



THE KENNEL CLUB

Making a difference for dogs



THE KENNEL CLUB DOG HEALTH GROUP
ANNUAL REPORT
2013

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AT THE ANIMAL HEALTH TRUST

INTRODUCTION

The work of the Dog Health Group has moved on apace in the last year, as new initiatives develop and others continue to embed and expand their scope and impact. The four sub-groups allow for a dynamic approach on emerging issues, and the external memberships within each ensure that perspective and balance is maintained throughout the Kennel Club's drive towards ever improving health and welfare.

This report intends to update the information given in previous reports, highlight new developments over the year, and focus on key steps that have been achieved. However, full information on all of our health work can be obtained from the Kennel Club website, <http://www.thekennelclub.org.uk>



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REMIT OF THE DOG HEALTH GROUP

- To develop strategy for the Kennel Club's health work.
- To provide overall co-ordination and monitoring of such work.
- To supervise the *Fit for Function: Fit for Life* campaign and other 'public' campaigns.
- To be responsible for recommending, on advice from the various sub-groups, the requirements for health schemes, the Assured Breeder Scheme requirements and other breeding strategies.
- To produce an annual report on the Dog Health Group's work.



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DOG HEALTH GROUP ACHIEVEMENTS IN 2013

KENNEL CLUB CHARITABLE TRUST

During 2013 the Kennel Club Charitable Trust - primarily supported by donations from the Kennel Club - made grants for the study of canine health totalling £536,205 as follows:

Animal Health Trust	
Year 5 support for the Kennel Club Genetics Centre at the Animal Health Trust	£250,000
Research into hereditary cataract in the Irish Red & White Setter	£15,359
Gene Atlas system for cancer sample diagnosis	£42,500
British Veterinary Nursing Association	
Bursaries	£7,500
Dachshund Breed Council	
Third instalment for a research project into Lafora in the breed	£6,500
Guide Dogs	
Impact of dogs' early environment on their adult temperament	£6,285
International Canine Health Awards (funded by Vernon and Shirley Hill of Metro Bank)	
Awards for outstanding veterinary and student research into canine health	£100,032
Karlton Index	
Support of health awards	£3,830
Nottingham Trent University	
Research into the impact of jumping styles in agility dogs	£720
PDSA	
Digital X-ray machine	£20,000
Royal (Dick) School of Veterinary Studies	
Second instalment of additional funds for "DogsLife: An Epidemiological Study of Canine Health"	£20,000
University of Bristol	
Conformational indicators for syringomyelia	£2,670
Development of a canine gait laboratory	£13,325
University of Cambridge	
Laboratory equipment at the Queens Veterinary Hospital	£25,000
The respiratory cycle of brachycephalic dogs	£19,145
University of Glasgow	
Glut-1 expression in soft tissue sarcomas	£2,639
University of Nottingham	
Risk factors for osteosarcoma in the Rottweiler	£700

FRENCH BULLDOG

The French Bulldog was removed from the list of high profile breeds in the autumn of 2013. The breed has taken a consistently proactive approach to health and welfare and fulfilled all of the criteria for removal set by the Kennel Club. This is a very positive step forward for the breed and for the Kennel Club. In this year's report we have therefore included a special feature on the breed's progression, prepared by the French Bulldog breed health co-ordinator, Mrs Penny Rankine-Parsons.

ONLINE JOURNAL

Agreement has been reached for the establishment of the Kennel Club's online journal on canine genetics and epidemiology which will have open access. All papers to be published in the journal will be accompanied by an extended lay summary, so that the journal is widely accessible. This is an important initiative for the Kennel Club as no other repository exists for such areas of research. It is envisaged that the first edition will be available in April 2014.

ESTIMATED BREEDING VALUES

This is a new online tool for Mate Select, using data from health testing schemes to create an interactive resource allowing breeders to make more informed breeding choices. The EBV tool will be launched at Crufts 2014. Further details are given below in the report on the work of the Genetics and Health Screening Sub-Group.



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SPECIAL FEATURE - FRENCH BULLDOGS



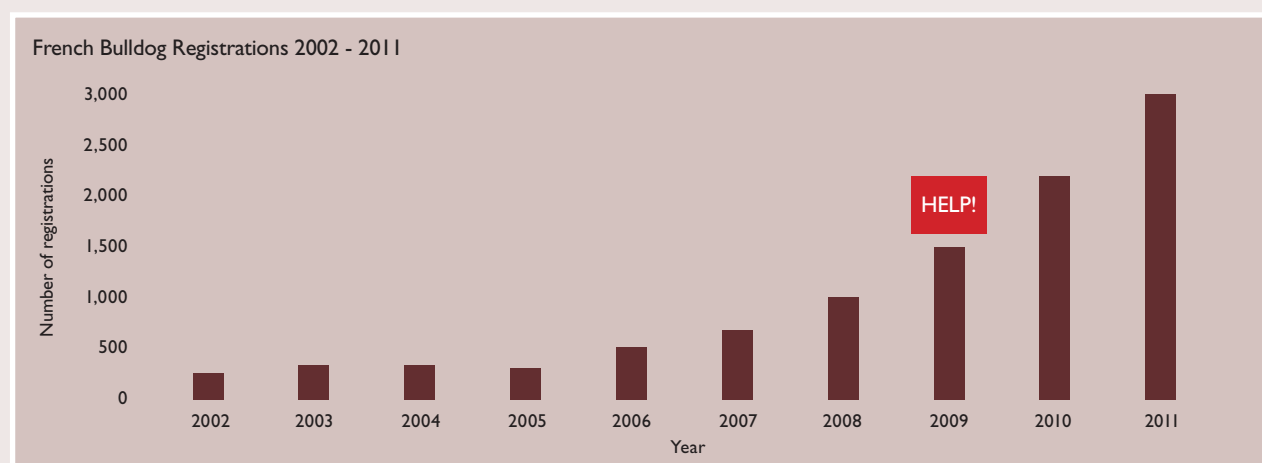
We are grateful to Penny Rankine-Parsons, French Bulldog Breed Health Co-ordinator, who has provided the following report.

BACKGROUND

The removal of the French Bulldog from the High Profile Breeds List was never the focus of the breed's health initiatives. Most French Bulldog breeders over the years were aware of the predisposition to conformational health problems that may exist within the breed and knew not to allow certain points to become dominant. In fact 'No point exaggerated' was and still is considered the key phrase in the Breed Standard. There were no DNA tests applicable to the French Bulldog, and the breed was not known to suffer from the conditions covered by the BVA schemes. Registrations were low, experienced breeders knew what lines went together and generally within the breed, we were able to observe any obvious changes within the show population. Those within the breed who had been aware of the existence of the European Convention for the Protection of Pet Animals were beginning to think that we should be looking more closely at how this would affect our Frenchies if the UK decided to ratify it. Indeed action was taken when the French Bulldog Club of England requested two additions to the Kennel Club Breed Standard to safeguard health. 'Dogs showing respiratory distress highly undesirable' and 'Soundness of Movement of the utmost importance'. When the major 2009 review of Breed Standards was announced, the French Bulldog Club voluntarily suggested a significant number of changes to the French Bulldog Breed Standard to help safeguard the health and welfare of the breed.

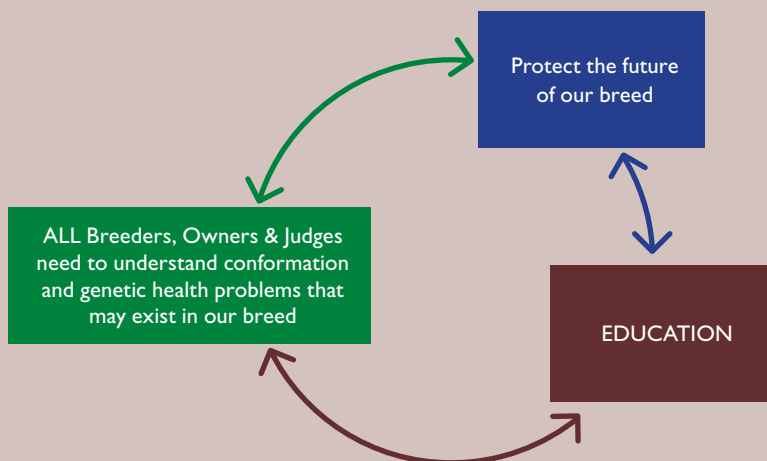
WHY THE SUDDEN 'WAKE UP CALL' IN 2009 ?

Kennel Club registrations for French Bulldogs had remained stable, around the 500 per year mark for many years. In 2006 the breed started to see an increase, nothing to be alarmed about but something to keep an eye on. By 2009 registrations had tripled and importation figures, particularly from Eastern European countries, were increasing at an alarming rate, totally unprecedented for any breed.



The breed needed to embark on some form of education programme to reach ALL breeders, owners and judges, not just members of the breed club; we were already doing that via our magazine 'The French Connection', our website and judges' training. We knew that it was and is imperative for the future of our breed, that ALL breeders and owners know of and understand the conformation and genetic health problems that may exist in our breed.

Urgent action was required to protect the future of our breed.



THE KEY - EDUCATION

To plan for the future we needed to learn from the past. We looked at the original breed standard and the changes made over the years, the FCI and US breed standards, we considered the Breed Watch points, results of health surveys both in the UK and overseas, we looked at other breed health schemes again both in the UK and abroad. We considered the general perception of health problems within the breed and sought veterinary opinion. As there was nothing in place within the dog community that would serve the needs of the French Bulldog, we needed to create our own health education/screening programme.

We chose to develop a scheme, whereby any French Bulldog over 1 year of age would have a breed specific health check performed by a vet, any problems found would be brought to the owners' attention by the vet and the necessary advice given.

Developing the Health (education) Scheme

- Vet Based
- Open to all French Bulldogs
- Easy to understand and promote
- Centralised data collection
- Flexible
- Use established BVA schemes
- Prevention of fraudulent use



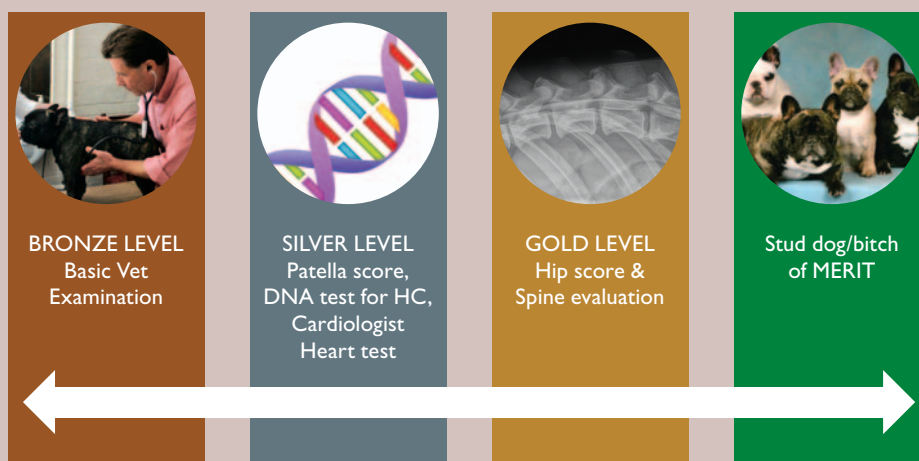
The outcome being a more knowledgeable owner/ breeder who would be better informed to make the choice whether to breed or not, and what stud dog to use etc. They would know the basic health status of their dog. We would be able to collect valuable health data and may be able to identify certain health trends before they became a problem. The data would be analysed and published in the future. To encourage owners and breeders to health screen their French Bulldogs, the scheme needed to be reward based and easily facilitated. Those dogs and owners who took part would receive a Certificate for each level of the scheme completed and their achievement published.

The Key to SUCCESS

The tests had to be...	The Scheme needed to be based on...
Non invasive	Reward
Inexpensive	
Available	Peer Pressure
Achievable	
Minimal sedation	

In October 2010 the French Bulldog Health Scheme was launched. The scheme consists of three levels, the basic vet check corresponding to the Bronze level, this covers all the Kennel Club Breed Watch points of concern for the breed. The next level, Silver, requires a DNA test for hereditary cataracts, a simple cardiology test and patella grading. The Gold level requires a hip score and a spine evaluation. Finally we added the accolade of Stud Dog or Brood Bitch of Merit which brought in an additional requirement of a Stud Book qualification and successful health testing of progeny. Full details can be found at: www.frenchbulldogclubofengland.org.uk/health

The Health Scheme



From the launch of the Health Scheme the French Bulldog Club of England (FBCE) holds regular 'clinics' at each of its three shows during the year. Cardiac clinics, bronze health test clinics, patella scoring, thermal imaging and BOAS clinics and twice a year the FBCE obtains a discounted price for the DNA test for HC. All tests can be done by the owner's vet or specialist as well as at a club event.

COMMUNICATION OF THE FRENCH BULLDOG HEALTH SCHEME

Knowing that we needed to reach not just the club members and show fraternity but as many French Bulldog fanciers as possible, we extensively developed the FBCE's website, particularly the health side. We opened a Facebook page to facilitate an easy and wide reaching communication channel. All information relating to health, the health scheme or events is available on the French Bulldog Club of England website: <http://www.frenchbulldogclubofengland.org.uk/how-to-participate.html>. Information is also available on the Scottish and Pennine French Bulldog Association website: <http://www.pennineandscottishfrenchbulldog.co.uk/health/health-scheme>. Health events are advertised on the French Bulldog Club of England Facebook page which is an open group and users are encouraged to cross post the information to other sites. The FBCE website is currently averaging around 900 visitors per day. Breed notes in Dog World were used to promote and publicise the health scheme and health activities.

