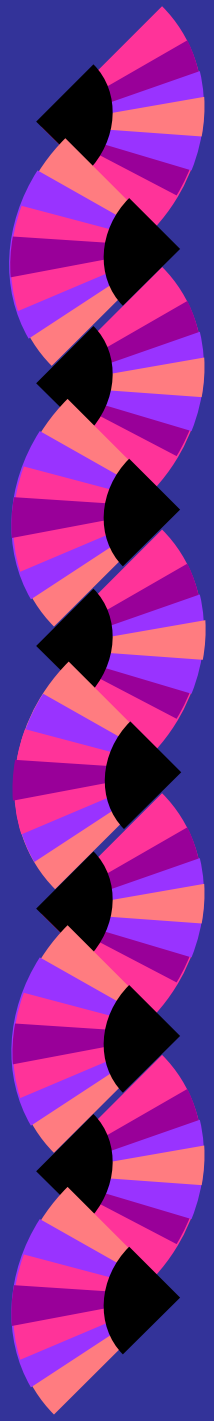
DEVELOPING A HEALTHY BREEDING PROGRAM



Breeding Goals

- Maintain and enhance the quality of the breed
  - Do not limit the genetic diversity of the population
- Genetic Disease Control
  - Do not produce affected animals
  - Decrease the (carrier) frequency of defective genes

Genetic Screening and Genetic Testing

Poll locked. Responses not accepted.

What genetic screening do you do in your dogs?

" X-rays, Pawprint basic panel, ophthalmology exam, cardiologist exam "
5 days ago

" Embark panel, OFA panel "
5 days ago

" Cystinuria, JC, echocardiogram, hips, CERF "
5 days ago

" Patella eyes heart, patella "
5 days ago

" Cardiac, hips, thyroid, spine "
5 days ago

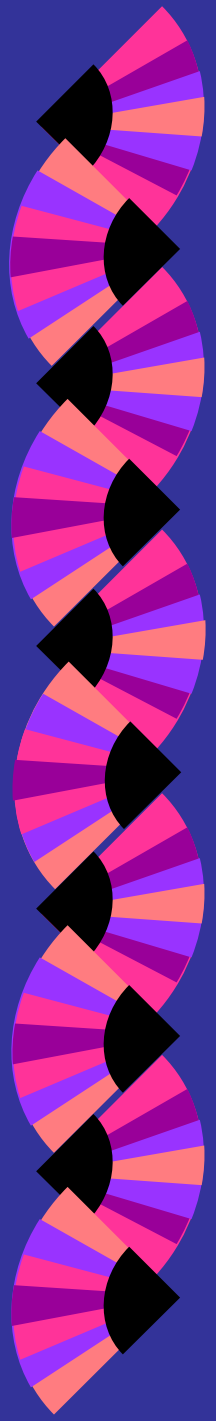
" Hips, elbows, cardiac, eyes, cmr, trachea, spine, dm "
5 days ago

" Hips, trachea, patella's, eyes, cystenuria, hereditary cataracts, cardiac "
5 days ago

" Haven't bred yet, but allergies if possible "
5 days ago

" Cystinuria, IVDD, JHC, eyes, hips, trachea, patella, heart "
5 days ago

" Juvenile cataracts, PRA, hemivertibrae, patella, cardiac, CERF, "
5 days ago



- Tests of the genotype: Direct DNA tests for liability genes
- Tests of the phenotype: Tests to primarily identify clinically affected individuals
- Pedigree analysis: Identification of carrier risk based on the knowledge of carrier and affected relatives

Genetic Panel Screening

MARS veterinary™ | Optimal Selection™ Genetic Breeding Analysis | embark

- Mutation test results for 150+ genetic diseases.
- Testing for more than 20 traits including coat colors, coat types, and morphology.
- Genetic diversity testing.
- Cheek swab test costing $130-$199.
- Uses SNPs – doesn't check for mutations
- Requires knowledge of what test results are relevant to the tested individual (breed).

International Partnership for Dogs

DogWellNet

IPFD

Harmonization of Genetic Testing for Dogs

Canine Health Foundation

AMERICAN KENNEL CLUB

Poll locked. Responses not accepted.

What genetic disorders are you seeing in your dogs?

" Breathing issues luxating patellas "
5 days ago

" Heart disease "
5 days ago

" Airway issues "
5 days ago

" hemi vertebrae "
5 days ago

" allergies are a problem with my creams "
5 days ago

" Extreme sensitivity to heat, allergies "
5 days ago

" Breathing issues "
5 days ago

" Allergies "
5 days ago

" Spinal malformation, boas, malformed vulva "
5 days ago

" Allergies "
5 days ago

" Some allergies "
5 days ago

" Patella "
5 days ago

" IVDD "
5 days ago

" Cancer/lymphoma, ear disease/cholesteatoma, boas "
5 days ago

" Cystinuria, allergies, "
5 days ago

" Cherry eye "
5 days ago

Top 10 Canine Health Concerns

(AKC Canine Health Foundation)

#1 Hip Dysplasia

#2 Epilepsy

#3 Allergies

#4 Hemangiosarcoma

#5 Hypothyroidism

#6 Lymphoma

#7 Gastric Dilitation-Volvulus/Bloat

#8 Patella Luxation

#9 Cruciate Ligament Rupture (ACL)

#10 Inflammatory Bowel Disease

Next 10 Canine Health Concerns

(AKC Canine Health Foundation)

#11 Cataracts

#12 Osteosarcoma

#13 Atopic Dermatitis (Atopy)

#14 Elbow Dysplasia

#15 Immune-Mediated Hemolytic Anemia

#16 Cardiomyopathy

#17 Progressive Retinal Atropy (PRA)

#18 Mammary Tumors

#19 Cryptorchidism

#20 Mitral Valve Disease

Health Issues by Diagnosis in the French Bulldog

2009 FBCA Health Survey

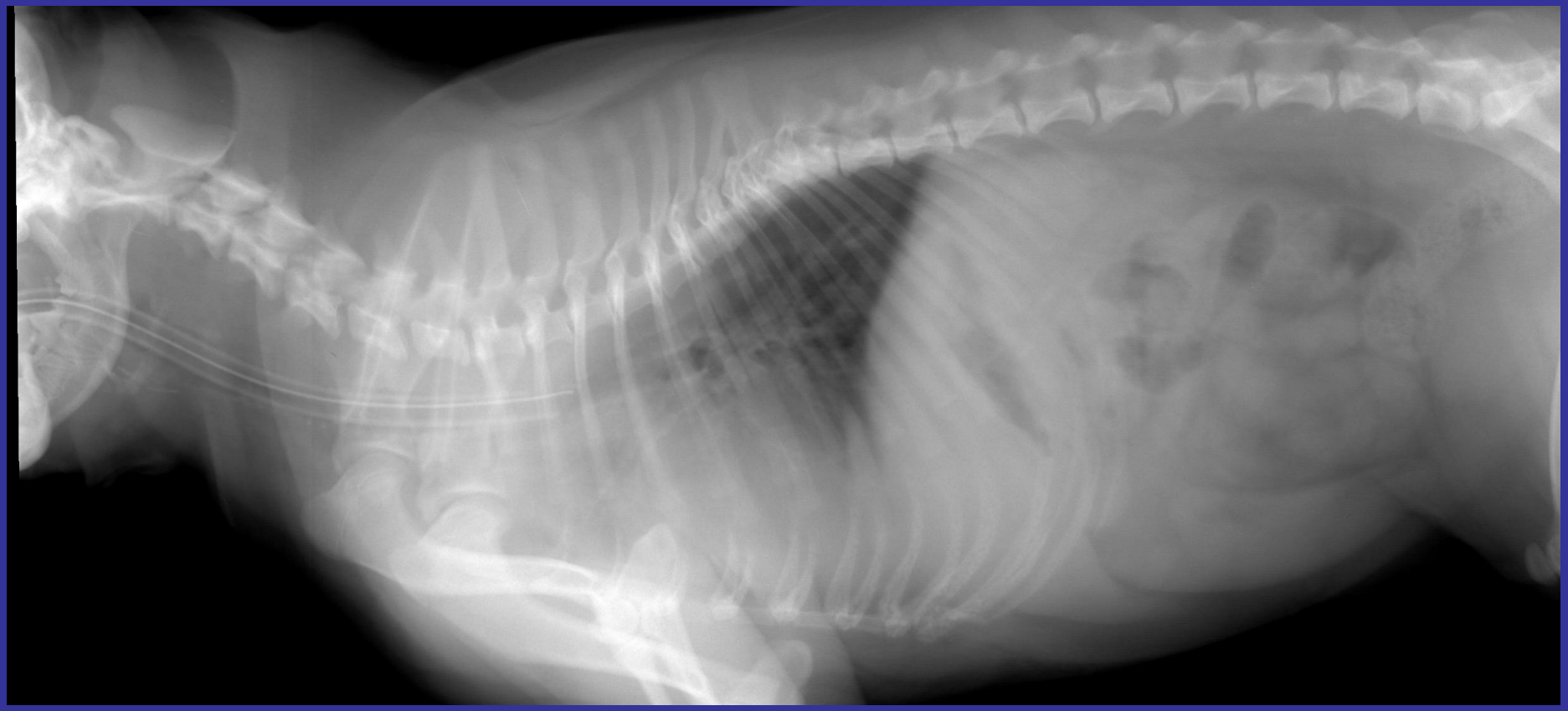
•Vertebral Malform.	35.09%	•Hypoplastic Trachea	4.36%
•Allergic Dermatitis	27.98%	•Cryptorchidism	4.15%
•Stenotic Nares	21.56%	•Demodex-generalized	4.13%
•Elongated Soft Palate	15.83%	•Hip Dysplasia	4.13%
•Food Allergy	14.22%	•Other-Ophtho	3.90%
•Other-Temperament	8.49%	•Resorption of litters	3.70%
•Allergic Rhinitis	7.80%	•Other – Dermatologic	3.44%
•Pyometra	7.00%	•Frequent cystitis	3.21%
•Irregular or Split Heats	6.58%	•Mast Cell Tumor	2.98%
•Intervertebral Disc Dz	5.50%	•Hypothyroidism	2.98%
•Other Female Repro	5.35%	•Wry Jaw	2.98%
•Other-Gastrointestinal	5.05%	•Other Respiratory	2.98%
•Extreme Aggression	4.59%	•Degenerative Myelopathy	2.29%

