In MLHDs, the mutation frequency has dropped to 0.21 and we are now seeing an average of only 5% of dogs testing as “Affected”, down from 18% in 2005. More than half of all MLHDs tested in the past three years have been “Clear” of the cord1 mutation, compared with 35% 5 years ago.



In MSHDs, the mutation frequency started at a higher level than in MLHDs and has now dropped to 0.30 and we are seeing 9% “Affected” dogs, down from 27% in 2007.



In MWHDs, there are fewer test results to review so far and the proportion of “Affected” dogs is known to be much lower than in the other two varieties: 5% “Affected” in 2010 and 1% in 2011 and 2012.



From our Dachs-Life 2012 survey, the cases of PRA were only found in Mini Longs (1.9% prevalence) and Mini Smooths (1.7% prevalence) and this verifies the anecdotal evidence we previously had. Given the average age of these dogs (6.1, with a range of 3 - 13) it seems likely this is related to the cord1 PRA, which is known to range from early to late onset, depending on whether or not the cord1 mutation and a second modifying mutation are both present.

Other Health Conditions

IVDD, Lafora and cord1 PRA are the three conditions currently prioritised by the Breed Council. Others are under investigation, or on our “Watch List”:

- ⤴ Distichiasis in MLHDs
- ⤴ Epilepsy in MLHDs
- ⤴ Cardiac disease in WHDs
- ⤴ Diabetes in SHDs

The Dachs-Life 2012 prevalence of Distichiasis in Mini Longs was 2.8% and it is important to note that this is the only variety where this condition was reported in our survey. The AHT’s research screening of Mini Longs (checking for PRA) in 2010 identified 43% of Mini Longs with this condition; a worryingly high proportion. However, neither the extent of the condition, nor its health impact, in that study are known.

Anecdotally, Epilepsy in Mini Longs has been discussed, but it has been difficult to get much data about the prevalence of the condition from breeders/owners. Dachs-Life 2012 recorded 12 cases which represents a prevalence of 3.7%, compared with a reported prevalence of around 4% in dogs in general. This level of Epilepsy in MLHD is a statistically significant difference from that reported in the other five varieties. The average age of the MLHDs with Epilepsy was 8.6, but we do not know the age of onset/diagnosis for these dogs.

The WHDC has previously investigated heart disease in Standard Wires and found 5% with Heart Murmurs. In Dachs-Life 2012 we found Wires to have the highest prevalence of heart disorders of the six varieties at 7.4% and representing 39% of all reported heart conditions. This is a statistically significant difference from the prevalence in the other varieties (at the 95% Confidence Level). 12 Wires had Heart Murmurs, with an average age of 12.2, the youngest being 6.4. We do not know the age of diagnosis for these heart conditions, but three Wire deaths associated with heart conditions were reported (ages 2, 11, 12). Two-thirds (13 cases) of our on-line cardiac reports are from WHDs.

Diabetes in SHDs was reported at around 1.5% prevalence in Dachs-Life 2012, which is low and only represents 4 cases, but this is a condition that, again, has been reported anecdotally.

Genetic Diversity

CoI values for each of the Dachshund varieties, taken from the KC's MateSelect, was as follows in May 2011 and at December 2012:

	Smooth	Mini Smooth	Long	Mini Long	Wire	Mini Wire
May 2011	8.20%	8.10%	8.60%	7.60%	6.70%	11.30%
Dec. 2012	7.30%	8.00%	12.20%	7.10%	6.60%	10.80%

All six Dachshund varieties currently have a Breed average COI of less than 12.5% which is the maximum value identified in the Advisory Council on the Welfare Issues of Dog Breeding's Standard for dog Breeding.

The (breed) average inbreeding coefficient for a breed is calculated on an annual basis by calculating the inbreeding coefficients of all individuals of the breed born during the selected year. The mean of the inbreeding coefficients is taken as the average for that year.

It is important to note that there has been some discussion during 2012 about the basis for calculating COI within MateSelect. The program uses however many generations of pedigree data are available, so COI values for two dogs might be based on significantly different numbers of ancestors. The number of generations used in the calculation can significantly affect the value of COI. For example, the KC's database does not include the pedigrees of many imported dogs and therefore CoI values for these dogs are incorrectly shown as 0%. The KC's quoted Breed Average CoI figures may therefore be underestimates.