A newsletter is produced by the French Bulldog Club of England twice a year which features health related articles and also information of upcoming research projects or health testing sessions. The French Bulldog Club of England has 700+ members most of whom own pet French Bulldogs, we regard the newsletter as an effective tool to communicate to those outside of the dog show sphere.

JUDGES EDUCATION

As breed enthusiasts we keep the health status of the breed under constant surveillance and we are committed to taking action to ensure the breed's health is not compromised as a consequence of exaggeration. The show ring is one place where we can demonstrate how fit and healthy our breed is. We have developed a guide which should be read in conjunction with the Breed Standard to explain what judges should expect to find when examining a healthy Frenchie in the show ring. We expect our judges to be knowledgeable about the anatomy and sound movement of the breed and to recognise potential health and welfare issues in the ring and judge accordingly.

The guide 'Judging the French Bulldog - Putting Health First' highlights specific areas from the Breed Standard which may have the potential to cause health issues. The guide can be found on the club website. Conformation seminars are currently organised by two breed clubs who alternate every two years. 15-20 places are available on each seminar. Anyone can apply for a place on the club seminars regardless of experience level.

LONG TERM HEALTH RESEARCH

As our health scheme gained momentum and the notion of health testing was establishing itself within the breed community it was now time to get involved with long term health research.

We identified areas of special concern to the breed's overall long term health improvement and have embarked on research programmes. Potentially the most important research that the breed is involved with is Non-invasive Respiratory Function Assessment in Brachycephalic Dogs at the Queen's Veterinary School Hospital, University of Cambridge, UK. This looks at the conformation of the skull and flattening of the muzzle in relation to Brachycephalic Obstructive Airway Syndrome (BOAS). Clinical features of BOAS may include snoring, panting, exercise intolerance, respiratory distress, regurgitation, acute overheating, cyanosis, collapse and even death. Thus it is important to investigate the detailed relationship between skull shape, breed and clinical conditions in BOAS. Whole Body Barometric Plethysmography (WBBP) is a non-invasive respiratory function test that can be applied to brachycephalic dogs. The dog is placed in a transparent chamber and is monitored whilst breathing naturally for 30 minutes. Skull measurements are taken, these dimensions are of major interest in brachycephalic dogs. There is a genetic component to the study which aims at defining the genetic basis of BOAS and to associate the genotypic and phenotypic abnormalities that affect respiratory function in brachycephalic dogs. The long-term aim of this study is to improve the health and welfare of brachycephalic breeds by reducing the incidence of severe BOAS and give them a better quality of life. This research is a win-win situation as whatever its findings it will surely have far-reaching consequences for all brachycephalics.

We also initiated a study into the potential value of using thermal imaging to assess the health of French Bulldogs' spines and hips. This followed discussions with Veterinary Thermal Imaging UK. A small-scale pilot study was conducted in October 2012 in which 20 dogs were thermally imaged. Of these 20 dogs, 7 showed increased thermal readings along the dorsal line.

A further robust study commenced in October 2013 at the Club Open Show. This study seeks to extend this preliminary work to a statistically significant population to ensure repeatability and accuracy of findings, in addition to determining the best practice screening protocol for thermal imaging. French Bulldogs are predisposed to various congenital abnormalities of the vertebrae. These abnormalities are traditionally identified via X-ray and MRI screening, both of which are invasive and costly for the owner. There is a desire to reduce incidences of these conditions through screening breeding animals to try to eliminate genetic factors. We hope the study may be able to identify the differences between healthy and unhealthy backs. If the study proves successful, it may provide us with a way of identifying “at risk” dogs and therefore influence whether or not they should be used in breeding programmes.

Spinal problems in Frenchies also include Degenerative Spinal Myelopathy: we hope to collect and bank DNA samples from dogs taking part in the Thermal Imaging project for possible DNA research in the future.

REMOVAL FROM HIGH PROFILE BREED LIST

In consultation with the Kennel Club’s High Profile Breed Co-ordinator we were confident that we could demonstrate that we had made significant progress with our health initiatives to start the process of removal from the High Profile Breed List.

In October 2013, after many months of discussion, consultation, and presentations to various bodies at the Kennel Club, the French Bulldog was removed from the list following a recommendation from the Kennel Club’s Dog Health Group. However whilst we welcomed the Kennel Club’s acknowledgement of the work we are doing with health we also realised that we must continue to strive and to push forward to achieve the best we can for our breed. Being a high profile breed has never been the issue; we started our health scheme before this came about. The scheme was designed to educate the owner and breeder to recognise any health issues that their dog may have. As a breed we know it will take some years of careful selection to achieve our goals, but we have made a good start with our health initiatives and we are collecting valuable health data; for that the breed should be commended.

FUTURE WORK

We are no longer labelled as a high profile breed, however everything remains a work in progress. We have plans for a number of initiatives during 2014 including, establish a Health Group, conduct a review of the Health Scheme, conduct a General Health Survey to include a Cause of Death Survey, as well as continuing to support and carry out the many health initiatives that are already underway.

Future Plans

Set up a ‘Health Group’

Review the Health Scheme

Conduct a General Health Survey including Cause of Death

To promote the use of the BVA clinical eye examinations in addition to the use of DNA HC test

Follow up all Bronze Tested French Bulldogs after 5 years

SUB-GROUP ACTIVITY 2013

ACTIVITIES HEALTH AND WELFARE SUB-GROUP

REMIT

- Contribute towards guidance, advice and opinion to the Kennel Club's Activities Sub-Committee, based on clinical veterinary experience and the latest available scientific research.
- Proactively review the available scientific research and bring any relevant information or findings to the attention of the Sub-Committee for discussion and action where appropriate.
- Recommend areas for further research and investigation in order to address issues raised by the Sub-Group or the Activities Sub-Committee and to define and scope the parameters for any research recommended.

The aim of the Activities Health and Welfare Sub-Group is to review current research and proactively pursue any need for research to be undertaken regarding specialised activity disciplines which include Agility, Obedience, Heelwork To Music, Flyball and Working Trials. The need for research, within these disciplines, is based on numerous factors, including potential implications on dog health and welfare, public views/knowledge, current and previous research available, cost and time needed to undertake research. This approach allows the Kennel Club to be at the forefront of research regarding activity disciplines, whilst also investigating issues which may improve the health and welfare of dogs. Such research also allows the Kennel Club to deal with any questions from the public and also provides relevant information and advice to the appropriate sections within the Kennel Club and external bodies.

The Sub-Group currently consists of a range of experts including veterinary surgeons, university lecturers, researchers and specialists who are actively involved in various canine activities. External individuals are also involved from time to time to aid in the group's aims and objectives.

The Sub-Group has recently conducted a range of research. This includes a large scale questionnaire investigating the occurrence of injuries in Agility dogs. Furthermore, at the International Agility Festival in August 2013, several studies were carried out including jumping analysis, body condition scoring and judges' incident reports. The results of this research will be released in the near future and aid in future research and potential changes to the rules and regulations regarding the related disciplines. A code of conduct for dogs involved in specialised activity disciplines is currently being developed and will be available in the near future.

The Sub-Group will continue to conduct evidence based research based on previous research and issues raised by the various Kennel Club committees involved in canine activities



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ASSURED BREEDER SCHEME [ABS] SUB-GROUP

REMIT

- To act as an impartial unit which provides for the participation of all parties significantly concerned with the Kennel Club ABS.
- To advise on the formulation of policy matters relating to the operation of the scheme.
- To oversee the running of the ABS, with particular regard to the performance of the processes of admitting, monitoring and excluding breeders from the scheme, as well as the receipt and evaluation of puppy buyer feedback.
- To make recommendations as to the husbandry aspects of the ABS and to put into operation those health screening requirements/recommendations agreed by the DHG and in liaison with breed clubs/councils.
- To oversee the use of scheme finances.

ACHIEVEMENTS

The Sub-Group has had another productive year and met on two occasions. The total ABS membership as at January 2014 stands at 8,518 breeders.

The composition of the Sub-Group represents all relevant parties involved in the breeding and selling of dogs and assures impartiality of the ABS on strategy and policy, certification and evaluation and as such includes representation from puppy buyers, dog trainers, breeders, the veterinary profession and the Kennel Club. A further two members were appointed during 2013 - one from the welfare sector and one from the working gundog community - giving the Sub-Group its full quota of eight voting members.

The granting of United Kingdom Accreditation Service (UKAS) accreditation to the Kennel Club, so that it can certify breeders under the ABS, was a major achievement in 2013. A series of formal audits had been undertaken as well as further development work. In particular, work had been undertaken on the rules of the scheme (the ABS Standard) and a guidance document, which is primarily designed as a tool to assist the Regional Breeder Assessors in assessing members' compliance with the rules of the scheme. Finalised documents were available to members early in 2013. Work on the guidance document, in particular, is likely to continue.

The frequency of the Assessment Visits (the inspections carried out by the Regional Breeder Assessors), increased during the year and will be increased further during 2014. The associated costs of these and the recovery of these costs through application and membership fees, formed part of further changes which came into operation at the beginning of 2014.

Three new breed-specific requirements have been approved - two DNA tests and one clinical health test. In addition, eight new breed-specific recommendations were approved - five DNA tests, one clinical health test and two welfare-related aspects. All requirements and recommendations can be found on the Kennel Club website, where any breeds with recent adjustments are always marked with an asterisk. The link is as follows: http://www.thekennelclub.org.uk/media/9846/20913_kc_abs_healthcheck_web.pdf

Other developments finalised during 2013 include a new format for the ABS visit assessment form which is now sent to Assured Breeders electronically, as are all confirmation of visit messages and improvement notices.

BREED STANDARDS AND CONFORMATION SUB-GROUP

REMIT

- To advise on conformation related health issues as they relate to Breed Standards.
- To work with breed clubs/councils and other organisations on specific conformation related health issues.
- To liaise with Kennel Club departments and committees on judges' involvement, training and monitoring related to health issues.

ACHIEVEMENTS

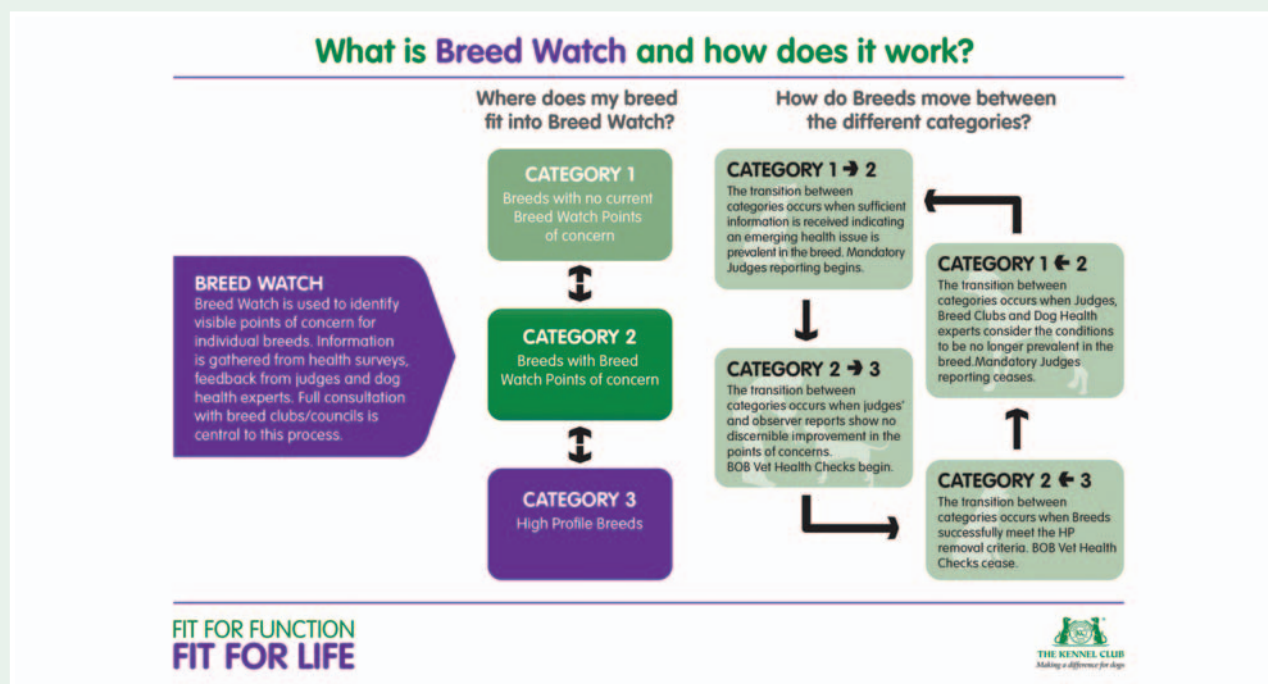
BREED WATCH ENHANCEMENTS

Breed Watch is an important resource which provides up to date information on visible health conditions and exaggerated conformational issues that are detrimental to the health and welfare of dogs. The online tool also serves as an 'early warning system' to help identify emerging points of concern for individual breeds. In 2013 the Breed Watch website received an average of 5,720 hits per month, peaking at over 7,950 in March. Further information on Breed Watch can be found at: <http://www.thekennelclub.org.uk/services/public/breed/watch/Default.aspx>

In 2013, to continue to improve the health and welfare of pedigree dogs and with the aim to regularise and broaden the scope of information gathering to incorporate all breeds, the Kennel Club announced that it would be enhancing Breed Watch with a number of improvements.