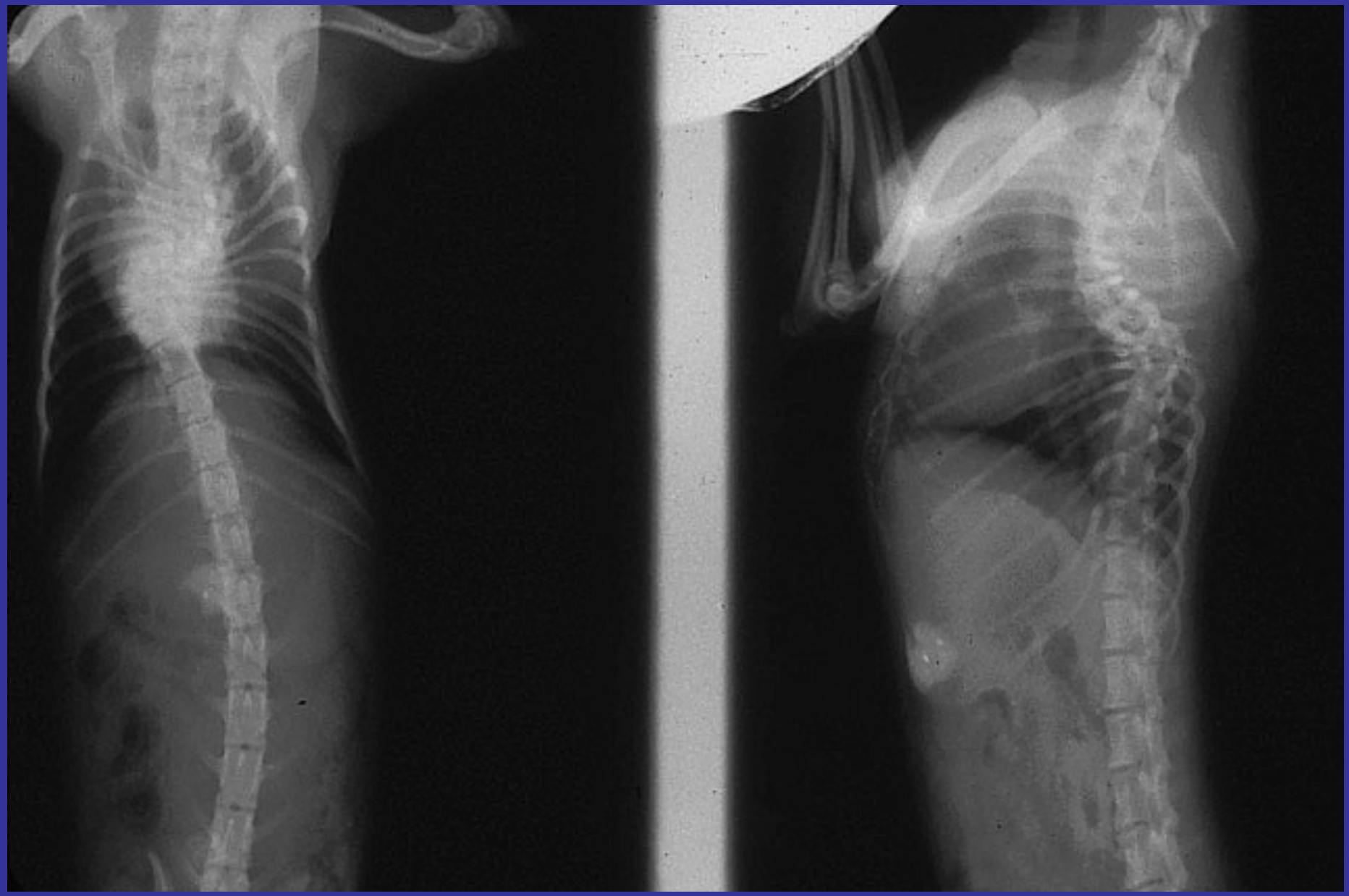
Important Disorders or Problems in the French Bulldog

2009 FBCA Health Survey

•Airway/Breathing	32.34%
•Vertebral Malformation	27.06%
•Allergies	23.62%
•Orthopedic Disease	13.07%
•Cancer	7.57%
•Eye Disease	4.36%
•Cardiac/Pulmonary Dz	3.21%

Vertebral Malformations in the French Bulldog





Vertebral Malformations in the French Bulldog

- 95.1% of French Bulldogs show some vertebral abnormalities in OFA Spine Database
- 92.1% vertebral abnormalities in Bannasch research
- 35.09% reported in the FBCA Health Survey

Vertebral Malformations in the French Bulldog

- Abnormal Vertebrae Seen
  - Hemivertebrae 73.8%
  - Butterfly Vertebrae 18.1%
  - Block Vertebrae 6.9%
  - Transitional Vertebrae 1.2%
- Location of Abnormal Vertebrae
  - Cervical Spine 1.5%
  - Thoracic Spine 95.1%
  - Lumbar Spine 3.4%

Vertebral Malformations in the French Bulldog

- Vertebral malformations and screw tail are caused by a mutation in the DVL2 gene that is fixed in French Bulldogs, Bulldogs, and Boston Terriers (all screw tail breeds)
- Degenerative disk disease is not necessarily correlated to vertebral malformations
- Most vertebral malformations do not cause clinical pain or discomfort