The Breed Council published an analysis of average litter sizes based on KC Registrations since 1990 in its 2011 Health Report. This showed no evidence of reductions in average litter sizes which might have been expected if, overall, the six varieties were becoming more inbred.

In all six varieties, responsible breeders have brought in a number of new bloodlines from America, Canada, Australia, Scandinavia and Europe which has helped to extend the gene pool for the good of the breed.

The following table show the proportion and number of litters sired by the most popular stud dog in each variety, during 2011:

Variety:	Smooth	Long	Wire	Mini Smooth	Mini Long	Mini Wire
% of litters	7.8%	2.6%	11.1%	2.5%	2.7%	3.6%
No. of litters	4	1	7	20	8	8

Objectives and Plans

Health Planning

Each health condition considered by the Dachshund Breed Council is reviewed using our Health Planning and Progress Matrix.

- ⤴ The matrix assesses plans and progress across six criteria and rates them at one of five achievement levels
- ⤴ This enables us to take a systematic approach to planning for improvement and for tracking achievements

The six criteria are:

- ⤴ **Evidence**
 - ⤴ (do we have data?)
- ⤴ **Communication and Education**
 - ⤴ (do people know about this condition?)
- ⤴ **Involvement of external stakeholders**
 - ⤴ (who are we working with on this?)
- ⤴ **Health Planning**
 - ⤴ (what do we plan to do?)
- ⤴ **Testing**
 - ⤴ (what tests are being used?)
- ⤴ **Health Outcomes**
 - ⤴ (what has been achieved?)

The first four criteria are “Enablers”; we have to put these things in place before we can achieve any improvements. The final two criteria are “Results”; the positive achievements from our efforts.

The five performance levels are:

5	Improving	The consistent use of screening tests has conclusively reduced the impact of the condition
4	Quantitatively Managed	The use of screening tests is widespread and there is some evidence of improved health
3	Defined	Screening tests are under way and breeders are aware of the need to use them
2	Managed	We have gathered some evidence, begun some testing and are starting a Health Plan
1	Initial	We don't know much about the condition or its prevalence and have no plans to deal with it

The long-term aim is for each condition to achieve Level 5 (“Improving”) for each of the six assessment criteria.

An example for Back Disease (IVDD) is shown below:

Intervertebral Disc Disease

Illness Severity [GISID: 5-12]	Evidence	Communication & Education	Involvement of external Stakeholders	Health Planning	Testing & Screening	Health & Welfare Outcomes
Level 5: Improving	<i>Research results are updated and published</i>	<i>Research updates are communicated, as necessary, in the public domain</i>	<i>Progress is reviewed formally with the KC and researchers</i>	<i>Health Plan is reviewed annually (or every 2 years if "stable")</i>	<i>Clinical and/or DNA testing is an ABS "Recommendation" or</i>	<i>Demonstrably reduced occurrences</i>
Level 4: Quantitatively Managed	<i>Research results are published and shared among the Breed Council/ Clubs</i>	<i>Research and recommendations are communicated to vets, breeders & puppy buyers</i>	<i>KC is requested to make testing an ABS "Recommendation" or "Requirement"</i>	<i>Health Plan is reviewed annually</i>	<i>Clinical and/or DNA testing is available and used by most breeders</i>	<i>Breeders can make fully informed choices and there is some evidence of improvement</i>
Level 3: Defined	<i>Structured and systematic evidence gathering and research is in place</i>	<i>Recommended good practices are communicated to breeders and puppy buyers</i>	<i>External research groups are engaged; Funding is sought, if necessary</i>	<i>Health Plan is in place</i>	<i>Clinical testing is widely available and used by most breeders</i>	<i>Breeders can make informed choices based on clinical tests</i>
Level 2: Managed	<i>Evidence is requested from breeders & owners</i>	<i>Concerns are communicated via Breed Council/ Club newsletters & websites</i>	<i>Approaches are made to KC and potential researchers</i>	<i>Ownership is accepted by Breed Council; Lead Club(s) appointed</i>	<i>Clinical testing is initiated and used by a few breeders</i>	<i>Individual breeders can make choices based on personal knowledge of problems</i>
Level 1: Initial	<i>Anecdotal & rumours only</i>	<i>Breeders are "unaware" or "keeping it quiet"</i>	<i>None</i>	<i>Breed Clubs & Council are made aware</i>	<i>None</i>	<i>None</i>