Summary of improvements:

- Breed Watch has a new 3 tier process which all breeds form part of. This process clearly demonstrates how the visible health of breeds is monitored and how breeds are added and removed from Breed Watch. *See diagram for further information.*



- Judges are now at the heart of improving the visible health of pedigree dogs. From 2014 all judges at Championship Shows will have the opportunity to report on any visible conditions or exaggerations that they consider to be detrimental to the health and welfare of dogs. Mandatory judges' reporting has been extended to encompass Category 2 breeds, in addition to Category 3, and for judges of all other breeds an optional form is included in the back of the judging book.

MONITORING BY JUDGES OF CATEGORY 3 BREEDS (FORMERLY KNOWN AS HIGH PROFILE BREEDS)

A Category 3 (formally 'high profile') breed is defined as 'a breed from time to time designated by the General Committee as requiring particular monitoring by reason of visible condition(s) which may cause health or welfare concerns'. The list of designated Category 3 breeds is kept under regular review and is published from time to time in the Kennel Club Journal.

The programme of obtaining reports from the Category 3 breed judges at Championship Shows has continued throughout 2013. Every judge of a Category 3 breed scheduled at Championship Shows in 2013 was requested to complete a report giving their opinion on the health and well-being of exhibits shown under them.

From 2014 the Dog Health Group has introduced new breed specific forms for judges to complete. Each judge will be asked to report on the prevalence of the breed watch points of concern specific to their breed, and whilst judges will continue to indicate an average grading of the health of the breed, they will do so using a newly defined 7 point scale (see image). It is hoped that this improved information collection from judges' forms will allow the Dog Health Group to provide more valuable feedback to both breed clubs and judges.

Seven part scale for judges' reports

1	Absolutely no concern whatsoever
2	There is very slight concern
3	There is one feature that distinctly needs watching
4	There are two or three features that need watching
5	There is general concern about several issues affecting the breed
6	There is a strong concern about many of the issues affecting the breed
7	Action needs to be taken immediately/urgently in relation to the issues affecting the breed

Results

Fig. 1 provides a snapshot of judges' perception of the health of their breed between 2012 and 2013. When completing each health form, judges were asked to indicate a grading between 1 and 7 to summarise their opinion of the health and well-being of the dogs exhibited at the show. The following scale was provided.

1 - There were no features or exaggerations detrimental to the soundness, health or well-being of the dogs (Excellent)

7 - All dogs showed features and/or exaggerations that are a cause for concern (Poor)

The chart on the next page illustrates the judges' average grading (value in bold) for each breed and also depicts the variation in scores.

Fig. I Summary of judges' opinion of breed health and well-being, as extracted from judges' reports, submitted across Championship Shows held in 2012 and 2013



The Dog Health Group is grateful to judges for submitting constructive and informative reports and to observers who have given their time to watch individual breeds.

HIGH PROFILE BREED EDUCATION DAY

The Kennel Club held the High Profile Breed Education Day in February 2013 at the Kennel Club Building in Stoneleigh enabling positive, open discussion on the current state of pedigree dog health. The event offered the chance for representatives of the fourteen Category 3 (high profile) breeds to showcase the health work that has been undertaken by breeders to judges of these breeds and to the veterinary surgeons who monitor the breeds at General and Group Championship Shows.

Each breed representative brought along examples of dogs that have good characteristics, that have moved away from exaggerations, and examples of dogs that show conformation or movement problems that are still faced within the breed. This provided a visual demonstration of the work that has been done to improve breed health, and allowed for attendees to see where problems may still lie. As well as giving breed representatives the opportunity to exchange views with judges, vets and those in other breeds about the progress that has been made, there were two rings dedicated to movement displays, with a commentary of individual breeds.

VETERINARY HEALTH CHECKS

During 2013 a total of 368 veterinary health checks have taken place at Group & General Championship Shows for Best of Breed and Champion title awards, which is two less than the 370 checks in 2012.

323 Best of Breed awards were confirmed with only 6 awards not confirmed, compared with 324 Best of Breed checks that took place in 2012 with 13 awards not confirmed.

A further 45 Champion titles were confirmed with only one Champion title not confirmed. Compared with 2012, when 52 Champion title checks were confirmed with only two dogs not passing their initial check, however both dogs in 2012 had the Champion title confirmed after a second check.

The continued co-operation from the Category 3 breeds, alongside the consistency of the checks and the continuing programme of educational events, have all contributed to a regime in which all parties can have confidence. The veterinary health checks will continue in 2014.

VETERINARY HEALTH CHECK REVIEW WORKING PARTY RECOMMENDATIONS

The working party established in 2012 to review the veterinary health check process presented its recommendations to the Kennel Club AGM in May 2013. Some of the recommendations have now been referred to other Kennel Club committees for consideration.

CATEGORY 3 (HIGH PROFILE) BREED REMOVAL CRITERIA GUIDANCE

In June 2013 the General Committee announced that further guidance on the Category 3 (high profile) breed list removal criteria was available. Breed representatives were contacted by the Kennel Club's High Profile Breed Co-ordinator who provided advice and support on developing individual breed health initiatives to allow each breed to work towards meeting the removal criteria. The French Bulldog has now been removed from the list of high profile breeds, as documented above.

The Kennel Club recognises and applauds the hard work and dedication of the breed representatives and the work they have achieved during 2013. For further information on the Category 3 (high profile) breed list removal please visit the Kennel Club website www.thekennelclub.org.uk/media/158015/high_profile_breed_list_removal_criteria_v6_website_version.pdf



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FUTURE WORK

- A Breed Watch Education Day will take place in early 2014. In the main, the event is aimed at those judges who judge the Utility, Working, Pastoral and Toy Groups to develop a better understanding of the visible conditions listed on Breed Watch for breeds in these groups. The day will include interactive workshops covering movement, soundness, dentition, skin and eye conditions and a session on completing the new Breed Watch health monitoring forms.
- Other specific education events will be devised as a result of feedback from the above event.
- Health monitoring for all breeds at Championship Shows will take place, commencing on 1 January 2014, and mandatory health monitoring will be in place for all breeds in Category 2 breeds as well as continuing for those breeds listed in Category 3.
- Veterinary checks at Championship shows will continue for Category 3 breeds.
- Feedback on health monitoring will be made available to all the relevant breed clubs and breed councils.
- The Kennel Club will continue to liaise with breed clubs and breed health representatives to assist and advise on the most effective ways of monitoring and improving breed health.



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GENETICS AND HEALTH SCREENING SUB-GROUP

REMIT

- To advise on strategy for development of health screening (clinical/DNA) tests.
- To advise on which of the above should be requirements or recommendations in the Kennel Club Assured Breeder Scheme (ABS).
- To advise on breeding and registration issues to protect or enhance genetic diversity.
- To set up review processes on effectiveness of health screening schemes.
- To provide scientific input, where appropriate, to breeding strategies on phenotypic issues.
- To monitor progress on external data collection and surveillance.

ACHIEVEMENTS

At each of its meetings in the last year, the group received and commented on updates from Drs Blott and Mellersh of the Kennel Club Genetics Centre at the Animal Health Trust on progress and current projects. This year marks the end of an initial 5 years' funding by the Kennel Club Charitable Trust, in which time significant inroads into preventing a host of heritable diseases through the plethora of new DNA tests created by the molecular genetics team, and tools for improving breed-wide health have been created and implemented. A summary of these works is included in Annex C. The Kennel Club Charitable Trust has recently agreed to a further 5 years' funding of the Centre. A notable new development from the collaborative works between the Kennel Club and the Kennel Club Genetics Centre's quantitative genetics team, is the creation of a new tool for Mate Select; Estimated Breeding Values (EBVs). EBVs utilise data from the British Veterinary Association/Kennel Club hip and elbow dysplasia schemes to create an interactive resource that estimates the genetic risk in these complex conditions - allowing breeders to make more efficient breeding choices in reducing the risk of this inherited condition in future progeny. An initial 15 breeds will have this tool available, with more breeds to follow as sufficient data is achieved. The EBV tool will be launched at Crufts 2014.

Many of the recommendations and discussions within the Genetics and Health Screening Sub-Group have been focused on increased collaboration between researchers, the veterinary profession, and the breed clubs. This is evidenced by several proposals to increase the ways that the Kennel Club database may be able to receive robust data from new sources, and more effectively utilise data currently held. One example of this was the establishment of new health programmes, which it is hoped will be published in due course.

The first health programme to be established, with the enthusiastic collaboration of the Dalmatian Club(s), will be the publication of BAER test results of Dalmatian puppies. Puppies of certain breeds, like Dalmatian, English Setter and Bull Terrier, have an increased risk of being born with either unilateral or bilateral hearing loss as a result of their coat pattern genotype. For this reason responsible breeders in these breeds have for a number of years litter screened their litters using Brainstem Auditory Evoked Response (BAER) testing to ascertain the hearing status of the puppies in the litter. There are a number of specialist centres in the UK that offer this screening and each dog screened is issued with a veterinary certificate stating the dog's hearing status: normal, unilateral hearing loss or bilateral hearing loss.

Up until now, the results of BAER testing have not been centrally collated and results of individual tested dogs have not been published. For this reason, the Kennel Club has been working with the Dalmatian Breed Clubs to establish an official BAER health programme testing scheme for the breed. Results from testing centres will be forwarded directly to the Kennel Club where they will be recorded in the tested dog's registration database, making them available for publication via the Health Test Result Finder. It is hoped once this official health programme is in operation, other breeds that routinely use BAER testing on their dogs will wish to set up similar official schemes for their breed.



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All participating dogs will need to be Kennel Club registered and microchipped, to ensure verification of the dog being screened. In addition to providing useful information on an individual dog's health to breeders, owners, and puppy buyers, it is hoped the data collected from this programme will further assist in research into hearing loss.

Other areas of development have seen progress in bringing the veterinary and research professionals closer to the breeder communities through 6 new regional Breeder Education Seminars, and the online Bio-acquisition Research Collaboration (BARC) platform - bringing researchers, vets and dog owners together. The increasing focus on collaborative research, data collection and utilisation, and scientific communication aims to provide increasingly focused, prioritised information to dog breeders, the public, and the wider canine health and welfare interested parties, to efficiently progress dog health, and support the breeder community in health-focused breeding choices.

During the year, the Sub-Group also made the following recommendations to the Dog Health Group:

- The Sub-Group suggested that the prioritisation of health conditions, particularly in breeds where a number of tests are available, should continue to be discussed amongst all relevant parties to ensure health and welfare concerns are in balance to the greatest benefit to all dogs.
- The Sub-Group discussed the benefit to improving data capturing from non-official, but reliable canine health schemes to identify their significance within wider health initiatives. A set of health scheme acceptance criteria is in development.
- There was consideration given to ensuring the robust trustworthiness of DNA testing laboratories. As there is currently no standard national or international accreditation service, the group has worked towards developing acceptance of new laboratory DNA test results onto the Kennel Club database.
- The Sub-Group celebrated the establishment of an online research journal which could improve access to canine specific health and welfare research to the veterinary and research community, as well as the lay-person.

CONCLUSION

The 2013 Dog Health Group annual report has highlighted the main achievements of the work of the Dog Health Group for the year, provided updates on ongoing projects and outlined the future direction of the group's work. The depth and diversity of the Kennel Club's commitment to health issues is self-evident and, as an organisation, the drive to improve canine health and welfare remains our firm priority.

The Kennel Club is extremely grateful to all who contribute to this work, from donations to the Kennel Club Charitable Trust through to breed health co-ordinators, judges, observers, show veterinary surgeons and those who form the membership of the Dog Health Group and its sub-groups.