Allergic Dermatitis in the French Bulldog

27.98% in the FBCA Health Survey

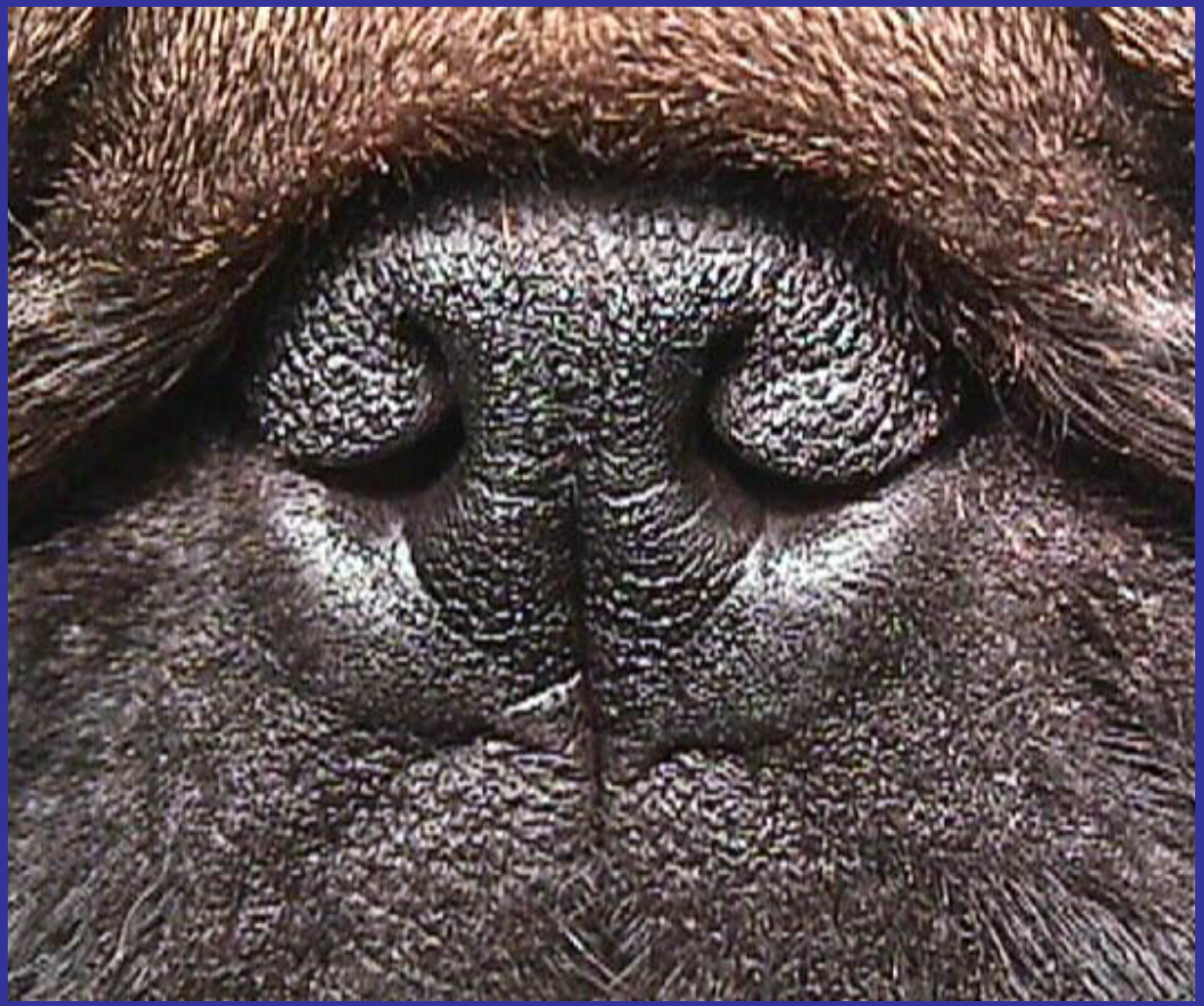
Allergic Dermatitis in French Bulldogs

- Chronic ear infections
- Hot spots
- Licking, scratching
  - Feet, face, and armpits
- Seasonal presentation
- Much less common is food allergy
- Allergies are strongly inherited

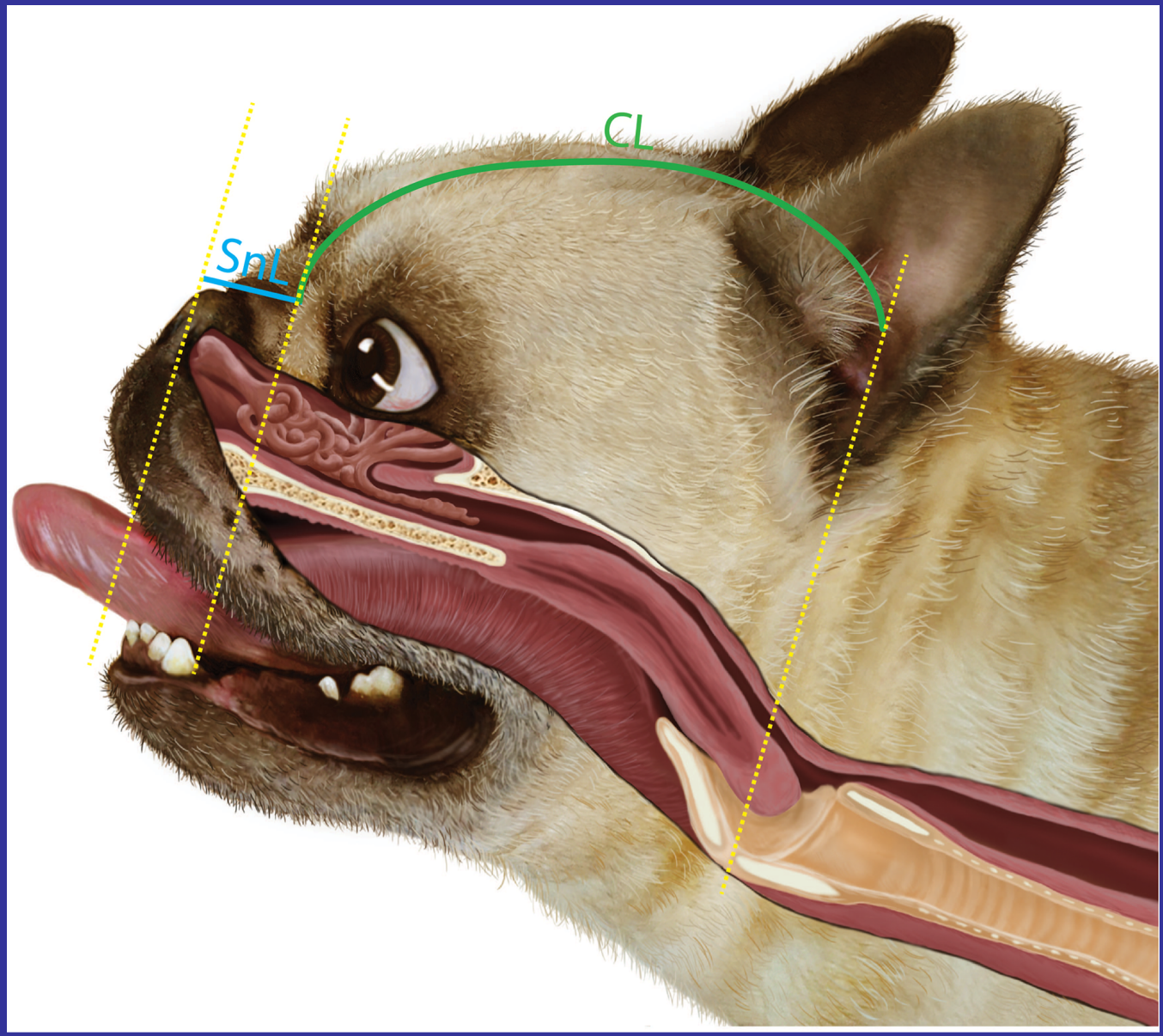
Brachycephalic Syndrome in the French Bulldog

- Disorder of respiratory difficulty due to anatomical restriction of air movement
- Clinical signs get worse as dog ages
- Syndrome based on several components
  - Stenotic Nares
  - Elongated Soft Palate
  - Hypoplastic Trachea
  - Everted Laryngeal Saccules

