

# Health Challenges of Pedigree Dogs

Petplan report a 400% increase in the number of crossbred dogs being insured over the last 5 years. Whilst purebreds remain in the majority, concerns over inherited disorders and health problems in pedigree dogs are fuelling the trend much to the concern of pedigree breeders. The Kennel Club recognise 215 official breeds in the UK and 396 inherited disorders have been identified thanks to stringent recording and advances in DNA based diagnostics. More than 80 are directly associated with the published breed standards for registration. This article looks at the most common genetic disorders and methods of avoiding them.

## How do genetic diseases occur?

All dogs have 39 pairs of genes, one set inherited from the dam and one from the sire. Genetic diseases occur when the genes that they have inherited predispose them to certain health problems. Genes that are problematic to the survival of the dog are usually recessive so the puppies only exhibit the disease if both parents are carriers or the gene is sex linked. If the gene is sex linked, males only inherit one set of X chromosome whereas females inherit two so the males are more likely to exhibit the symptoms than the female. The females however may be carriers. The probabilities of outcomes based on the status of the parents are illustrated in Figure 1.

The likelihood of inheritance is greatly increased when the gene pool (the number of potential

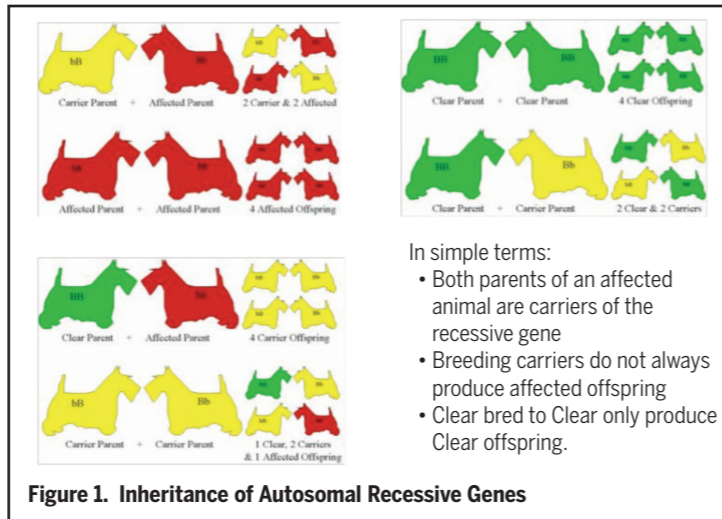


Figure 1. Inheritance of Autosomal Recessive Genes

In simple terms:

- Both parents of an affected animal are carriers of the recessive gene
- Breeding carriers do not always produce affected offspring
- Clear bred to Clear only produce Clear offspring.

breeding pairs) is limited. For this reason, rare breeds and colours and breeds subjected to relentless pursuit of "breed type" have a higher probability of inherited health problems. If the genes are polygenous (linked to other

genes), they may inadvertently select for low resistance to disease. These factors account for the correlation between breed standards and genetic disorders.

In the future, DNA screening and identification of problematic genes

can greatly reduce the incidence of these diseases providing breeders apply this science and refrain from breeding from known carriers. The rise in the popularity of crossbreds and some of the recent publicity will hopefully encourage pedigree breeders to do just that.

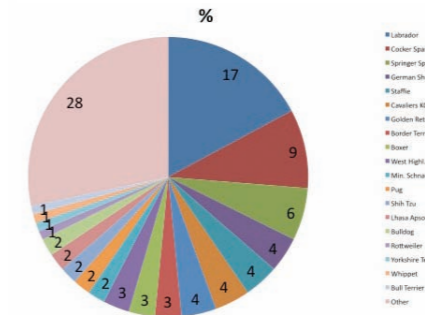
## The Most Popular Breeds in the UK & Documented Health Problems

It is impossible to cover every breed and every known disease in a single article so on this occasion, we will concentrate on the 20 dog breeds that account for 72% of total registrations in the UK namely:

- Labrador
- \* Cavalier King Charles Spaniel
- Cocker Spaniel
- \* Boxer
- \* English Springer Spaniel
- \* West Highland Terrier
- Pug
- \* Miniature Schnauzer
- German Shepherd
- \* Pug
- \* Golden Retriever
- \* Shih Tzu
- French Bulldog



## % of total registrations of popular dog breeds



serious disease lists but all the breeds do endure many non-life threatening ailments from atopic dermatitis to diabetes and progressive kidney, liver and heart conditions.