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You can find a slide-show summarising our current plans at our Health website: [here](#). This includes progress matrices (as shown above) for:

- ♣ IVDD
- ♣ Lafora Disease (MWHD)
- ♣ cord1 PRA (MLHD, MSHD, MWHD)
- ♣ Heart Disease (WHD)
- ♣ Epilepsy (MLHD)
- ♣ Diabetes (SHD)
- ♣ Distichiasis (MLHD)

We use the GISID* scoring tool to assess the severity of diseases, which helps us decide how high a priority each condition should be, in combination with what we know about disease prevalence.

[* GISID: Generic Illness Severity Index for Dogs. Proposed by Asher et al 2009. 0 = Low Severity, 16 = High Severity.]

Health Objectives

Our Health Objectives for our priority conditions are:

- ▲ IVDD
 - Identify and implement a screening approach that can be used to reduce the risk of breeding IVDD-affected puppies
 - Achieve a 25% reduction in IVDD prevalence within 10 years (end of 2022)
- ▲ Lafora Disease
 - Refine and implement the full DNA screening programme
 - Eliminate the breeding of Lafora-affected puppies within 3 years (end of 2015), without adversely compromising genetic diversity
- ▲ Retinal Degeneration - cord1 PRA
 - Continue to achieve year-on-year reductions in the mutation frequency of cord1 in all Miniature varieties, without adversely compromising genetic diversity
 - Encourage the use of clinical eye testing (BVA/KC/ISDS Scheme) for the early identification and prevention of other eye diseases

Our Health Objectives for Genetic Diversity are:

- ▲ Coefficient of Inbreeding
 - Achieve a reduction in Breed Average COI (as measured by KC MateSelect), with an overall aim of 6.25%, or less, within 10 years (end of 2022)
 - Encourage the importation of new breeding stock to help reduce Breed Average COI
- ▲ Popular Sires
 - No individual stud dog to sire more than 20 litters over his lifetime
 - No individual stud dog to sire more than 5% of litters per year for Standards and 2.5% for Miniatures (using the previous year's No. of litters registered as the base for calculation). For 2013, the maximum number of litters per stud dog would be:
 - Smooth = 3
 - Long = 2
 - Wire = 3
 - Mini Smooth = 10
 - Mini Long = 8
 - Mini Wire = 6

Plans to achieve these objectives

Our plans to achieve these objectives and progress towards them are described in our Annual Health Reports. In summary:

- ⤴ We have a DNA research programme under way with the AHT to identify a gene test for IVDD
- ⤴ We have a Thermal Imaging (TI) research programme starting in 2013, to look at TI as a potential technique to assess the health of Dachshunds' backs
- ⤴ We have work under way to refine the full DNA test for Lafora Disease with Dr. Minassian's laboratory in Canada
- ⤴ The currently available Lafora DNA test is an ABS Recommendation and we will seek to upgrade this to an ABS Requirement once the full test has been established
- ⤴ We will continue to promote the cord1 PRA test for all Miniatures and clinical eye testing for all Dachshunds
- ⤴ We have a comprehensive education and communication strategy in place to ensure our messages on health are directed to a wide range of audiences (breeders, owners, buyers, judges)
- ⤴ We have mechanisms in place to monitor breed health and genetic diversity and will report progress annually
- ⤴ Our Health Sub-committee has clearly defined roles and responsibilities for leading and supporting our plans

Breeding Recommendations

Code of Ethics

Our [Code of Ethics](#) includes the following clauses in relation to breeding:

- ⤴ I will discourage indiscriminate breeding, bearing in mind always the welfare of the bitch as a primary consideration and the long-term welfare of any puppies bred by me.
- ⤴ I will not breed from any stock that has, or may carry, any serious hereditary faults. In particular I will not allow any dog to be used at stud if he has, or could carry; serious hereditary faults and I will be very selective of the bitches on which he is used. If health screening/testing is available for any hereditary disease/illness carried by my breed, I will ensure all my breeding stock is tested.
- ⤴ I will not knowingly mate 2 dapples together.
- ⤴ I will not allow any of my dogs to be used irresponsibly at stud.
- ⤴ I will not breed irresponsibly
 - (a) from any bitch less than one year of age at the time of mating and only if she is considered mature enough to raise a litter of puppies.
 - (b) from any dam which is 8 years or over at the date of whelping unless I obtain Kennel Club permission.
 - (c) from any dam which has whelped 4 litters (KC Regulation from 01/01/12)
 - (d) more than one litter in a twelve-month period per bitch (except with veterinary advice)
- ⤴ No bitch to be mated who has had 2 caesarean sections (as this may indicate possible whelping difficulties).
- ⤴ No bitch more than 4 weeks in whelp should be imported, exported or exhibited.

All the points in our Code of Ethics should be self-explanatory and are aimed at ensuring Breed Club members demonstrate the highest standards of behaviour when breeding, judging and exhibiting and that the welfare of their dogs is of prime importance.

We have provided some additional guidance in relation to Clause 18, which says:

I will not breed from any stock that has, or may carry, any serious hereditary faults. In particular I will not allow any dog to be used at stud if he has, or could carry; serious hereditary faults and I will be very selective of the bitches on which he is used. If health screening/testing is available for any hereditary disease/illness carried by my breed, I will ensure all my breeding stock is tested.

Clearly, a Code of Ethics is a guide and cannot be prescriptive in defining “serious hereditary faults” or the screening tests which should be carried out.

The owners of Stud Dogs with any known hereditary condition have a particular responsibility not to allow a dog to be used at stud if it is likely that its offspring will also suffer from that condition. Conditions such as Epilepsy, Lafora Disease, Heart Disease, Cushing's, Entropion and IVDD clearly fall into this category.

IVDD and Lafora Disease are clearly among the serious health conditions where breeders should not knowingly breed from bitches, or use dogs at stud, if it is likely that their puppies will be affected by these conditions.

Available Screening Tests

The results of screening programmes give breeders a better understanding of the genes that a dog carries and therefore the genes that it is likely to pass to its progeny if it were to be bred from.

Lafora screening is a Recommendation under the Assured Breeder Scheme and the WHDC has published a set of test results and status of dogs' parents on its [website](#). Until a full DNA test is in place, breeders should make use of this information to inform their breeding decisions and act to minimise the risk of producing Lafora-affected puppies.

Cord1 PRA testing is an ABS Requirement for all three varieties of Miniature Dachshund and it is expected that all Breed Club members will use this test to make ethical breeding decisions. So, for example, anyone testing for cord1 PRA, mating “Carriers to Carrier”, “Carrier to Affected” or “Affected to Affected” and knowingly producing “Affected” puppies would be acting outside the Code of Ethics. All matings should include at least one cord1 “Clear” parent.

Clinical eye testing under the KC/BVA/ISDA Eye Scheme is considered to be good practice and the Breed Council encourages use of this scheme for all Dachshunds.

Where screening tests are available and recommended by the Breed Council, Breed Club members are expected to make use of them and act on the results in accordance with the latest advice from our Health and Welfare Sub-committee.

Other diseases are explained on our [A-Z of Health](#) page and the notes include specific advice on breeding in relation to each disease.

If anyone needs advice on a particular situation they should contact any member of the Breed Council's [Health and Welfare Sub-committee](#) for advice.

Temperament

Breeders should select breeding dogs that have the best chance of producing puppies with good temperaments, with the correct breed type and characteristics and free from health defects. The temperament of the potential parents will be a good guide to predicting the temperament of any puppies. If a dog shows a suspect temperament, then it really should not be bred from. Participation in activities which require good temperaments are to be encouraged; for example: Working Trials, Good Citizen Dog Scheme, Obedience, Mini Agility.