Stenotic Nares



Elongated Soft Palate



Hypoplastic Trachea

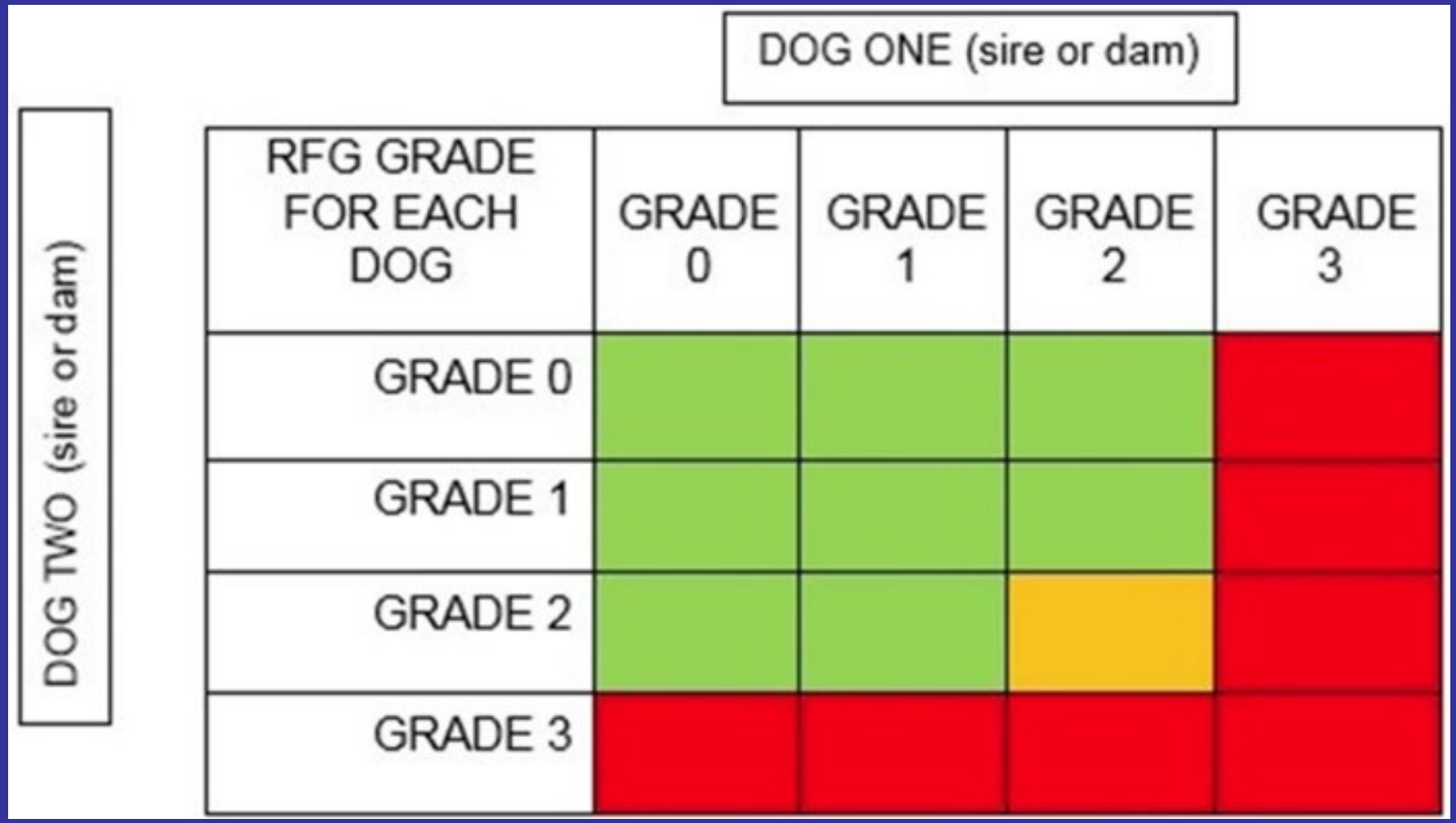
Respiratory Functional Grading to Screen for BOAS

- Developed in many countries – most commonly used is the UK Kennel Club/Cambridge Univ.
  - A veterinary examiner listens to the dog with a stethoscope (pre-exercise)
  - The dog goes on a brisk 3 minute walk
  - The veterinary examiner listens to the dog again with a stethoscope (post-exercise)
- Listening for excessive turbulence in the respiratory system, as well as rapid recovery from exercise

Respiratory Functional Grading to Screen for BOAS

- Dogs are graded according to the following system:
  - Grade 0 – Normal: no turbulence pre or post exercise
  - Grade 1 – Mildly affected: Mild turbulence post-exercise
  - Grade II – Moderately affected: Normal to moderate turbulence pre-exercise and moderate to severe turbulence post-exercise
  - Grade III – Severely affected: Moderate to severe turbulence pre-exercise and severe turbulence post-exercise

Breeding Advice Based on RFG Screening



Respiratory Functional Grading to Screen for BOAS

FRENCH BULLDOG KENNEL CLUB

RFG SCREENING (828 Dogs)

Grade 0	46%
Grade 1	41%
Grade 2	12%
Grade 3	2%

Respiratory Functional Grading (RFG) to Screen for BOAS

- OFA is instituting RFG screening at the request of the FBDCA, BCA, and PDCA
- Official rollout is at the Rose City Classic dog show cluster in Portland, OR on January 19-23, 2023
- If your club wishes to schedule a RFG screening clinic, contact the OFA
- If you do not have access to RFG screening, your dogs should be able to go on a brisk 3 minute walk in normal temperature without labored breathing

EYE CERTIFICATION REGISTRY (ECR)

OFA – THE CANINE HEALTH INFORMATION CENTER • SINCE 1966 •

Ocular Disorders in the French Bulldog
(Based on ACVO Examination of 2,322 dogs examined betwee 2016-2020)

DISORDER	% (# of dogs)
Normal	75.3% (1,748)
Distichiasis	5.6% (131)
Other, significance unknown	4.5% (104)
Persistent Pupillary Membrane (Iris to Iris)	2.8% (65)
Cataract, Significant	2.7% (62) *
Imperforate lower nasolacrimal punctum	2.1% (49)
Retinal Dysplasia, Folds	1.9% (44)
Persistent Pupillary Membrane (Endothelial opacity)	1.8% (41) *
Cataract, Significance Unknown	1.8% (41) *
Persistent Pupillary Membrane (Iris to Cornea)	1.0% (22)
Entropion	1.0% (23)

* ACVO does not recommend breeding any French Bulldog with a cataract or PPM iris to lens or corneal or endothelial opacity

Juvenile Hereditary Cataract in the French Bulldog

- Autosomal recessive inheritance
- Bilateral nuclear and cortical cataracts
- Average age of onset around 3 months of age
- Identified in 2.46% of French Bulldogs CERF examined between 2000-2005
- A posterior polar cataract also occurs in the French Bulldog breed
- I.e., at least two inherited cataract conditions in the breed

Juvenile Hereditary Cataract (JHC/HSF4)

GENETIC TESTING RESULTS

- VetGen (982 dogs)
- 82.5% Normal 17.1% Carrier 0.4% Affected
- Embark (> 24,000 dogs)
- 99.1% Normal 0.9% Carrier 0% Affected
- NeoGen/Paw Print Genetics (> 2,000 dogs)

  98.0% Normal 2.0% Carrier 0% Affected
- Animal Genetics (> 50,000 dogs)

  94.0% Normal 5.5% Carrier 0.5% Affected
- OFA (911 dogs submitted)

  98.4% Normal 1.6% Carrier 0% Affected

Multifocal Retinopathy 1 (CMR1)

GENETIC TESTING RESULTS

- Mars (> 13,000 dogs)
- 89.6% Normal 10.1% Carrier 0.4% Affected
- Embark (> 24,000 dogs)
- 91.5% Normal 8.2% Carrier 0.3% Affected
- NeoGen/Paw Print Genetics (> 2,000 dogs)

  91.1% Normal 8.6% Carrier 0.4% Affected
- OFA (592 dogs submitted)

  93.2% Normal 6.4% Carrier 0.3% Affected

Canine Hip Dysplasia

OFA Hip Statistics for the French Bulldog

Rank 23/204 (3,314 radiographs)

65.6% Normal

- 2.9% Excellent (15.7% for all breeds)
- 39.4% Good
- 23.3% Fair

32.6% Dysplastic (11.4% for all breeds)