In terms of the most serious diseases, reputable breeders are now

joining the Kennel Club recording schemes and carefully selecting their breeding stock in order to reduce the incidence of these diseases but this can be very difficult if the individuals do not exhibit the symptoms at an early age. Again, DNA mapping and the introduction of new blood lines are their best option for the future. At the same time, the authorities need to look again at some of the breed standards that they impose. Dogs must be fit for purpose – able to breathe, eat, digest and

- \* Lhasa Apso
- \* Border Terrier
- \* Rottweiler
- \* English Bulldog
- \* Yorkshire Terrier
- \* Staffordshire Bull Terriers
- \* Whippet

If the breed you are concerned about is not represented, the University of Prince Edward Island and Cambridge University Genetics Department publish databases on the web that you can access.

The Cocker Spaniel and Border Terrier are notably absent from the



Cavachon puppy

## About Biolife ...

Mary Lloyd

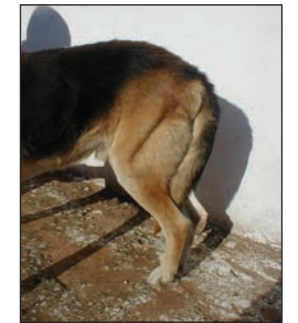
A Welsh farmer's daughter who now lives in the village of Brailles in South Warwickshire, Mary is a graduate in Animal Production. She started her career at the Meat and Livestock Commission as a sheep specialist and was cited as the "Young Scientist of the Year" in 1981. Soon after, she became a Lecturer and Consultant at the University of Edinburgh and a regular contributor to House of Lords & House of Commons Select Committees advising on research and development in animal nutrition, health and welfare. After

completing an MBA at Warwick University, she left the public sector and joined the Boots Company formulating products and marketing strategies for a wide variety of product ranges. The commercial experience enabled her to set up Bio-Life International Ltd in 2000 formulating, manufacturing and marketing allergy preventative for humans and pets throughout Europe and even as far afield as Japan.

Mary lives with her partner, Graham Warmington, 3 step children, 3 dogs, 1 cat and 16 Hebridean sheep! The company she founded and Graham, her partner in life, are enthusiastic supporters of

exercise --- and it is not hard to see that extreme demands are far from desirable!

**"Hip and retinal dysplasia are serious diseases but they are visible."**



## Practical Advice

Be aware of the health characteristics of the breed that you select and look carefully at the breed history of the puppy that you choose. If the same family names appear repeatedly on the pedigree papers then the risk of inherited disease increases dramatically. Speak to your veterinary surgeon if you are in any doubt – they will know the local breeder and can advise you on whether the breeding stock are prone to serious illnesses. Choose kennels that do participate in Kennel Club certification schemes and check the paperwork. Always see the puppy's parents to make sure they are fit and well and do not be deterred if the puppy or dog you fall in love with is not a pedigree – he or she will still be a loving, healthy companion!

Table 1: Serious Diseases that are Relatively Common within Breeds

DISEASE	COMMON NAME	BREED
Elbow dysplasia	Dislocated elbow	Labrador, Rottweiler
Hip dysplasia	Dislocated hip	Labrador, German Shepherd, Springer Spaniel, Golden Retriever, English Bulldog, Rottweiler
Retinal dysplasia	Displaced retina	Labrador, Golden Retriever, Yorkshire Terrier
Phosphofruktokinase deficiency	Enzyme deficiency that leads to lethargy & muscle wasting	Springer Spaniel
Seborrhea	Oily, smelly coat	Springer Spaniel, West Highland Terrier
Degenerative myelopathy	Degeneration of the spinal cord leading to crippling	German Shepherd
Exocrine pancreatic deficiency	Lack of enzymes that assist digestion	German Shepherd
Haemophilia	Lack of blood clotting	German Shepherd
Renal cystadenocarcinoma & modular dermatofibrosis	Kidney cancer	German Shepherd
Pannus	Inflammation of the eye's cornea	German Shepherd
Panosteitis	Bone inflammation	German Shepherd
Perianal fistula	Ulcerated anus	German Shepherd
Mitral valve dysplasia	Heart disease	Cavalier King Charles Spaniel
Chiari like malformation & syringomyelia	Malformation of the skull	Cavalier King Charles Spaniel
Subaortic stenosis	Heart disease	Golden Retriever, Rottweiler
Craniomandibular Osteopathy		West Highland Terrier
Keratoconjunctivitis sicca	Dry eye	West Highland Terrier, Lhasa apso, English Bulldog
Portosystemic shunt	Liver disease	Miniature Schnauzer, Yorkshire Terrier
Sick sinus syndrome	Heart arrhythmia	Miniature Schnauzer
Exposure keratopathy syndrome	Severe eye irritation	Shih tzu
Brachycephalic syndrome	Severe respiratory distress	English Bulldog
Pulmonic stenosis	Heart disease	English Bulldog
Vertical septal defect	Heart defect	English Bulldog
Patellar luxation	Knee dislocation	Yorkshire Terrier
Tracheal collapse	Lung disorder	Yorkshire Terrier