Inbreeding Coefficients

We know that as the inbreeding coefficient increases the risk of these having a serious and deleterious impact on the breed will also increase. The Breed Council strongly encourages breeders to make use of [Mate Select](#) to help inform their breeding strategies, by reviewing COI values of their breeding stock and the expected COI of puppies. Mating two dogs where the COI of the resulting puppies is lower than the current Breed Average COI will be of benefit to the breed overall.

Popular Sires

In order to avoid potential issues associated with Popular Sires, no individual stud dog should sire more than 5% of litters per year for Standards and 2.5% for Miniatures (using the previous year's No. of litters registered as the base for calculation). No individual stud dog should sire more than 20 litters over his lifetime. For 2013, the maximum number of litters per stud dog would be:

- Smooth = 3; Long = 2; Wire = 3
- Mini Smooth = 10; Mini Long = 8; Mini Wire = 6

Breed-specific Judging Guidance

The Breed Council's Health and Welfare Sub-committee has produced a [Guide for Dachshund Judges](#) on their responsibilities in relation to health and welfare. Judges may also be interested to read "[why Dachshunds are the shape they are](#)".

The Dachshund Breed Council and the Kennel Club are committed to ensuring that there are no health and welfare issues in relation to the exhibition of Dachshunds. We would like to remind judges, therefore, of their responsibilities in relation to the health and welfare of the dogs that they judge. Judges will have the full support of the Dachshund Breed Council and Kennel Club if they feel they need to act, during a judging appointment, to protect the health and welfare of any Dachshund. You can download the [Breed Council's Dach-Facts information sheet on the weighing of Miniature Dachshunds](#).

Requirements for all dogs

Breathing: All dogs should be able to breathe without difficulty, also when moving.

Eyes: All dogs should have clear eyes without any signs of discomfort.

Skin: All dogs should have healthy skin without signs of irritation.

Teeth: All dogs should have healthy teeth and a bite according to the breed standard. Incorrectly placed teeth that injure the upper gums or palate are health issues.

Condition: No dogs should be overweight or underweight.

Coat: The coat should not be so extensive as to create discomfort or impede movement.

Movement: All dogs should be able to move naturally without visible effort or discomfort.

Temperament: All dogs should have good temperament suitable for life in society. Breed specific behaviour must be noted and allowed, but excessive shyness or sharpness of temperament is never acceptable. N.B. aggressive dogs and dogs showing signs of panic and/or fear should always be penalised.

Dachshund Breed Standard

Breed Standard Clauses (parts only)	Potential health issues
GENERAL APPEARANCE: Moderately long and low with no exaggeration, compact, well muscled body, with enough ground clearance to allow free movement. Height at the withers should be half the length of the body, measured from breastbone to the rear of thigh.	⚠ Dogs that have exaggerated length may be more at risk of damaging their backs, particularly if they are also long in the loin
TEMPERAMENT: Faithful, versatile and good tempered.	⚠ Dogs that cannot be handled on the judging table as a result of nervousness, or aggression should be seriously penalised
EYES: Medium size, almond-shaped, set obliquely. Dark except in chocolates, where they can be lighter. In dapples one or both 'wall' eyes permissible.	⚠ Tear-staining from the eyes may be a sign of blocked tear ducts, or other abnormalities of the eyelids causing irritation