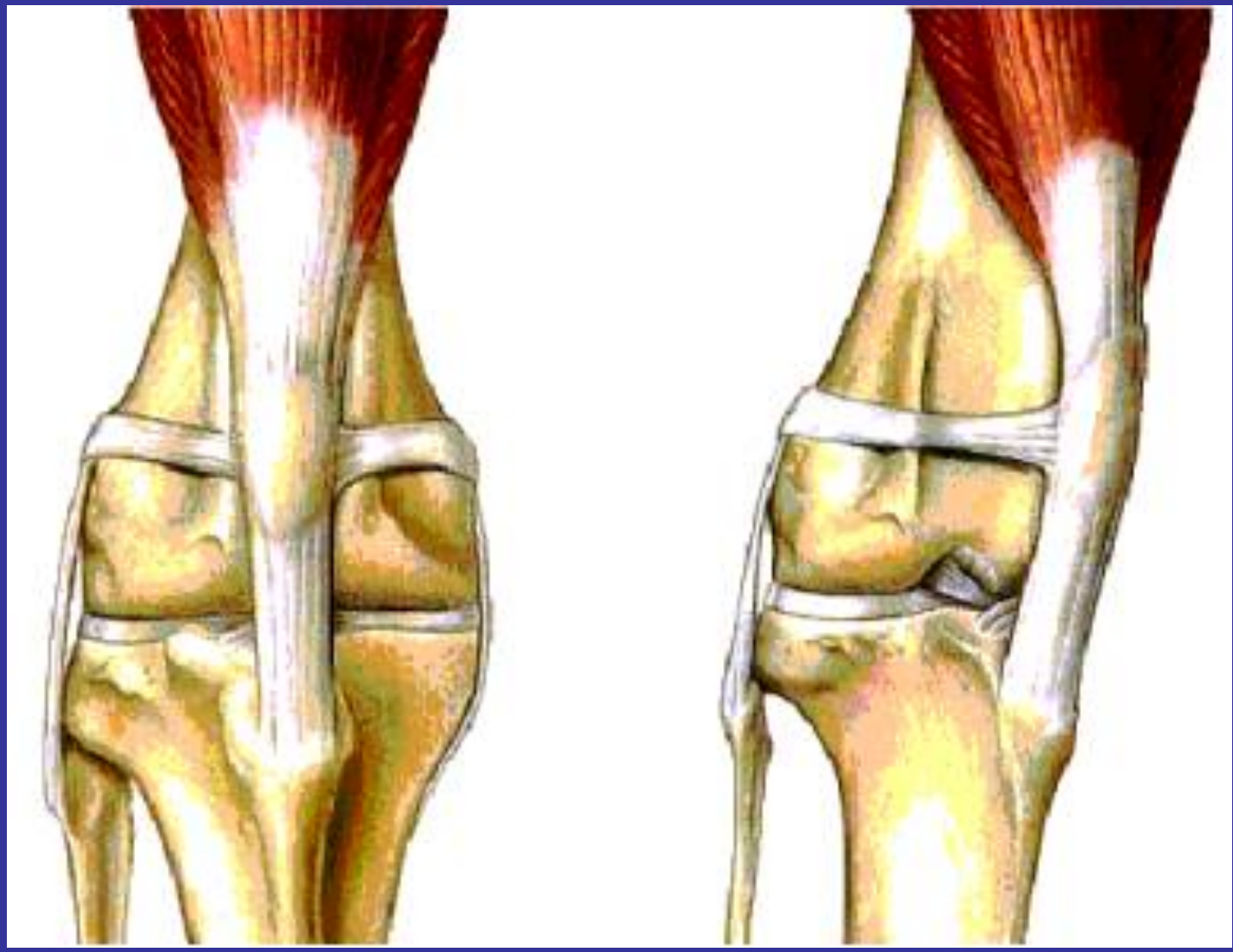
- 21.7% Mildly Dysplastic
- 8.8% Moderately Dysplastic
- 2.1% Severely Dysplastic

OFA Hip Statistics for the French Bulldog

Trends:

Range	# submitted	Excellent	Dysplastic
‘91-’95	15	0%	37.9%
’96-’00	108	1.3%	33.5%
‘01-’05	256	1.0%	35.6%
‘06-’10	449	2.6%	24.3%
’11-’15	631	3.0%	30.4%
’16-’20	1,170	3.8%	36.5%
2021	465	2.0%	38.3%

Patella Luxation



OFA Patella Statistics for the French Bulldog

Rank #24/150 (5,823 evaluations)

94.2% Normal

5.8% dysplastic:

4.3% Grade I (251 dogs)

1.2% Grade II (69 dogs)

0.3% Grade III (17 dogs)

Elbow Dysplasia

OFA Elbow Statistics for the French Bulldog

Rank #58/153 (1,155 evaluations)

91.8% Normal

7.2% dysplastic:

5.5% Grade I (63 dogs)

1.5% Grade II (17 dogs)

0.3% Grade III (3 dogs)

Hypothyroidism in the French Bulldog

- Diagnosis of autoimmune thyroiditis
  - not just thyroid responsive conditions
- **Dogs with measurable antibodies are affected**
- 1.1% of 357 French Bulldogs tested by Michigan State University are positive for TgAA. Average for all breeds = 7.5%
- 1.1% test equivocal

OFA Thyroid Statistics for the French Bulldog

Rank #111/119 (550 evaluations)

95.8% Normal (527 dogs)

0.5% Affected (3 dogs)

3.6% Equivocal (20 dogs)

Chondrodystrophy/IVDD risk (CDDY)

GENETIC TESTING RESULTS

- Mars (> 13,000 dogs)
- 2.0% Normal 20.1% Carrier 78.0% “at risk”
- Embark (> 24,000 dogs)
- 3% Normal 29% Carrier 68% “at risk”
- NeoGen/Paw Print Genetics (> 2,000 dogs)

  1.6% Normal 22.9% Carrier 75.5% “at risk”
- OFA (142 dogs submitted)

  3.5% Normal 37.3% Carrier 59.2% “at risk”

Hyperuricosuria (HUU)

GENETIC TESTING RESULTS

- Mars (> 13,000 dogs)
- 99.6% Normal 0.4% Carrier 0% Affected
- Embark (> 24,000 dogs)
- 99.8% Normal 0.2% Carrier 0% Affected
- NeoGen/Paw Print Genetics (> 2,000 dogs)

  99.6% Normal 0.5% Carrier 0% Affected
- OFA (611 dogs submitted)

  100% Normal 0% Carrier 0% Affected

Cystinuria – sex-related (Type 3)

- Causes cystine bladder stones in affected males
- Females will not become affected regardless of their genotype
- Homozygous males are at highest risk of forming stones and neutering should be considered (androgen responsive)
- Carrier males can rarely also form stones
- The percentage of “at risk” French Bulldogs forming stones is undetermined because not enough stone formers have had their stones analyzed

Cystinuria – sex-related (Type 3)

GENETIC TESTING RESULTS

- PennGen (>2,100 dogs submitted)

  41.6% Normal 47.7% Carrier 10.8% “at risk”
- NeoGen/Paw Print Genetics (> 1,300 dogs)

  v2: 58.4% Normal 36.4% Carrier 5.3% “at risk”

  v3: 98.4% Normal 1.6% Carrier 0% “at risk”
- OFA (326 dogs submitted)

  75.2% Normal 22.4% Carrier 2.5% “at risk”

Progressive Retinal Atropy CRD4/cord1

GENETIC TESTING RESULTS

- NeoGen/Paw[illegible]rint Gene[illegible]s (>2,000 tested)

79.4% Normal 18.[illegible] Carrier 1.9% "at risk"

- Embark (>24,000 [illegible]d)

85.2% Normal [illegible]% Ca[illegible]r 0.7% "at risk"

- OFA (57 dogs submitted)

87.7% Normal 12.3% Carrier 0% "at risk"

This genetic disease only occurs clinically in Miniature Longhaired Dachshunds and English Springer Spaniels

Degenerative Myelopathy

- Disorder of neurological degeneration of the spinal cord in older dogs (ave. 9 years)
- Causes weakness and sinking of hind legs
- Not a painful condition
- No effective treatment is available

Degenerative Myelopathy

- Clinical DM is a breed-related disease in German Shepherd Dogs and Boxers
- It is occasionally diagnosed in Pembroke Welsh Corgis, Rhodesian Ridgebacks, Chesapeake Bay Retrievers, Bernese Mountain Dogs, Cardigan Welsh Corgis, and Borzoi
- It is rarely diagnosed in any other breed or mixed-breed dog, including French Bulldogs

Degenerative Myelopathy SOD1 Testing

- A mutation in the SOD1 gene was identified at the University of Missouri that is homozygous (two copies) in all confirmed DM affected dogs
- The SOD1 variant is the most frequent variant found in genetic testing of all dogs
- The frequency of the SOD1 variant is over 20-90% in more than 30 breeds, though no dogs in the majority of these breeds have ever been confirmed with DM

Degenerative Myelopathy

GENETIC TESTING RESULTS

- OFA/UMo (763 dogs tested)

75.9% Normal 20.3% Carrier 3.8% “At Risk”

- Mars (> 13,0 dogs)