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ANNEX A

HEALTH TESTS

Annual summaries of health data generated by BVA/KC health schemes and official Kennel Club DNA testing schemes

BVA/KC HIP DYSPLASIA SCHEME

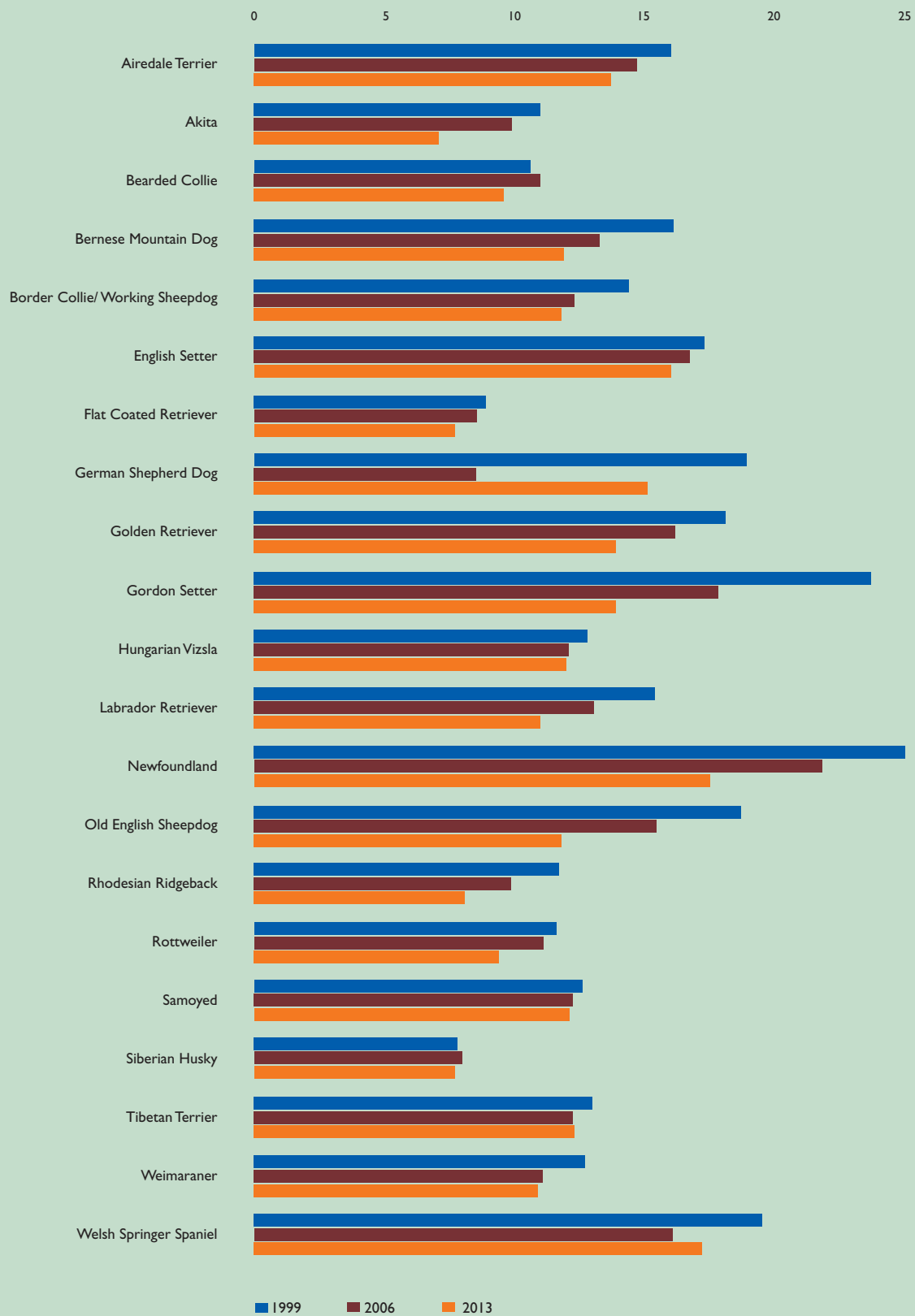
Data Calculated to 01/11/13

'Five year Rolling Mean Scores' are maintained for the breeds that have a high throughput of annual scoring. The five year rolling mean is the average derived from dogs scored in the previous 5 years. So, the 1999 5-year mean represents the mean of the dogs scored between 1st November 1994 and 31st October 1999. For the 2000 5-year mean, the start date moves on by a year as does the end date, and so on

5-YEAR ROLLING MEAN HIP SCORES FOR THE MAJOR BREEDS USING THE SCHEME

Breed	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Airedale Terrier	16.0	15.6	15.6	15.1	14.8	14.2	14.6	14.7	14.8	14.4	14.6	14.0	13.5	13.6	13.7
Akita	11.0	11.0	11.0	11.1	10.8	10.4	10.4	9.9	9.2	8.8	8.3	7.8	7.4	7.2	7.1
Bearded Collie	10.6	10.3	10.3	10.3	10.8	10.9	11.0	11.0	10.8	10.5	10.2	10.1	9.7	9.7	9.6
Bernese Mountain Dog	16.1	15.5	15.7	15.0	14.3	14.2	14.0	13.3	13.3	13.2	12.7	12.4	12.5	12.0	11.9
Border Collie/ Working Sheepdog	14.4	14.2	13.7	13.2	12.6	12.7	12.4	12.3	12.2	12.2	11.9	11.8	11.7	11.9	11.8
English Setter	17.3	17.1	16.7	16.4	16.2	16.6	16.9	16.8	16.3	16.5	15.7	15.3	15.4	15.9	16.0
Flat Coated Retriever	8.9	9.0	9.0	8.9	8.8	8.8	8.6	8.5	8.3	8.1	7.9	7.9	7.8	7.8	7.7
German Shepherd Dog	18.9	18.7	18.3	17.7	17.5	17.5	17.5	17.2	17.0	16.7	16.1	15.9	15.7	15.4	15.1
Golden Retriever	18.1	17.6	17.3	17.1	16.8	16.7	16.6	16.2	15.7	15.3	15.0	14.7	14.3	14.1	13.9
Gordon Setter	23.7	23.2	21.0	20.2	18.7	18.5	18.6	17.9	18.0	17.9	16.3	15.5	15.3	14.5	13.9
Hungarian Vizsla	12.8	12.7	12.4	12.5	12.1	12.2	12.1	12.1	12.0	12.4	12.2	12.1	12.1	12.2	12.0
Labrador Retriever	15.4	15.0	14.5	14.2	13.8	13.6	13.4	13.1	12.8	12.6	12.2	11.9	11.6	11.3	11.0
Newfoundland	25.0	25.0	24.6	23.8	23.5	23.1	22.8	21.9	22.8	21.6	20.9	20.6	19.9	18.5	17.5
Old English Sheepdog	18.7	17.5	16.8	15.6	15.3	15.5	15.2	15.5	15.0	13.9	13.4	12.9	11.9	11.3	11.8
Rhodesian Ridgeback	11.7	11.1	11.0	10.4	10.0	10.0	10.0	9.9	9.9	9.7	9.4	9.2	8.8	8.4	8.1
Rottweiler	11.6	11.5	11.3	11.2	11.2	11.2	11.2	11.1	11.0	10.9	10.6	10.3	10.0	9.7	9.4
Samoyed	12.6	12.1	11.7	11.4	11.4	11.5	12.0	12.3	12.5	12.6	12.8	12.1	12.2	12.3	12.1
Siberian Husky	7.8	7.8	7.7	7.6	7.6	7.6	7.7	8.0	8.1	8.0	8.0	8.0	7.8	7.6	7.7
Tibetan Terrier	13.0	13.3	13.1	12.8	13.0	12.7	12.4	12.3	12.3	12.2	12.1	12.0	12.1	12.0	12.3
Weimaraner	12.7	12.5	12.0	11.7	11.5	11.4	11.2	11.1	11.1	11.0	11.2	11.3	11.0	10.8	10.9
Welsh Springer Spaniel	19.5	19.6	19.6	19.1	18.3	17.1	16.4	16.1	16.7	16.7	16.6	17.7	17.1	17.0	17.2

Comparison of results indicating decline in Hip Dysplasia



HIP SCORES BY BREED**Data Calculated to 01/11/13**

The following is an annual summary that is now prepared for the BVA, covering all breeds, using data from the current approximated breeding population (data from dogs scored in the last 15 years only). By representing dogs scored in the last 15 years, a more accurate reflection of each breed's current state of health and improvement is given. The 5-year mean here refers to dogs scored between 1st November 2008 and 31st October 2013.

A: BREEDS WITH 1000 OR MORE SCORED (37)

Breed	No.	15 Years			5 Years	
		BMS	Range	Median	BMS	Median
Airedale Terrier	1669	14.3	3-72	11	13.7	11
Akita	2460	9.1	0-91	7	7.1	6
Alaskan Malamute	1266	12.3	0-78	10	12.1	10
Bearded Collie	3417	10.3	0 - 70	9	9.6	9
Belgian Shepherd Dog (all types)	1877	8.8	0-45	8	8.8	8
Belgian Shepherd Dog (Groenendael)	493	8.6	0 - 37	8	8.6	8
Belgian Shepherd Dog (Laekenois)	16	10.4	5 - 16	10	10.3	10
Belgian Shepherd Dog (Malinois)	201	8.6	0 - 45	8	8.9	8
Belgian Shepherd Dog (Tervueren)	988	8.9	0-43	8.5	8.8	8
Belgian Shepherd Dog (pre 2000 unspecified)	179					
Bernese Mountain Dog	5073	13.3	0-101	10	11.9	9
Border Collie/Working Sheepdog	8175	12.2	0-84	11	11.8	10
Bullmastiff	1105	22.0	4-93	15	19.3	14
Cocker Spaniel	1293	11.9	0-99	10	10.7	10
Dobermann	1581	10.7	0-64	9.5	10.2	9
Dogue de Bordeaux	1199	22.0	0-98	15	21.4	15
English Setter	3127	16.2	1-92	12	16.0	12
English Springer Spaniel	1015	13.0	0-92	10	13.0	10
Flat Coated Retriever	6504	8.3	0-84	8	7.7	7
German Shepherd Dog	43329	16.6	0-106	11	15.2	11
German Shorthaired Pointer	1254	9.7	0-49	9	9.2	9
Golden Retriever	35360	15.6	0-102	11	13.9	11
Gordon Setter	2595	17.1	0-101	12	13.9	11
Hungarian Vizsla	2471	12.8	0-92	11	12.0	11
Irish Setter	1450	13.8	0-100	11	13.2	11
Italian Spinone	1454	12.0	0-88	9	11.0	9
Labrador Retriever	80189	12.5	0-106	9	11.0	9
Leonberger	1534	11.4	0-89	9	11.0	9
Newfoundland	4644	21.1	0-103	12	17.5	11
Old English Sheepdog	1886	13.8	0-82	10	11.8	9
Rhodesian Ridgeback	2446	9.3	0-84	8	8.1	7
Rottweiler	12816	10.8	0-91	8	9.4	8
Rough Collie	1225	9.5	0-70	8	9.1	8
Samoyed	1588	12.1	0-71	10	12.1	10
Siberian Husky	3994	7.8	0-49	8	7.7	8
Standard Poodle	1019	12.4	0-66	11	12.1	10
Tibetan Terrier	2720	12.4	0-97	10	12.3	10
Weimaraner	2347	11.1	0-69	10	10.9	10
Welsh Springer Spaniel	1884	17.4	0-94	12	17.2	12

B: BREEDS WITH 500 TO 999 SCORED (15)

Breed	No.	15 Years			5 Years	
		BMS	Range	Median	BMS	Median
Australian Shepherd	721	10.2	0-55	9	10.0	9
Briard	993	13.3	0-71	10	13.7	10
Chesapeake Bay Retriever	537	10.4	0-45	9	9.0	8
Chow Chow	844	15.5	0-106	9	18.0	9
Clumber Spaniel	889	24.1	0-106	13	24.4	12
Curly Coated Retriever	505	11.1	0-58	9	10.6	9
Great Dane	596	11.6	0-81	10	11.0	9
Hungarian Puli	502	11.6	4-83	10	10.7	10
Irish Water Spaniel	919	13.9	0-79	11	12.5	10
Large Munsterlander	666	9.8	0-77	8	8.4	8
Norwegian Elkhound	585	11.9	0-57	11	10.5	10
Nova Scotia Duck Tolling Retriever	500	10.8	0-70	9	11.7	10
Pyrenean Mountain Dog	564	11.3	0-77	9	10.4	9
Shetland Sheepdog	664	12.3	0-90	10	12.7	10
Soft-Coated Wheaten Terrier	596	11.8	0-48	11	11.6	11
St. Bernard	701	20.3	0-98	14	21.8	14

C: BREEDS WITH 100 TO 499 SCORED (29)

Breed	No.	15 Years			5 Years	
		BMS	Range	Median	BMS	Median
Anatolian Shepherd Dog	191	12.1	3 - 67	9	11.0	8.5
Australian Cattle Dog	101	12.3	4 - 85	11	13.6	11
Bouvier Des Flandres	160	14.8	7-65	12	14.5	11.5
Boxer	428	14.8	0-75	12	14.6	12
Bracco Italiano	156	15.5	4-79	11	14.2	10
Brittany	490	15.8	5-66	13	15.0	18
Cavalier King Charles Spaniel	273	13.0	0-47	12	18.1	13.5
Dalmatian	213	11.3	0-96	10	11.4	10
Eurasier	153	10.3	0-34	9	9.9	9
Field Spaniel	254	15.1	0-78	11	13.8	11
Finnish Lapphund	235	13.1	4-45	12	13.4	12
German Wirehaired Pointer	420	10.2	0-32	10	9.9	9
Giant Schnauzer	201	12.8	0-75	9.5	11.1	9
Hovawart	225	10.0	0-40	9	10.5	8
Hungarian Wire Haired Vizsla	493	12.8	4-63	11	12.4	11
Irish Red & White Setter	451	9.4	0-96	8	8.0	7
Maremma Sheepdog	172	17.9	4-68	14	16.7	11
Mastiff	390	17.5	0-80	12	18.4	14
Norwegian Buhund	159	14.9	5-76	12	12.6	13

C: BREEDS WITH 100 TO 499 SCORED (29) (CONTINUED)

Breed	No.	15 Years			5 Years	
		BMS	Range	Median	BMS	Median
Otterhound	235	46.0	9-106	44	51.3	51.5
Pointer	163	10.2	0-54	9	9.1	9
Polish Lowland Sheepdog	436	15.4	4-60	11	12.7	10.5
Portuguese Water Dog	105	14.5	4-60	12	15.4	12
Pyrenean Sheepdog	115	12.4	3-53	11	14.4	12
Spanish Water Dog	275	14.8	0-64	12	14.6	12
Sussex Spaniel	177	39.0	8-90	34	38.9	34
Swedish Vallhund	209	10.0	2-26	9	9.8	9
Tibetan Mastiff	257	14.4	0-101	10.5	14.6	11

D: BREEDS WITH 40 TO 99 SCORED (24)