Breed Standard Clauses (parts only)	Potential health issues
<p>MOUTH: Teeth must be strongly developed; the powerful canine teeth fitting closely. Jaws strong, with a perfect, regular and complete scissor bite; i.e. the upper teeth closely overlapping the lower teeth and set square to the jaws. Complete dentition important.</p>	<ul style="list-style-type: none"> ⤴ Dental disease (tooth or gum decay) ⤴ Crowded mouths, overshot, or undershot jaws ⤴ Narrow lower jaw with missing incisors ⤴ Incorrectly fitting lower canines which pierce the upper jaw
<p>BODY: Moderately long and full muscled. Sloping shoulders, back reasonably level, blending harmoniously between withers and slightly arched loin. Loin short and strong. Breast bone strong, and so prominent that a depression appears on either side of it in front. When viewed from front, thorax full and oval; when viewed from side or above, full volumed, so allowing by its ample capacity complete development of heart and lungs. Well ribbed up, underline gradually merging into line of abdomen. Body sufficiently clear of ground to allow free movement.</p>	<ul style="list-style-type: none"> ⤴ As stated above, excessive length is to be avoided and the loin should be short ⤴ Exaggerated depth of chest could predispose the dog to Gastric Torsion (Bloat) which is reported as a breed-related risk ⤴ Insufficient length of leg and ground clearance could adversely affect the dog's ability to cope with adequate amounts of exercise
<p>GAIT/MOVEMENT: Should be free and flowing. Stride should be long, with the drive coming from the hindquarters when viewed from the side. Viewed from in front or behind, the legs and feet should move parallel to each other with the distance apart being the width of the shoulder and hip joints respectively.</p>	<ul style="list-style-type: none"> ⤴ Lameness may be an indication of an underlying muscle or skeletal health issue ⤴ Inability to walk without skipping or missing steps in the rear legs may be an indication of Patellar Luxation ⤴ A wobbly, or unsteady, hind gait may be an indication of a back problem or other musculo-skeletal issue ⤴ Twisting of the lower ends of the radius and ulna or tibia and fibula due to uneven growth of these pairs of bones may lead to various signs standing or on the move - protruding elbows, bandy legs or pinning - and this could lead to leg weakness and injury

Breed Standard Clauses (parts only)	Potential health issues
<p>COAT:</p> <p>Long Haired: Soft and straight, or only slightly waved; longest under neck, on underparts of body, and behind legs, where it forms abundant feathering, on tail where it forms a flag. Outside of ears well feathered. Coat flat, and not obscuring outline. Too much hair on feet undesirable.</p> <p>Smooth Haired: Dense, short and smooth. Hair on underside of tail coarse in texture. Skin loose and supple, but fitting closely all over without dewlap and little or no wrinkle.</p> <p>Wire Haired: With exception of jaw, eyebrows, chin and ears, the whole body should be covered with a short, straight, harsh coat with dense undercoat, beard on the chin, eyebrows bushy, but hair on ears almost smooth. Legs and feet well but neatly furnished with harsh coat.</p>	<ul style="list-style-type: none"> ⤴ Thin patches, or areas of baldness, may indicate an underlying skin condition such as Seasonal Alopecia
<p>COLOUR:</p> <p>All colours permitted but no white permissible, save for a small patch on chest which is permitted but not desirable. The dapple pattern is expressed as lighter coloured areas contrasting with the darker base. Neither the light nor the dark colour should predominate. Double dapple (where varying amounts of white occurs all over the body in addition to the dapple pattern) is unacceptable.</p>	<ul style="list-style-type: none"> ⤴ Double Dapple (Merle) is associated with congenital blindness and deafness – the Kennel Club will no longer register puppies born from two Dapple parents ⤴ The dilute colours Blue and Isabella are unlikely to be seen in the UK show ring, but are associated with Colour Dilution Alopecia

Breed Standard Clauses (parts only)	Potential health issues
<p>SIZE: Ideal weight: 9-12 kgs (20-26 lbs).</p> <p>Miniature ideal weight; 4.5kgs (10lbs). Desired maximum weight 5kgs (11lbs). Exhibits which appear thin and undernourished should be severely penalised.</p>	<ul style="list-style-type: none"> ⤴ Miniatures which are “up to weight” i.e. 11 pounds, but appear thin are unacceptable, whether dogs or bitches ⤴ A dog is too thin if, when running your fingertips against the direction of the coat without applying any pressure, you can: <ul style="list-style-type: none"> ⤴ Easily feel the ribcage <u>and</u> ⤴ Easily feel the spine <u>and</u> ⤴ Easily feel the shoulder-blades and hip-bones ⤴ Dogs that are overweight, or in “soft” condition, may be getting insufficient exercise and are at increased risk of heart disease or musculo-skeletal conditions ⤴ A dog is overweight if you cannot feel his ribs and can see fat over his back and the base of his tail. He will also have rolls of fat on his neck and over his shoulders. He will have no discernible waist behind the ribs, when viewed from above, and you will be able to see excessive abdominal fat or a distended underline, in profile ⤴ Remember, the Breed Standard describes the ideal sizes of Standard and Miniature Dachshunds; these ARE NOT "target weights" for individual dogs
<p>NOTE: Male animals should have two apparently normal testicles fully descended into the scrotum.</p>	<ul style="list-style-type: none"> ⤴ Monorchidism is an inherited condition and affected animals should not be bred from