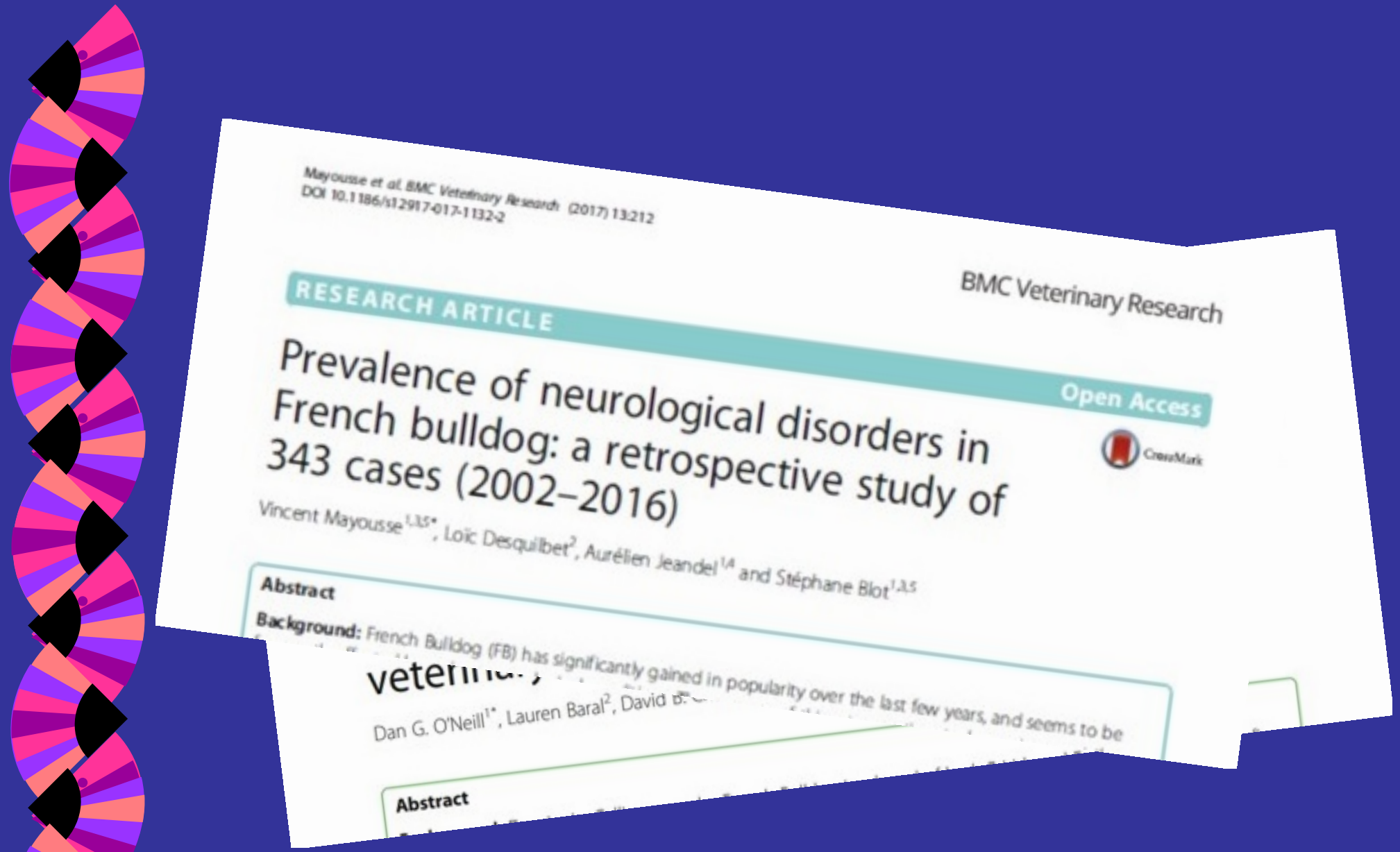
64.7% Normal 31.5 rrier 3.8% “At Risk”

- Embark (>24,00 dog

68.6% Normal 8.2% Ca 3.2% “At Risk”

- NeoGen/Paw Print Genetics (> 2000 dogs)

65.7% Normal 31.8% Carrier 2.5% “At Risk”



Mayousse et al. BMC Veterinary Research (2017) 13:212
DOI 10.1186/s12917-017-1132-2

BMC Veterinary Research

RESEARCH ARTICLE

Open Access

Prevalence of neurological disorders in French bulldog: a retrospective study of 343 cases (2002–2016)

Vincent Mayousse[1,3,5*], Loic Desquilbet[2], Aurélien Jeandel[1,4] and Stéphane Blot[1,3,5]

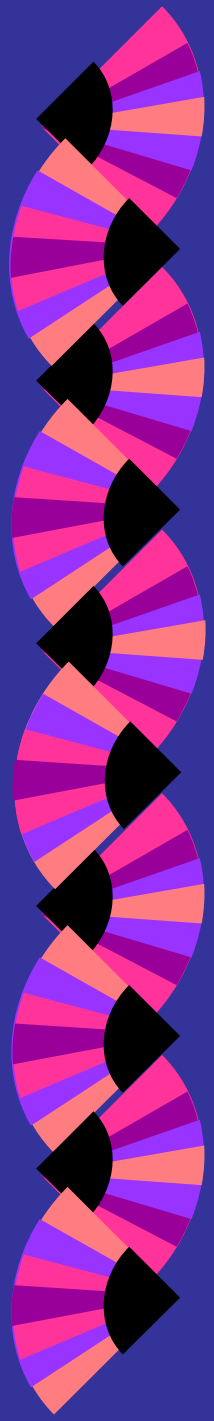
Abstract

Background: French Bulldog (FB) has significantly gained in popularity over the last few years, and seems to be

veteri

Dan G. O'Neill[1*], Lauren Baral[2], David B.

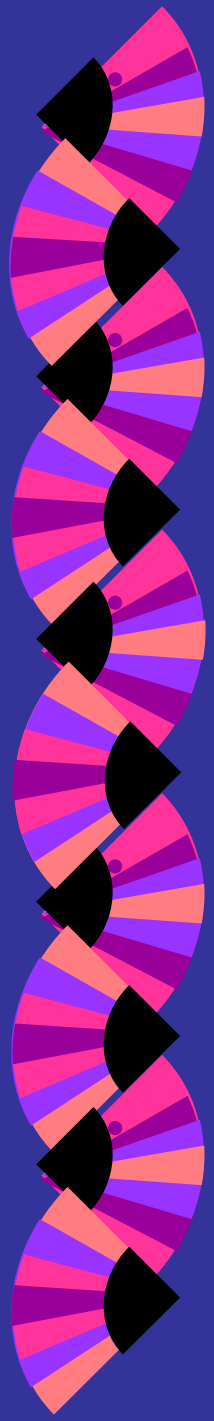
Abstract



Responsibility

Duty, Obligation, Burden

What is the obligation for breeders to do genetic testing?

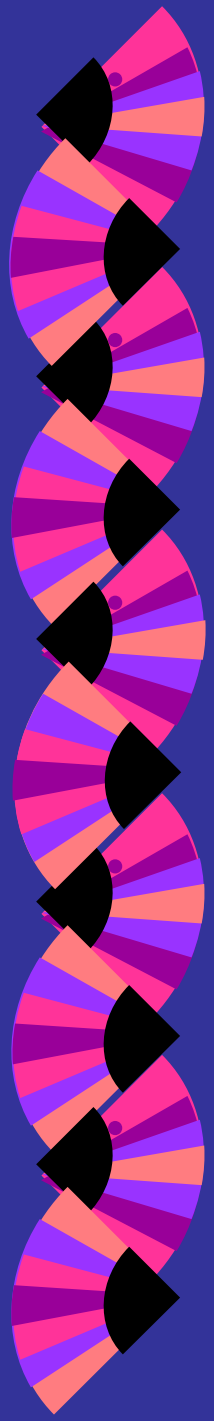


Breeders are the custodians of their breeds, and their gene pool.

- Above all, do no harm.
- Breeders must be counseled to use genetic tests for the best interests of their breed.

What is the Expectation of the General Public?

That Quality Control for Genetic Disease Is Being Done



It is the ethical responsibility and obligation of all breeders to perform the available required pre-breeding genetic health tests on prospective breeding stock prior to any breeding

Health Tested Parents For Healthier Puppies

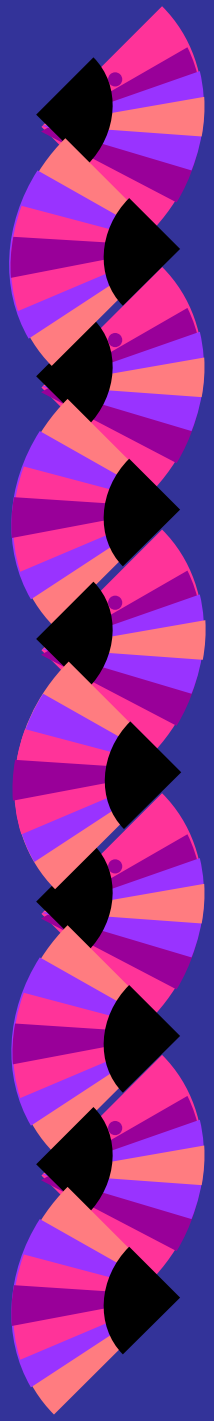
THE CANINE HEALTH INFORMATION CENTER

All genetic disease cannot be prevented. However, we have the knowledge and the tools to improve the genetic health of puppies

Who is a Reputable Breeder?

One That Does Genetic Screening

If not: Find a different hobby or profession



Many health tests can be performed during an examination with your veterinarian, or obtained inexpensively at local health screening clinics

UPCOMING HEALTH SCREENING CLINICS

Have a health clinic you would like to list on the OFA Health Clinic Calendar? Fill out the Clinic Submission form and submit. This service is free. Clinics are also advertised monthly in *Dog News magazine*.