Breed	No.	15 Years			5 Years	
		BMS	Range	Median	BMS	Median
Affenpinscher	64	17.3	8 - 90	12.5	17.4	13
Afghan Hound	48	7.6	0 - 12	8		
Basenji	42	7.6	0 - 26	8		
Bavarian Mountain Hound	40	10.2	4 - 20	10	10.4	10.5
Beagle	64	22.3	9 - 71	16	18.7	14
Beauceron	42	11.8	3 - 37	11	9.9	10
Bloodhound	46	18.0	10-44	14		
Canaan Dog	60	10.5	0-36	10	9.4	10
Canadian Eskimo Dog	41	12.5	0-45	10	12.6	9.5
Catalan Sheepdog	44	21.5	7-98	13	22.4	13
Estrela Mountain Dog	69	25.7	2-89	13	25.7	22
German Longhaired Pointer	69	9.7	0-35	9	10.1	9
Irish Wolfhound	75	8.1	2-18	8		
Japanese Akita Inu	89	12.3	4-85	8	11.7	8
Keeshond	55	11.9	7-16	12		
Kerry Blue Terrier	68	15.1	6-66	12		
Komondor	42	11.0	2-19	10		
Lagotto Romagnolo	57	11.7	0-43	10.5	11.4	11
Miniature Poodle	79	10.9	4-45	10	11.4	10
Neapolitan Mastiff	62	33.5	4-97	25	35.7	32
Pug	55	22.1	8-72	18	24.3	19
Russian Black Terrier	68	32.4	4-90	26.5	26.5	23
Saluki	40	5.7	0-9	8		
Shar Pei	66	12.0	6-51	10		
Slovakian Rough Haired Pointer	52	10.3	4-29	9	11.0	10.5
Smooth Collie	84	5.3	0-14	5	3.8	5
Staffordshire Bull Terrier	63	12.7	0-53	11	12.9	11

E: BREEDS WITH 10 TO 39 SCORED (26)

Breed	No.	15 Years			5 Years	
		BMS	Range	Median	BMS	Median
American Cocker Spaniel	15	20.9	6 - 9	12		
Basset Griffon Vendeen (Petit)	14	11.7	7 - 18	10		
Bichon Frise	17	8.5	6-11	8.5		
Border Terrier	26	10.8	6-33	9	9.3	8
Bull Terrier	14	1.5	0-6	0		
Bulldog	29	39.9	9-96	31.5	33.3	28
French Bulldog	26	17.3	5-93	12	13.5	11.5
Greater Swiss Mountain Dog	21	8.0	4-16	8	8.6	8
Greenland Dog	39	11.9	7-34	10	14.2	11.5
Havanese	18	8.6	0-19	8	9.5	8.5
Hungarian Kuvasz	13	11.3	9-13	12		
Japanese Shiba Inu	36	7.5	4-11	7.5		
Korthals Griffon	36	9.6	4-34	9	9.6	8.5
Lowchen	18	14.9	8-84	11.5	19.3	10
Miniature Schnauzer	20	11.0	9-16	10	11.6	10
Schnauzer	28	12.0	8-16	12.5	11.3	10.5
Swedish Lapphund	16	22.7	7-80	12.5		
Tibetan Spaniel	39	14.8	10-28	11		
Welsh Corgi (Cardigan)	31	16.1	8-67	14	14.4	14
Welsh Corgi (Pembroke)	30	19.5	9-31	19.5		
West Highland White Terrier	16	9.2	6-14	8		



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BVA/KC ELBOW DYSPLASIA SCHEME**Data Calculated to 01/01/14**

The following table contains the outcome of dogs scored under the scheme in the last 15 years and is broken down by year, number and percentage of dogs in each elbow grade.

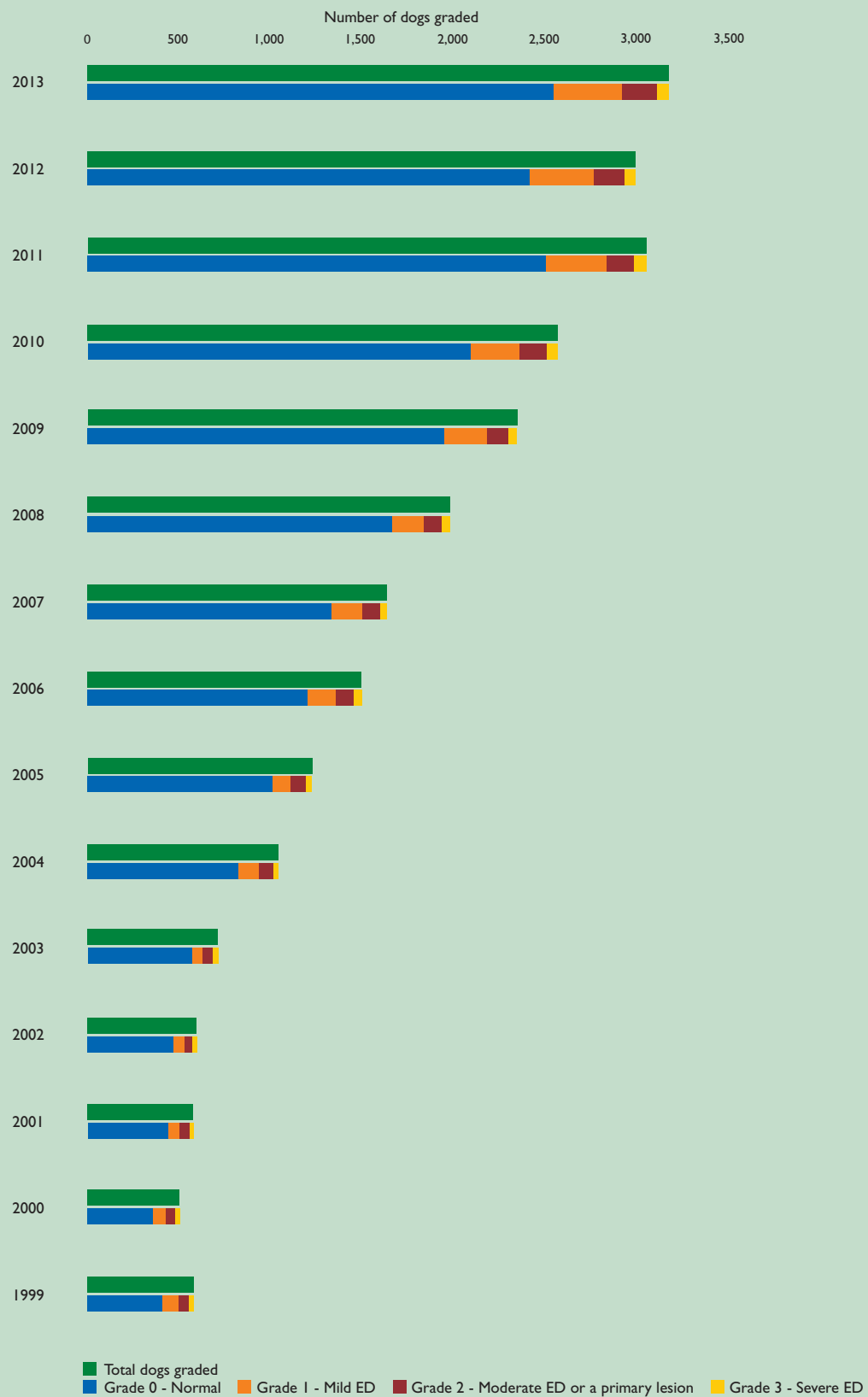
Year	Total dogs graded	Grades				
		0	> 0	1	2	3
2013	3181	2554 (80.3%)	627 (19.7%)	370 (11.6%)	194 (6.1%)	63 (2.0%)
2012	3000	2420 (80.7%)	580 (19.3%)	351 (11.7%)	168 (5.6%)	61 (2.0%)
2011	3059	2509 (82.0%)	550 (18%)	331 (10.8%)	152 (5.0%)	67 (2.2%)
2010	2575	2095 (81.4%)	480 (18.6%)	267 (10.4%)	152 (5.9%)	61 (2.4%)
2009	2351	1953 (83.1%)	398 (16.9%)	234 (10.0%)	116 (4.9%)	48 (2.0%)
2008	1993	1674 (84.0%)	319 (16%)	172 (8.6%)	101 (5.1%)	46 (2.3%)
2007	1639	1335 (81.5%)	304 (18.5%)	167 (10.2%)	99 (6.0%)	38 (2.3%)
2006	1501	1206 (80.3%)	295 (19.7%)	152 (10.1%)	100 (6.7%)	43 (2.9%)
2005	1229	1014 (82.5%)	215 (17.5%)	97 (7.9%)	81 (6.6%)	37 (3.0%)
2004	1046	828 (79.2%)	218 (20.8%)	111 (10.6%)	75 (7.2%)	32 (3.1%)
2003	714	570 (79.8%)	144 (20.2%)	57 (8.0%)	54 (7.6%)	33 (4.6%)
2002	598	471 (78.8%)	127 (21.2%)	59 (9.9%)	43 (7.2%)	25 (4.2%)
2001	578	441 (76.3%)	137 (23.7%)	62 (10.7%)	53 (9.2%)	22 (3.8%)
2000	503	359 (71.4%)	144 (28.6%)	70 (13.9%)	49 (9.7%)	25 (5.0%)
1999	583	408 (70.0%)	175 (30%)	89 (15.3%)	54 (9.3%)	32 (5.5%)

ELBOW SCORES BY BREED**Data Calculated to 01/11/13**

The following summary covers all breeds that have had over 100 dogs tested in the last 15 years. This data is further broken down by grade.

Year	Total dogs graded	Grades				
		0	> 0	1	2	3
Australian Shepherd	223	214 (96.0%)	9 (4.0%)	6 (2.7%)	2(0.9%)	1 (0.4%)
Bernese Mountain Dog	1975	1218 (61.7%)	757 (38.3%)	280 (14.2%)	307 (15.5%)	170 (8.6%)
Border Collie	162	160 (98.8%)	2 (1.2%)	2 (1.2%)	0	0
Dogue de Bordeaux	236	150 (63.6%)	86 (26.4%)	34 (14.4%)	34 (14.4%)	18 (7.6%)
Flat Coated Retriever	180	175 (97.2%)	5 (2.8%)	2 (1.1%)	2 (1.1%)	1 (0.6%)
German Shepherd Dog	2682	2215 (82.6%)	467 (17.4%)	264 (9.8%)	130 (4.8%)	73 (2.7%)
Golden Retriever	3013	2370 (78.7%)	643 (21.3%)	382 (12.7%)	206 (6.8%)	55 (1.8%)
Great Dane	148	127 (85.8%)	21 (14.2%)	9 (6.1%)	6 (4.1%)	6 (4.1%)
Hungarian Vizsla	111	100 (90.1%)	11 (9.9%)	10 (9.0%)	1 (0.9%)	0
Irish Water Spaniel	116	84 (72.4%)	32 (27.6%)	22 (19.0%)	10 (8.6%)	0
Labrador Retriever	11437	9784 (85.5%)	1653 (14.5%)	1000 (8.7%)	453 (4.0%)	200 (1.7%)
Large Munsterlander	144	114 (79.2%)	30 (20.8%)	18 (12.5%)	10 (6.9%)	2 (1.4%)
Leonberger	1053	962 (91.4%)	91 (8.6%)	73 (6.9%)	7 (0.7%)	11 (1.0%)
Mastiff	118	92 (78.0%)	26 (22.0%)	10 (8.5%)	10 (8.5%)	6 (5.1%)
Newfoundland	600	425 (70.8%)	175 (29.2%)	92 (15.3%)	51 (8.5%)	32 (5.3%)
Otterhound	110	45 (40.9%)	65 (59.1)	34 (30.9%)	26 (23.6%)	5 (4.5%)
Rhodesian Ridgeback	280	238 (85.0%)	42 (15.0%)	32 (11.4%)	9 (3.2%)	1 (0.4%)
Rottweiler	756	355 (47.0%)	401 (53.0%)	224 (29.6%)	161 (21.3%)	16 (2.1%)
St. Bernard	191	151 (79.1%)	40 (20.9%)	16 (8.4%)	9 (4.7%)	15 (7.9%)

Comparison of Elbow Dysplasia Grading



BVA/KC/ISDS EYE SCHEME**Data Calculated to 01/01/14**

The following table contains the results of eye examinations performed under schedule A of the Scheme in the last 15 years and is broken down by year, number and percentage of dogs found to be affected.