KC Regulations

Below is a summary of relevant Kennel Club Regulations, Breed Standard clauses and declarations relevant to Canine Health and Welfare:

1. Regulation F.9 (2007)

In assessing dogs, judges must penalise any features or exaggerations which they consider would be detrimental to the soundness, health or well being of the dog. All dogs must be able to see, breathe, walk and be free from pain, irritation or discomfort.

2. Regulation F(1)21n. Judges and Judging (January 2009)

Judges may exclude any dog from the ring if it is considered not in a fit state for exhibition owing to savage disposition or suffering from any visible condition which adversely affects its health or welfare and the exclusion must be reported immediately by the judge/steward to the Show Secretary. The judge's decision is final and the dog shall be excluded from all subsequent competition at the Show. The judge must make a report to the Show Secretary at the first opportunity after the Show.

3. Regulation F(1)15b. Exclusion of Dogs (January 2009)

If the show executive receives a report from a show official or Kennel Club official of an apparently visibly unhealthy and/or unsound dog, the dog will be referred to the show veterinary surgeon and if the allegation is upheld the dog will be excluded from subsequent competition at the show. For example if the dog in question had been awarded Best of Breed, it would be excluded from the Group competition.

4. Judge's Declaration on Challenge Certificate (June 2007)

Having assessed the dogs and penalised any features or exaggerations which I consider detrimental to their soundness, health or welfare, I am clearly of the opinion that ... is of such outstanding merit as to be worthy of the title of Champion.

5. Introductory Paragraph to All Breed Standards (January 2009)

A Breed Standard is the guideline which describes the ideal characteristics, temperament and appearance of a breed and ensures that the breed is fit for function. Breeders and judges should at all times be careful to avoid obvious conditions or exaggerations which would be detrimental in any way to the health, welfare or soundness of this breed. From time to time certain conditions or exaggerations may be considered to have the potential to affect dogs in some breeds adversely, and judges and breeders are requested to refer to the Kennel Club website for details of any such current issues. If a feature or quality is desirable it should only be present in the right measure.

6. Universal Fault Clause in Every Breed Standard

... the seriousness with which the fault should be regarded should be in exact proportion to its degree and its effect upon the health and welfare of the dog.

7. Withholding of awards

You may withhold awards if in your opinion an exhibit lacks sufficient merit. Remember; if you withhold third in a class, you must withhold all subsequent awards in that class.

The Breed Council's latest advice is published [on our Judges and Judging web-page](#).

As a judge, you will have the full support of the Dachshund Breed Council and Kennel Club when you act to protect the health and welfare of the Dachshund.

Appendices

You can find further information as follows:

Breed Standard:	http://dachshundbreedcouncil.wordpress.com/uk-breed-standard/
Illustrated Breed Standard:	http://ukdachshund.wordpress.com/
Genetics of Dachshund Coats and Colours:	http://dachshundbreedcouncil.files.wordpress.com/2012/02/coat-and-colour.pdf
WHDC Lafora Screening Programme:	http://www.whdc.co.uk/lafora-results-jan-2012.php
Guidance for Judges:	https://sites.google.com/site/ukdachshundhealthreport/dachshund-health-resources/welfare/judges-and-judging
Code of Ethics:	http://dachshundbreedcouncil.wordpress.com/code-of-ethics/
Dachshund Health Website:	http://dachshundhealth.org.uk/
KC Breed Health Improvement Strategy Guide:	http://www.thekennelclub.org.uk/download/13823/bhcbreedhealthimpstrat.pdf