OFA Clinics Month

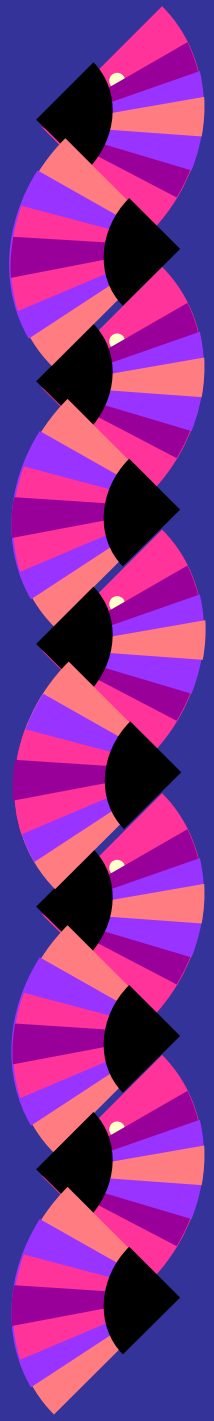
Today | February 2013 | Print | Week | **Month** | Agenda

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	31	Feb 1	2
Waterloo, Ontario, CAN						
Norwalk, CT						
Scottsdale, AZ						
3	4	5	6	7	8	9
Blairstown, NJ						Philomath, OR
10	11	12	13	14	15	16
Indiannapolis, IN					Denver, CO	
Whitmore Lake, MI						East Aurora, NY
						Houston, TX
						Newark, DE
17	18	19	20	21	22	23
Denver, CO					Albany, OR	
East Aurora, NY						Fillmore, CA
Chesterfield, MO						
Hillsboro, NJ						
24	25	26	27	28	Mar 1	2
Albany, OR					Colorado Springs, CO	
						Bowie, MD
						Ft Collins, CO
						Atlanta, GA
						Ft Collins, CO

Events shown in time zone: Central Time

Google Calendar

www.offa.org/clinics.html



CavalierHEALTH.org

SERVING THE CAVALIER KING CHARLES SPANIEL

INSIDE TOPICS

Breeders
Questions For Breeders
Breeders' Excuses
Books
Diets
Health Clinics
Overview
Rescue

[illegible]
SM MRI Screening
Stenotic Nares
Syncope
Syringomyelia
Syringohydromyelia (SHM)
Syrinx
Thrombocytopenia
Thyroid Disorders
Thyroiditis
Vision Disorders

Dog/Canine Health Test Clinic Schedule

in the United States and Canada

Updated February 16, 2013 −328 Clinics Listed!

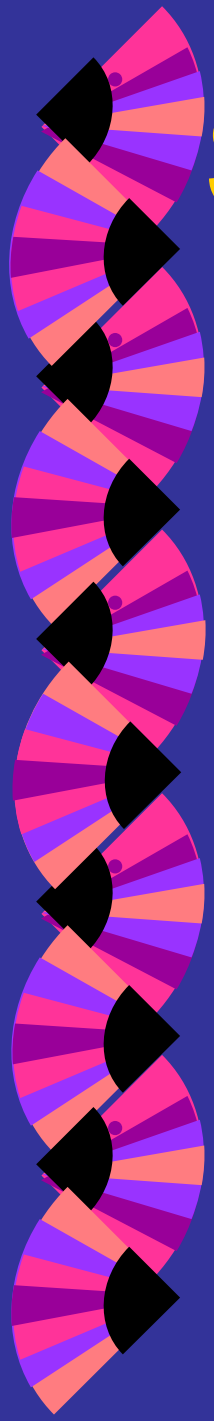
Table 1: State/Province, City, and Date (Latest Update in RED)

Symbols for tests:
Heart (Cardiac) ♥; Eyes 👁; Hearing 🦻; Blood/Swabs 🩸; X-rays ✕; Other tests +; Microchip 🖫

STATE/ PROV	CITY	DATE	TESTS
AB	Calgary	5/4-5/13	♥👁
"	"	8/2-4/13	♥
"	Edmonton	3/2-3/13	👁
"	"	3/16-17/13	👁
"	"	3/17/13	♥
AZ	Avondale	Monthly	👁
"	Fort McDowell*	4/10/13	♥👁🩸
"	"	4/13/13	♥
"	Mesa*	1/18/14	♥👁
"	Gilbert	Monthly	👁
"	"	Monthly	👁
"	Scottsdale	3/1-3/13	♥✕+🩸🖫
"	"	3/2/13	♥
"	"	3/2/13	👁
"	"	Monthly	👁
"	Tucson	Monthly	👁
BC	Nanaimo	4/28/13	👁
"	Surrey	4/6/13	♥👁
CA	Cerritos	9/21-22/13	♥✕+🩸🖫
"	Dixon	8/3-4/13	♥✕+🩸🖫

www.cavalierhealth.org/health_clinics.htm

Managing Genetic Disease



See the article in the handout

- Dominant Diseases
- X-Linked Diseases

Managing Recessive Genes

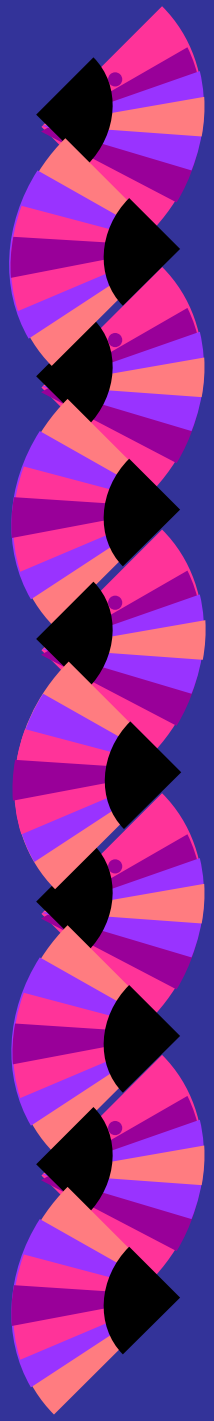
- Ex) storage diseases, Von Willibrand's disease, Cranomandibular Osteopathy (CMO), CMR.

With tests for carriers:

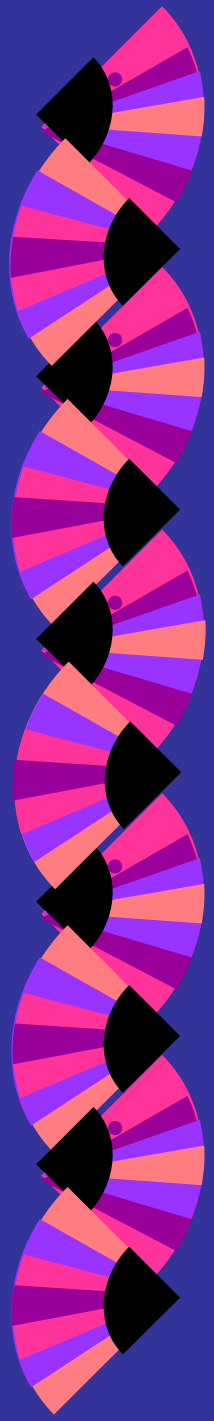
- Breed carriers to genetically normal mates.
- Replace carrier parents with genetically normal offspring.
- Select against carriers for breeding.

The Proper Use of Genetic Tests

- Without genetic tests, the effect of selection on the gene pool is minimal.
- With genetic tests, if everyone decides not to breed carriers, it can have a significant limiting effect on the gene pool.



If a breeder was planning on breeding an animal prior to receiving carrier test results, the PROPER RESPONSE is to breed to a normal individual, and eventually replace the parent with a quality normal offspring.



For RECESSIVE diseases

A DIRECT GENETIC TEST

should not alter

WHO gets bred, only

WHO THEY GET BRED TO.