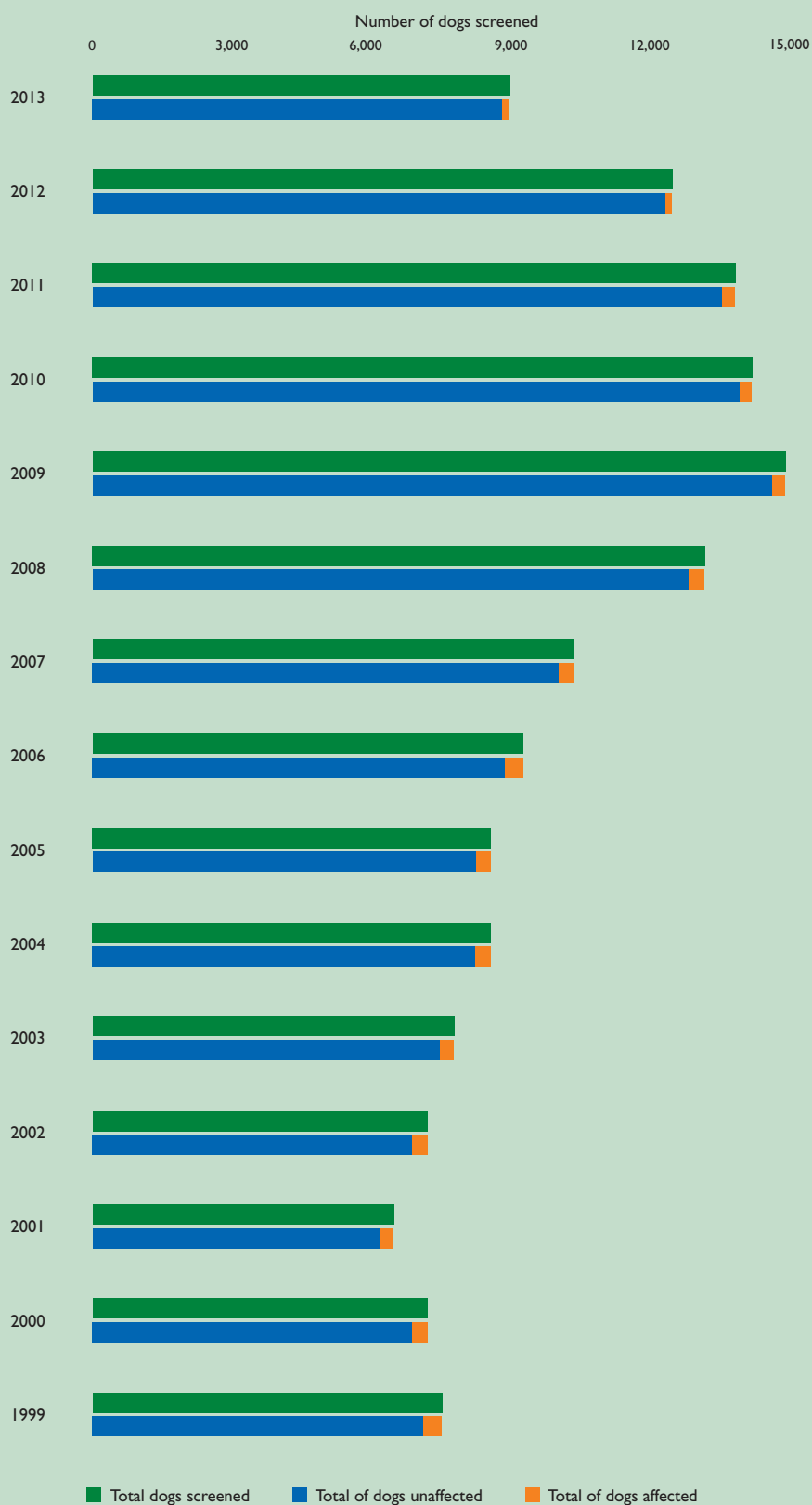
Year	Total Screened	Unaffected	Affected	CEA	TRD	CHC	PHPV	PPM	G	gPRA	cPRA	HC	PLL	RD
2013	8977	8819 (98.2%)	158 (1.8%)	18	0	0	2	0	24	9	1	104	0	0
2012	12478	12329 (98.8%)	149 (1.2%)	13	0	0	1	0	32	5	2	96	1	0
2011	13844	13548 (97.9%)	296 (2.1%)	34	0	2	3	0	52	12	0	193	2	0
2010	14198	13926 (98.1%)	272 (1.9%)	28	0	0	6	0	47	11	1	178	2	0
2009	14915	14623 (98%)	292 (2%)	38	0	1	3	0	58	14	0	177	3	0
2008	13180	12825 (97.3%)	355 (2.7%)	36	1	0	0	0	69	17	0	237	0	0
2007	10363	10035 (96.8%)	328 (3.2%)	27	0	0	4	0	69	14	0	209	7	0
2006	9264	8874 (95.8%)	390 (4.2%)	37	0	1	6	1	59	17	1	268	8	0
2005	8571	8249 (96.2%)	322 (3.8%)	30	0	1	2	0	37	12	0	236	4	0
2004	8575	8241 (96.1%)	334 (3.9%)	25	0	1	2	1	53	18	1	229	6	0
2003	7780	7472 (96%)	308 (4%)	31	0	0	4	1	31	26	0	216	2	0
2002	7206	6881 (95.5%)	325 (4.5%)	43	0	0	4	1	45	18	2	214	2	0
2001	6480	6195 (95.6%)	285 (4.4%)	29	0	0	3	0	30	11	2	206	6	0
2000	7206	6881 (95.5%)	325 (4.5%)	43	0	0	4	1	45	18	2	214	2	0
1999	7520	7125 (94.7%)	395 (5.3%)	64	0	0	1	2	55	23	2	248	0	0

EYE EXAMINATION RESULTS BY BREED**Data Calculated to 01/11/13**

The following summary covers all breeds that have had over 50 dogs tested in the last 15 years. This data is further broken down by dogs found to be affected.

Breed	Unaffected	Affected	CEA	TRD	CHC	PHPV	PPM	G	gPRA	cPRA	HC	PLL	RD
Alaskan Malamute	1435	57									57		
American Cocker Spaniel	1943	115						17	1		97		
Australian Cattle Dog	97	2							2				
Australian Shepherd	553	4									4		
Basset Hound	214	41						41					
Bedlington Terrier	215	0											
Belgian Shepherd Dog (Groenendael)	263	11									11		
Belgian Shepherd Dog (Malinois)	102	0											
Belgian Shepherd Dog (Tervueren)	556	16									16		
Bichon Frise	141	0											
Border Collie	3358	5	5										
Boston Terrier	888	90									90		
Briard	213	0											
Bull Terrier (Miniature)	442	21										21	

Breakdown of eye examination results into unaffected and affected figures



EYE EXAMINATION RESULTS BY BREED (CONTINUED)

Breed	Unaffected	Affected	CEA	TRD	CHC	PHPV	PPM	G	gPRA	cPRA	HC	PLL	RD
Cavalier King Charles Spaniel	7313	25									25		
Chesapeake Bay Retriever	413	14							3		11		
Cocker Spaniel	9286	147						87	52	8			
Collie (Rough)	631	237	236							1			
Collie (Smooth)	162	20	20										
Dachshund (Miniature Long-Haired)	1036	4							4				
Doberman	729	20				20							
English Springer Spaniel	3332	43						38	5				
Finnish Lapphund	335	5							5				
Flat Coated Retriever	3217	218						218					
German Shepherd Dog	410	0											
Giant Schnauzer	513	12									12		
Glen Of Imaal Terrier	170	5							5				
Golden Retriever	20605	429							2		427		
Irish Red & White Setter	545	32									32		
Irish Setter	555	0											
Irish Wolfhound	104	3							3				
Japanese Shiba Inu	273	5						5					
Labrador Retriever	51555	2161		2					90	3	2066		
Lancashire Heeler	416	22	9									13	
Large Munsterlander	533	19									19		
Leonberger	1418	42									42		
Lhasa Apso	3815	12							12				
Miniature Schnauzer	7624	20			7				2		11		
Norwegian Buhund	186	13									13		
Norwegian Elkhound	432	2							2				
Nova Scotia Duck Tolling Retriever	441	5							5				
Old English Sheepdog	584	5									5		
Parson Russell Terrier	378	1										1	
Poodle (Miniature)	1214	15							15				
Poodle (Standard)	759	3									3		0
Poodle (Toy)	1045	9							9				
Sealyham Terrier	75	2										2	
Shetland Sheepdog	1573	227	227										
Siberian Husky	3046	299						197			102		
Spanish Water Dog	210	21						21					
Staffordshire Bull Terrier	4213	38				27					11		
Tibetan Spaniel	1443	2							2				
Tibetan Terrier	3940	15							7			8	
Welsh Springer Spaniel	851	75						75					

KENNEL CLUB DNA TESTING SCHEMES

Data Calculated to 01/01/14

The following table contains the outcome of Kennel Club registered dogs tested under official Kennel Club DNA testing schemes in the last 15 years and is broken down by year and test result. Further data is presented to show the number of dogs born each year with a known hereditary status (i.e. both parents have been tested and the puppies' health status is predictable).

Year	DNA tested	Clear	Carrier	Affected	Dogs born with hereditary status known
2013	5726	4710 (82.3%)	934 (16.3%)	82 (1.4%)	28802
2012	6862	5466 (79.7%)	1276 (18.6%)	120 (1.7%)	28837
2011	5392	3824 (70.9%)	1373 (25.5%)	195 (3.6%)	25654
2010	4571	3373 (73.8%)	1086 (23.8%)	112 (2.5%)	22597
2009	3989	2894 (72.5%)	974 (24.4%)	121 (3%)	17987
2008	3191	2486 (77.9%)	602 (18.9%)	103 (3.2%)	14817
2007	3278	2641 (80.6%)	554 (16.9%)	83 (2.5%)	11986
2006	2496	2112 (84.6%)	346 (13.9%)	38 (1.5%)	8522
2005	1189	940 (79.1%)	220 (18.5%)	29 (2.4%)	6072
2004	421	320 (76%)	96 (22.8%)	5 (1.2%)	4205
2003	549	398 (72.5%)	140 (25.5%)	11 (2%)	3146
2002	217	178 (82%)	38 (17.5%)	1 (0.5%)	2764
2001	319	241 (75.5%)	73 (22.9%)	5 (1.6%)	2274
2000	421	368 (87.4%)	52 (12.4%)	1 (0.2%)	2194
1999	627	538 (85.8%)	88 (14%)	1 (0.2%)	1559

DNA TEST RESULT SUMMARY BY BREED

Data Calculated to 01/11/13

The following summary covers the results of all breeds that have had Kennel Club registered dogs DNA tested under an official Kennel Club DNA testing scheme in the last 15 years. This data is further broken down by test result.

Breed	No. tested		Clear		Carrier		Affected		Hereditary clear		Hereditary carrier		Hereditary affected	
	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013
Australian Cattle Dog														
prcd-PRA (Progressive Retinal Atrophy)	37	1	25	0	11	1	1	0	83	5	7	0	0	0
Australian Shepherd														
CEA/CH (Collie Eye Anomaly/Choroidal Hypoplasia)	87	9	78	8	9	1	0	0	147	51	0	0	0	0
HC-HSF4 (Hereditary Cataract)	129	13	116	11	13	2	0	0	244	93	0	0	0	0
MDRI (Multi-Drug Resistance)	99	16	48	7	42	7	9	2	15	0	1	0	0	0
prcd-PRA (Progressive Retinal Atrophy)	76	7	76	7	0	0	0	0	168	64	0	0	0	0
Beagle														
MLS (Mullerian-Leuke Syndrome)	788	161	703	143	83	18	2	0	4743	1210	0	0	0	0
NCCD (Neonatal Cerebellar Cortical Degeneration)	420	357	391	341	29	16	0	0	1978	744	0	0	0	0
Bedlington Terrier														
COMMD1 (Copper Toxicosis)	137	53	108	38	28	15	1	0	90	45	0	0	0	0
Border Collie														
CEA/CH (Collie Eye Anomaly/Choroidal Hypoplasia)	717	94	595	75	121	19	1	0	3223	360	5	0	0	0
CL (Ceroid Lipofuscinosis)	531	66	518	63	13	3	0	0	2512	259	0	0	0	0
TNS (Trapped Neutrophil Syndrome)	778	71	696	66	82	5	0	0	3775	419	0	0	0	0

KENNEL CLUB DNA TESTING SCHEMES - RESULTS FOR DOGS TESTED IN 2013

Breed	No. tested		Clear		Carrier		Affected		Hereditary clear		Hereditary carrier		Hereditary affected	
	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013
Boston Terrier														
HC-HSF4 (Hereditary Cataract)	487	68	466	64	21	4	0	0	3292	906	0	0	0	0
Briard														
CSNB (Congenital Stationary Night Blindness)	235	19	185	11	49	8	1	0	782	88	0	0	0	0
Bull Terrier (Miniature)														
PLL (Primary Lens Luxation)	376	31	225	22	142	9	9	0	495	66	3	0	0	0
Bulldog														
HUU (Hyperuricosuria)	451	233	327	171	111	54	13	8	346	165	8	2	0	0
Cavalier King Charles Spaniel														
CC/DE (Curly Coat/ Dry Eye)	1101	502	1006	453	94	49	1	0	1682	682	0	0	0	0
EF (Episodic Falling)	1105	497	927	405	167	86	11	6	1537	578	12	12	0	0
Chesapeake Bay Retriever														
DM (Degenerative Myelopathy)														
prcd-PRA (Progressive Retinal Atrophy)	27	0	22	0	5	0	0	0	476	40	0	0	0	0
Chinese Crested														
PLL (Primary Lens Luxation)	96	15	68	10	27	5	1	0	189	29	0	0	0	0
prcd-PRA (Progressive Retinal Atrophy)	20	3	20	3	0	0	0	0	22	12	0	0	0	0
Clumber Spaniel														
PDP-1 (Pyruvate Dehydrogenase Phosphates)	170	8	166	8	4	0	0	0	1068	141	0	0	0	0
Cocker Spaniel														
FN (Familial Nephropathy)	1679	254	1663	251	16	3	0	0	13581	2953	0	0	0	0
prcd-PRA (Progressive Retinal Atrophy)	2291	239	1526	186	681	49	84	4	11056	2409	440	31	10	0
Collie (Rough)														
CEA/CH (Collie Eye Anomaly/ Choroidal Hypoplasia)	15	2	5	1	8	1	2	0	3	0	5	0	0	0
DM (Degenerative Myelopathy)	1	1	1	1	0	0	0	0	0	0	0	0	0	0
MDRI (Multi-Drug Resistance)	116	21	50	2	50	10	16	9	25	8	0	0	0	0
PRA (rcd2) (Generalised Progressive Retinal Atrophy) rcd-2	3	0	3	0	0	0	0	0	0	0	0	0	0	0
Collie (Smooth)														
CEA/CH (Collie Eye Anomaly/ Choroidal Hypoplasia)	26	3	12	1	13	2	1	0	3	3	7	0	0	0
DM (Degenerative Myelopathy)	11	2	9	2	2	0	0	0	0	0	0	0	0	0
MDRI (Multi-Drug Resistance)	68	9	13	2	26	0	29	7	0	0	6	6	16	0
PRA (rcd2) (Generalised Progressive Retinal Atrophy) rcd-2	5	1	5	1	0	0	0	0	7	0	0	0	0	0
Dachshund (Miniature Long-Haired)														
PRA (cord1) (Generalised Progressive Retinal Atrophy) cord 1	1563	116	747	51	709	62	107	3	2189	353	239	4	24	0
Dachshund (Miniature Smooth-Haired)														
PRA (cord1) (Generalised Progressive Retinal Atrophy) cord 1	2036	276	841	142	943	118	252	16	2468	872	554	70	35	0
Dachshund (Miniature Wire-Haired)														
PRA (cord1) (Generalised Progressive Retinal Atrophy) cord 1	359	73	290	51	66	21	3	1	687	218	17	0	0	0

KENNEL CLUB DNA TESTING SCHEMES - RESULTS FOR DOGS TESTED IN 2013

Breed	No. tested		Clear		Carrier		Affected		Hereditary clear		Hereditary carrier		Hereditary affected	
	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013
Dobermann														
vWD (von Willebrand's disease)	1182	32	608	23	527	8	47	1	3472	356	77	0	0	0
English Springer Spaniel														
Fuco. (Fucosidosis)	687	114	680	112	7	2	0	0	4403	794	0	0	0	
PFK (Phosphofructokinase Deficiency)	99	32	99	32	0	0	0	0	356	108	0	0	0	0
PRA (cord1) (Generalised Progressive Retinal Atrophy) cord 1	759	121	578	103	168	17	13	1	2653	622	69	0	0	0
Finnish Lapphund														
GSD (II) (Pompe's Disease)	46	46	45	45	1	1	0	0	57	26	0	0	0	0
prcd-PRA (Progressive Retinal Atrophy)	126	9	78	6	47	3	1	0	170	14	3	0	0	0
French Bulldog														
HC-HSF4 (Hereditary Cataract)	614	277	594	271	20	6	0	0	1330	677	0	0	0	0
German Wirehaired Pointer														
vWD (von Willebrand's disease)	103	16	102	15	1	1	0	0	544	92	0	0	0	0
Glen Of Imaal Terrier														
PRA (crd3) (Generalised Progressive Retinal Atrophy) crd3	99	12	60	7	38	5	1	0	87	21	0	0	0	0
Golden Retriever														
GR PRA1 (Progressive Retinal Atrophy)	546	299	510	281	33	17	3	1	1789	637	18	9	0	0
GR PRA2(Progressive Retinal Atrophy)	459	339	436	322	23	17	0	0	1387	551	0	0	0	0
Gordon Setter														
PRA (rcd4) (Generalised Progressive Retinal Atrophy) rcd-4	489	46	208	24	210	17	71	5	344	93	159	37	6	0
Greyhound														
GN (Greyhound Neuropathy)	15	0	11	0	4	0	0	0	22	0	0	0	0	0
Irish Red & White Setter														
CLAD (Canine Leucocyte Adhesion Deficiency)	158	3	144	3	14	0	0	0	1367	85	0	0	0	0
vWD (von Willebrand's disease)	96	4	90	4	6	0	0	0	999	85	0	0	0	0
Irish Setter														
CLAD (Canine Leucocyte Adhesion Deficiency)	1367	9	1126	9	241	0	0	0	17106	819	0	0	0	0
PRA (rcd1) (Generalised Progressive Retinal Atrophy) rcd-1	980	36	980	36	0	0	0	0	15012	818	0	0	0	0
PRA (rcd4) (Generalised Progressive Retinal Atrophy) rcd-4	1081	217	549	107	454	102	78	8	1262	360	281	0	33	0
Keeshond														
PHPT (Primary Hyperparathyroidism)	126	1	126	1	0	0	0	0	717	111	0	0	0	0
Labrador Retriever														
CNM (Centronuclear Myopathy)	1353	223	1230	207	116	14	7	2	6422	1835	0	0	0	0
EIC (Exercise Induced Collapse)	377	163	307	125	57	28	13	10	664	262	13	5	0	0
prcd-PRA (Progressive Retinal Atrophy)	2491	207	1956	181	507	23	28	3	13524	2739	75	0	0	0
Lancashire Heeler														
PLL (Primary Lens Luxation)	337	51	190	21	139	30	8	0	184	31	2	0	0	0
Large Munsterlander														
HUU (Hyperuricosuria)	101	2	72	1	26	0	3	1	315	94	4	0	0	0
Leonberger														
LPNI (Leonberger Polyneuropathy)	53	7	48	7	5	0	0	0	57	6	0	0	0	0

KENNEL CLUB DNA TESTING SCHEMES - RESULTS FOR DOGS TESTED IN 2013

Breed	No. tested		Clear		Carrier		Affected		Hereditary clear		Hereditary carrier		Hereditary affected	
	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013	15 Years	2013
Manchester Terrier														
vWD (von Willebrand's disease)	136	25	106	13	29	12	1	0	520	129	0	0	0	0
Newfoundland														
CU (Cystinuria)	203	33	165	26	38	7	0	0	857	194	0	0	0	0
Norwegian Elkhound														
prcd-PRA (Progressive Retinal Atrophy)	152	13	79	3	63	10	10	0	221	61	4	0	6	0
Nova Scotia Duck Tolling Retriever														
CEA/CH (Collie Eye Anomaly/Choroidal Hypoplasia)	139	10	129	9	10	1	0	0	749	159	0	0	0	0
prcd-PRA (Progressive Retinal Atrophy)	169	13	104	7	60	6	5	0	402	89	3	0	0	0
Old English Sheepdog														
PCD (Primary Ciliary Dyskinesia)	58	20	56	20	2	0	0		118	64	0	0	0	0
Parson Russell Terrier														
LOA (Late Onset Ataxia)	211	211	170	170	39	39	2	2	320	152	0	0	0	0
PLL (Primary Lens Luxation)	378	43	268	31	107	12	3	0	973	239	7	0	0	0
SCA (Spinocerebellar Ataxia)	39	39	38	38	1	1	0	0	72	42	0	0	0	0
Poodle (Miniature)														
prcd-PRA (Progressive Retinal Atrophy)	448	63	360	52	86	10	2	1	1487	251	0	0	0	0
Poodle (Standard)														
vWD (von Willebrand's disease)	28	15	28	15	0	0	0	0	43	14	0	0	0	0
Poodle (Toy)														
prcd-PRA (Progressive Retinal Atrophy)	613	34	458	27	146	7	9	0	2051	200	24	0	0	0
Portuguese Water Dog														
prcd-PRA (Progressive Retinal Atrophy)	61	20	33	12	27	8	1	0	141	56	0	0	0	0
Russian Black Terrier														
HUU (Hyperuricosuria)	59	5	11	1	35	3	13	1	11	0	5	0	0	0
Schipperke														
MPSIIIB (Mucopolysaccharidosis)	11	5	11	5	0	0	0	0	2	0	0	0	0	0
Sealyham Terrier														
PLL (Primary Lens Luxation)	222	40	92	16	121	23	9	1	78	41	7	0	0	0
Shetland Sheepdog														
CEA/CH (Collie Eye Anomaly/Choroidal Hypoplasia)	119	27	75	17	44	10	0	0	54	13	0	0	0	0
MDRI (Multi-Drug Resistance)	23	6	10	3	8	1	5	2	0	0	4	4	0	0
vWD (von Willebrand's disease)	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Spanish Water Dog														
prcd-PRA (Progressive Retinal Atrophy)	60	9	48	8	12	1	0	0	54	20	0	0	0	0
Staffordshire Bull Terrier														
HC-HSF4 (Hereditary Cataract)	2131	105	2058	97	73	8	0	0	17883	2166	0	0	0	0
L2HGA (L-2-Hydroxyglutaricacid uria)	2359	99	2134	91	221	7	4	1	18434	2249	0	0	0	0
Tibetan Spaniel														
PRA3 (Progressive Retinal Atrophy)	85	84	77	76	8	8	0	0	108	29	0	0	0	0
Tibetan Terrier														
NCL (Neuronal Ceroid Lipofuscinosis)	718	168	575	139	138	29	5	0	2855	980	6	0	0	0
PLL (Primary Lens Luxation)	1122	138	783	102	323	34	16	2	3890	928	2	0	0	0
Welsh Corgi (Cardigan)														
PRA (rcd3) (Generalised Progressive Retinal Atrophy) rcd-3	131	9	123	9	8	0	0	0	928	71	0	0	0	0

ANNEX B

COMPOSITION OF DOG HEALTH GROUP AND SUB-GROUPS

COMPOSITION OF THE DOG HEALTH GROUP

Kennel Club Members	Mr Kevin Clifford, <i>Veterinary surgeon</i> Mr Jeff Horswell, <i>General Committee member</i> Mr Frank Kane, <i>General Committee member and Chairman Breed Standards Sub-Committee</i> Mrs Gil Simpson, <i>General Committee member and Veterinary surgeon</i> Mr Mike Townsend, <i>Chairman Kennel Club Charitable Trust & Vice Chairman, Kennel Club</i>
External	Mr Nick Blayney, <i>Veterinary surgeon</i> Prof. Sheila Crispin, <i>Veterinary surgeon with specialist expertise in comparative ophthalmology and systemic disorders with ocular manifestations</i> Mr Robin Hargreaves, <i>President, British Veterinary Association</i> Prof. Mike Herrtage, <i>Veterinary surgeon, Dean of University of Cambridge Veterinary School</i> Dr Sarah Blott, <i>Animal Health Trust Genetics Centre</i> Dr Cathryn Mellersh, <i>Canine Genetics Research Group Leader, Animal Health Trust</i>
Kennel Club Staff	Mrs Caroline Kisko, <i>Secretary/Director of Communications</i> Mr Bill Lambert, <i>Health and Breeder Services Manager</i> Mrs Caroline Hallett, <i>Registered Societies Manager</i> Ms Aimee Llewellyn, <i>Health Information Manager</i>

COMPOSITION OF THE GENETICS AND HEALTH SCREENING SUB-GROUP

External	Prof Neil Gorman, <i>Vice-Chancellor, Nottingham Trent University</i>
Canine Genetics	Dr Cathryn Mellersh, <i>Canine Genetics Research Group Leader, Animal Health Trust</i> Dr Tom Lewis, <i>Animal Health Trust Genetics Centre</i> Dr Susan Long, <i>University of Bristol, School of Veterinary Science</i>
Human Genetics	Prof. Bill Ollier, <i>Professor of Immunogenetics at Manchester University and Director of the Centre for Integrated Genomic Medical Research</i>
Canine Epidemiologist	Dr Dave Brodbelt, <i>Royal Veterinary College Lecturer in Companion Animal Epidemiology and a European Veterinary Specialist in Anaesthesia</i>
BVA nominated Veterinary Surgeons	Dr Ruth Dennis, <i>Head of Diagnostic Imaging Unit AHT and European Specialist in Veterinary Diagnostic Imaging, Chief Scrutineer BVA/KC Hip and Elbow Dysplasia schemes</i> Dr Ian Mason, <i>Chief Eye Panelist, BVA/KC Eye scheme</i>
Kennel Club Members	Mr Mike Townsend, <i>Chairman Kennel Club Charitable Trust & Vice Chairman, Kennel Club</i> Dr Ron James, <i>General Committee member & Veterinary surgeon</i>
Kennel Club Staff	Mrs Caroline Kisko, <i>Secretary/Director of Communications</i> Ms Aimee Llewellyn, <i>Health Information Manager</i>

COMPOSITION OF DOG HEALTH GROUP AND SUB-GROUPS

COMPOSITION OF THE BREED STANDARDS AND CONFORMATION SUB-GROUP

Kennel Club Members	Mr Frank Kane, <i>General Committee member and Breed Standards Sub-Committee Chairman</i> Dr Ron James, <i>General Committee member and Veterinary surgeon</i> Mrs Meg Purnell-Carpenter, <i>General Committee member and Breed Standards Sub-Committee Vice-Chairman</i> Mr Ian Seath, <i>Kennel Club member</i>
External	Prof. Sheila Crispin, <i>Veterinary surgeon with specialist expertise in comparative ophthalmology and systemic disorders with ocular manifestation.</i> Prof. Mike Herrtage, <i>Veterinary surgeon, Dean of University of Cambridge Veterinary School</i>
Kennel Club Staff	Mrs Caroline Kisko, <i>Secretary/Director of Communications</i> Mr Bill Lambert, <i>Health and Breeder Services Manager</i> Mrs Kathryn Symns, <i>Executive, Canine Activities Department</i> Mrs Caroline Hallett, <i>Registered Societies Manager</i>

COMPOSITION OF THE ASSURED BREEDER SCHEME SUB-GROUP

External	Mr Tony Buckwell, <i>Veterinary surgeon</i> Miss Annette Conn, <i>Behaviourist</i> Dr Jessica Holm, <i>Assured Breeder and Broadcaster</i> Mr Gavin Robertson, <i>Assured Breeder</i> Mr Graham Thurlow, <i>Veterinary surgeon</i> Mrs Jan Wood, <i>General Committee member and Assured Breeder</i>
Kennel Club Staff	Mr Bill Lambert, <i>Health and Breeder Services Manager</i> Mr Glen Dymock, <i>Assured Breeder Scheme Manager</i> Mrs Sue Sampson, <i>Assured Breeder Assessor</i> Ms Jacquie Easton, <i>Executive, Registration Services</i> Mr Nick Sutton, <i>Health Information Officer</i>

COMPOSITION OF THE ACTIVITIES HEALTH AND WELFARE SUB-GROUP

External	Mr Richard Curtis, <i>Heelwork to Music</i> Mrs Sue Garner, <i>Obedience</i> Mr Barry Gilbert, <i>Working Trials</i> Mrs Rachel Mowbray, <i>Veterinary Practitioner and International Agility Team Vet and Agility competitor</i> Dr Jacqueline Boyd, <i>Nottingham Trent University, School of Animal, Rural and Environmental Sciences, Agility competitor and Judge</i> Ms Lowri Davies, <i>Veterinary Practitioner at the Smaart Clinic, Canine Sports Medicine & Rehabilitation</i> Mr Gary Doyle, <i>Senior Lecturer at the University of East London, Sports Biomechanics and Health & Safety and Agility competitor</i> Miss Natasha Wise, <i>BSc in Sport Science and Agility competitor</i> Miss Carolyne Tranquille, <i>Research Assistant, Animal Health Trust</i>
Kennel Club	Mr Steve Croxford, <i>General Committee member, Activities Sub-Committee member, Disciplinary Sub-Committee Chairman</i>
Kennel Club Staff	Ms Debbie Deuchar, <i>Working Dog Activities Team Manager</i> Mr James Oxley, <i>Research Officer</i>

ANNEX C

REPORT FROM THE KENNEL CLUB GENETICS CENTRE AT THE ANIMAL HEALTH TRUST CANINE GENETICS - 2013

MOLECULAR GENETICS

During 2013 the Canine Genetics molecular research team at the Kennel Club Genetics Centre (KCGC) continued to investigate inherited disorders that are highlighted by breeders and/or veterinarians as health and welfare burdens for breeds at risk. We seek to identify the causal mutation(s) for each disorder and develop DNA tests that breeders can use to reduce the prevalence of the disorder in their breed and that veterinarians can use to facilitate diagnosis, prevention and treatment, where appropriate. Our research utilises DNA collected by a simple mouth swab from pet dogs, always with their owner's consent. During 2012 we received DNA samples from approximately 2130 dogs, of 115 different breeds, of which around 500 (~24%) were affected with an inherited disorder. Our DNA sample collection now comprises over 25,000 DNA samples, collected from over 180 different breeds, and represents an extremely valuable research resource.

NEW PROJECTS

During 2013 we have initiated several new projects, investigating inherited diseases we have not previously studied. These include:

- a breed-wide online survey to investigate the heritability of bloat in the Irish Setter (results expected during the first half of 2014)
- a study to identify genetic risk factors for idiopathic epilepsy in the Border Collie and
- an investigation into the genetics of primary glaucoma and goniodysgenesis in the Flatcoated Retriever and other breeds

We are also continuing our investigations of the genetics of a wide variety of other inherited disorders in many different breeds, including hereditary cataract, progressive retinal atrophy, geographic retinal dysplasia, ataxia, sebaceous adenitis and steroid responsive meningitis. For a more complete summary of conditions under investigation please see our website: www.aht.org.uk/cms-display/genetics_cares.html.

Our major findings from 2013 are summarised below.

PROGRESSIVE RETINAL ATROPHY IN TIBETAN SPANIELS AND TIBETAN TERRIERS

In 2013 our geneticists discovered a mutation that causes progressive retinal atrophy (PRA) in Tibetan Spaniels and Tibetan Terriers. We are calling this form of the disease PRA3 to distinguish it from other, genetically distinct, forms of PRA that are caused by different mutations, including the rcd4 mutation that is also known to cause PRA in some Tibetan Terriers.

In July 2013 we launched a DNA test based on the PRA3 mutation and have now tested > 780 dogs, of which 2 have been identified as affected with PRA and 47 of which are carriers.

NEONATAL CEREBELLAR CORTICAL DEGENERATION (NCCD) IN THE BEAGLE

We have reported previously the identification of the mutation that causes a serious, debilitating and non-curable condition known as neonatal cerebellar cortical degeneration (NCCD) in the Beagle. During 2012 we undertook a study, in collaboration with the Kennel Club, to determine the frequency of this mutation in UK Beagles. On the AHT's behalf, the Kennel Club contacted the owners of 500 Beagles randomly selected from their transfer of ownership database, inviting them to submit DNA from their Beagle to be tested, free of charge, for the NCCD mutation. We received DNA from 152 Beagles (30.4% response rate) of which 8 carried the NCCD mutation, representing a mutation frequency of 0.03. Based on these data our breeding recommendations were as follows:

- i) all Beagles to be bred from should be tested for the NCCD mutation, regardless of sex, colour or ancestry
- ii) when planning a litter, breeders should ensure that at least one parent is clear of the NCCD mutation
- iii) carriers should be included in breeding programmes until the mutation frequency in the breed falls below 0.01.

SUMMARY OF DNA TESTING STATISTICS

Since 2009, when the Kennel Club commenced funding of the Canine Genetics Centre at the Animal Health Trust, DNA tests have been developed for ten different disease mutations that are relevant to 29 different breeds of dog, with six breeds benefitting from more than one test. In total the AHT has now tested over 38,000 dogs for these ten mutations, over 11,000 of which were tested during 2013. Importantly, the tests have identified 8,400 dogs that are carriers of at least one disease mutation. In the absence of DNA tests it would have been impossible to determine whether the vast majority of these dogs were carrying these mutations or not, meaning they might have been innocently bred to other carriers and given rise to affected offspring.

QUANTITATIVE GENETICS

Research carried out by the Canine Genetics quantitative research team aimed over the past 5 years to develop effective methods of genetic evaluation for complex diseases, as management of these diseases poses the greatest challenge to dog breeders. Of the 489 currently known genetic diseases in dogs, 72% are believed to be complex (<http://omia.angis.org.au>).

The Quantitative Genetics team also aimed to develop breeding strategies for canine populations that will maintain long-term health by managing rates of inbreeding, while reducing the prevalence of existing disease; and to encourage the implementation of state-of-the-art breeding techniques in dog breeding by developing Internet-based tools for breeders.

DEVELOPMENT OF MATE SELECT

In 2011, the Quantitative Genetics team worked with Kennel Club IT developers to implement the algorithm for calculating inbreeding coefficients for all KC registered dogs, and for prospective matings.

Since then, Mate Select, launched in May 2011, enabled breeders to:

- access a dog's individual inbreeding coefficient
- access the average inbreeding coefficient for any breed recognised by the KC
- perform hypothetical matings and predict the inbreeding coefficients of the puppies.

This service now attracts more than 23,000 searches per month (statistic measured in 2012). We are now creating technologies that will underpin the second and third phases of Mate Select. This includes developing statistical models, so that EBVs (for conditions such as hip and elbow dysplasia) can be calculated. We are also researching the impact of 'optimum contributions' (OCs) when applied to dog breeds. By using OCs we will be able to understand the impact that using any particular dog will have on the future diversity of a breed. We also hope that through our continued research we will be able to develop new features for the program, ensuring that Mate Select remains an innovative and cutting edge development in dog breeding.

ESTIMATED BREEDING VALUES (EBVS)

Complex diseases, such as hip dysplasia and epilepsy, are believed to be caused by a combination of genetic and environmental effects. Pedigree information and population-wide data on disease, such as that collected for the BVA/KC health screening schemes, are analysed using advanced statistical techniques to calculate the extent to which a disease is genetic (its heritability), and this information is used to determine EBVs. EBVs are an objective numerical assessment of the genetic status of an individual dog, with environmental effects removed. By using EBVs breeders can distinguish between dogs of high and low genetic risk when selecting parents.

The research required to establish heritabilities for hip and elbow dysplasia and to develop appropriate statistical models for EBVs has been carried out. The results have been published in six peer-reviewed papers. EBVs for hip score in 15 breeds and elbow score in five breeds have been developed.

The breeds are: Labrador Retriever, Golden Retriever, German Shepherd Dog, Rottweiler, Border Collie, Flat Coated Retriever, Bernese Mountain Dog, Newfoundland, Siberian Husky, Bearded Collie, English Setter, Gordon Setter, Akita, Tibetan Terrier, Rhodesian Ridgeback.

These breeds encompass more than 80,000 KC registrations per year, so that EBVs will initially be available for about 33% of all KC registered dogs.

An informative display has been developed for EBVs in Mate Select. This will ensure that breeders take account of both the EBV and its accuracy in the comparison of dogs. EBVs for hip and elbow dysplasia will be launched formally at Crufts 2014.

The production of routine EBVs for other complex conditions requires suitable screening and data collection procedures to be in place. A new KC/BVA scheme for syringomyelia, open to all breeds, has been launched, which may be a data stream to the future for producing additional EBVs.

INBREEDING AND POPULATION ANALYSES

Inbreeding is one of the risk factors for inherited disease in purebred dogs. It is important to understand how the population structure of breeds may be contributing to an increased rate of inbreeding. Analysis of the population structure and rate of inbreeding for all 211 Kennel Club recognised breeds is currently underway.

Population analyses have been completed for 132 breeds. There are a further 49 breeds with more than 100 total registrations and mean number of registrations per year of at least 20, for which analyses will be attempted. Public formats of these reports are anticipated to be released in the near future, by the Kennel Club.

SUMMARY

The Kennel Club Genetics Centre at the AHT has made outstanding progress since its launch in 2009. The initial vision of combining the resources and expertise of the Kennel Club and the Animal Health Trust to create one centre of excellence, aimed at promoting the health and welfare of dogs - both individuals and whole breeds - has proven extremely successful.

There is still much to achieve, therefore it is tremendous news that the Kennel Club Charitable Trust is providing a further five years of funding to continue this important work. We will continue to take full advantage of new and developing technologies to discover more mutations, in the hope that they will lead to the development of further DNA screening tests that breeders can use to control, or even eliminate, painful and devastating diseases.

We will also continue to advance the tools available to dog breeders, particularly for dealing with the risk of complex diseases. This will include expanding the range of complex diseases for which EBVs are available, and researching new methods for calculating genetic risk. We will also be testing breeding strategies aimed at improving canine health, and diminishing the impact of inherited disease, using computer modelling.

Through publications, articles and seminars we will continue to update dog owners and breeders on progress, as well as advise them on available tests and appropriate breeding strategies, aimed at minimising disease risk specifically for their breeds.

We are committed to helping dog breeders in the UK, and across the world, to produce happy and healthy puppies. We are confident that breeders will continue to make the most of the scientific developments that we are generating, to ensure we are all able to achieve this important goal.

ACKNOWLEDGEMENTS

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ANNEX D

REPORT FROM THE KENNEL CLUB CANCER CENTRE
AT THE ANIMAL HEALTH TRUST

Since opening its doors in early 2013, the Kennel Club Cancer Centre at the Animal Health Trust (AHT) has treated more patients than it anticipated. By the end of November 2013, more than 530 radiation doses had been administered to 54 individual dogs, from more than 20 breeds with fifteen different types of cancer.

The AHT's clinical cancer team has also treated more than 290 new cancer patients and given more than 310 doses of chemotherapy. In addition, many patients seen have contributed valuable information to the veterinary charity's ongoing cancer research programme.

Breeds which have benefitted from the AHT's clinical cancer expertise and the state-of-the-art facilities available in the new Centre, include the Border Collie, Boxer, Bullmastiff, Dobermann, Bull Terrier, Cocker Spaniel, English Springer Spaniel, Golden Retriever, Greyhound, Labrador Retriever, Pug, Scottish Terrier, Staffordshire Bull Terrier, Weimaraner and Whippet.

The Kennel Club Cancer Centre is able to offer each and every patient the specific treatment for its specific cancer. Being able to combine surgery with chemotherapy and / or radiotherapy on one site is far better and less stressful.

In addition, by treating these animals at the AHT, the centre is able to gather information which will contribute to on-going cancer research. In time these patients may indirectly help improve cancer treatments for other dogs across the world. By collecting DNA samples, every cancer case treated at the AHT contributes towards clinical and genetic research projects, helping the AHT to better understand the disease and find ways to more accurately diagnose and treat it in the future.

The identification of inherited risk factors for cancer in dogs is one aim of the cancer research, and studies are currently being undertaken in several breeds that appear to have a risk of developing a certain type of cancer.

The scientists are getting closer to identifying the inherited risk factor for a common type of skin cancer, mast cell tumours, in Golden Retrievers.

By comparing the DNA from dogs with and without the cancer, the precise genetic alteration(s) which carries the risk can be identified. It is hoped that a DNA test can then be developed to easily identify dogs which carry the gene and are at an increased risk of developing a mast cell tumour.

Dogs found to have an inherited risk can be closely monitored by owners and vets for signs of the disease, which will hopefully lead to earlier diagnosis and better treatment for that animal. The genetic information can also be taken into account in breeding programmes, to limit the number of dogs developing the cancer in the future.

Research taking place now at the Centre could revolutionise the treatment of cancers and even help prevent cancer in our dogs in the future.



THE KENNEL CLUB
Making a difference for dogs

HEAD OFFICE

1-5 Clarges Street Piccadilly London W1J 8AB
Telephone 0844 4633 980 Facsimile 020 7518 1058

AYLESBURY OFFICE

4a Alton House Office Park, Gatehouse Way,
Aylesbury, Bucks HP19 8XU
Telephone 0844 4633 980 Facsimile 01296 486725



www.thekennelclub.org.uk



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