Genetic Registries

ORTHOPEDIC

Over 40 yea

OFA – THE CANINE HEALTH INFORMATION CENTER

OFA

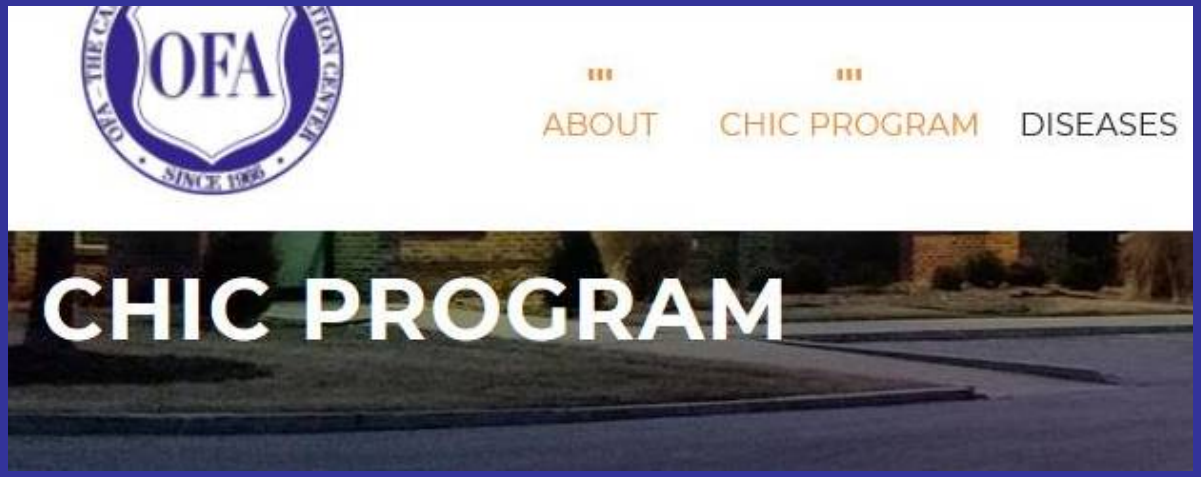
SINCE 1966

www.ofa.org

Advancing the health of all breeds through DNA collection for research.

Banking On Your Future

There are currently 208 French Bulldog DNA samples in the CHIC DNA Repository (59 Blood, 149 Swabs)



OFA – The Canine Health Information Center

The Standard of Care in Health Conscious Breeding

CANINE HEALTH INFORMATION CENTER

- Open health database for breeds.
- Included disorders and means of diagnoses are determined by each national breed club.
- Animals can receive CHIC certification based on completing the required genetic testing, REGARDLESS of normal or abnormal outcomes.
- As more testable disorders emerge, every individual is likely to carry some deleterious genes.

CANINE HEALTH
INFORMATION CENTER

Not about health normalcy

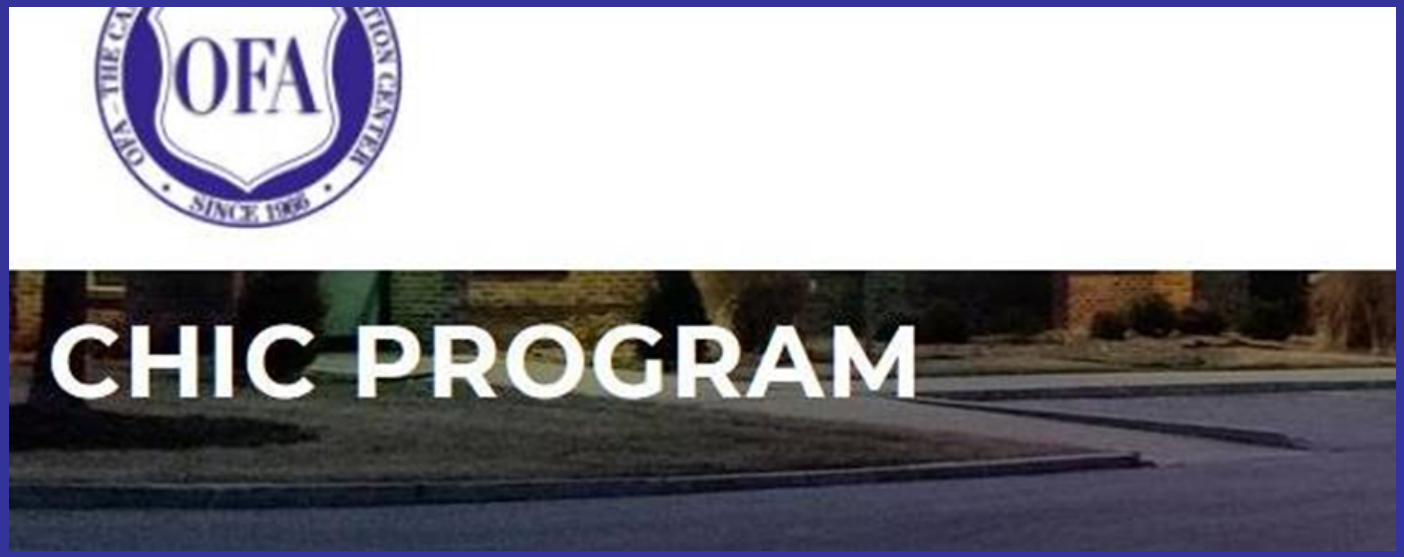
About health consciousness

FRENCH BULLDOG CHIC

Health Screenings | Testing Statistics | Download Reports | Health Survey | Print Page | Club Web Page

Recommended Tests/CHIC Program Requirements

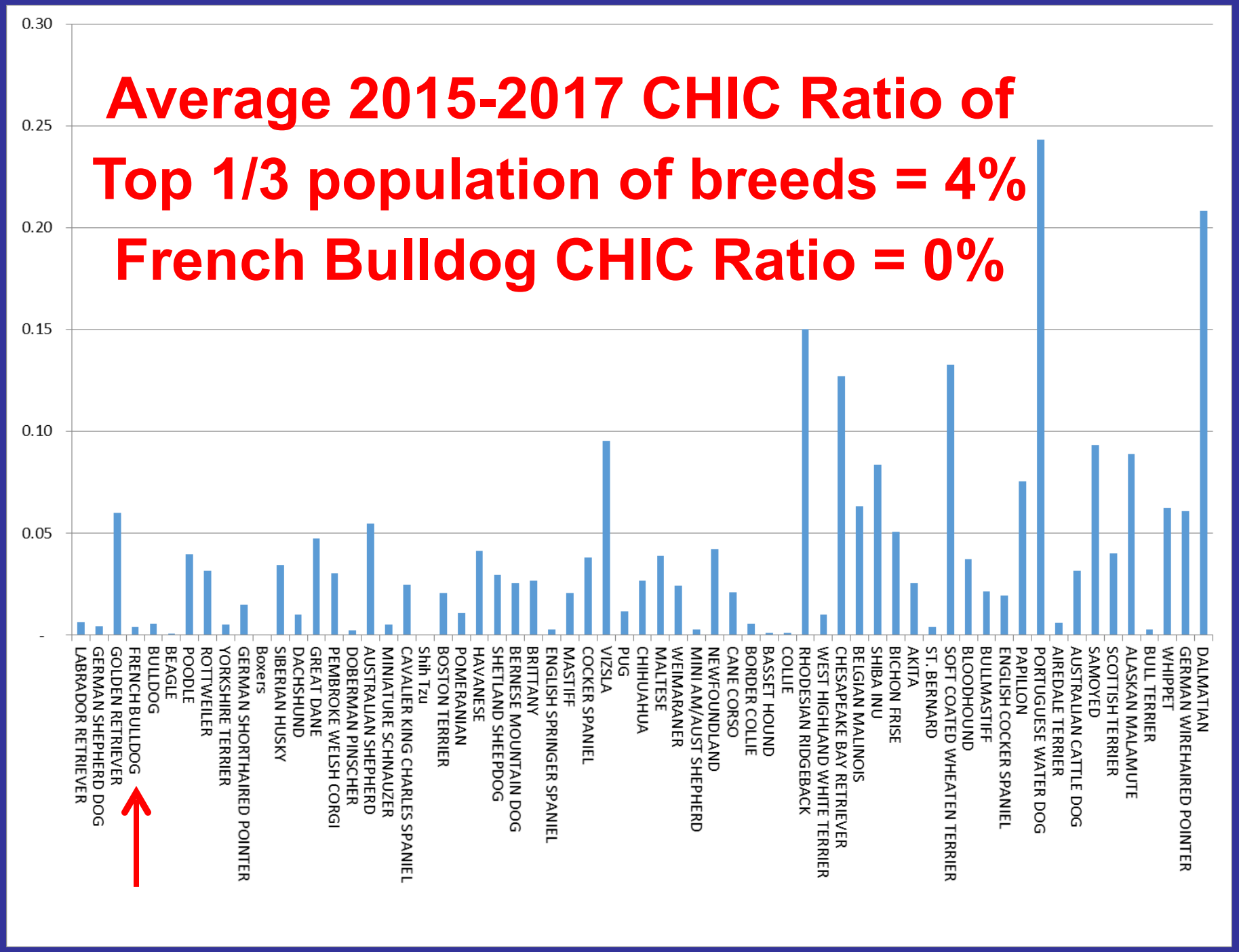
Screening	Testing options
Hip Dysplasia	*One of the following:* OFA Evaluation PennHIP Evaluation
ACVO Eye Exam	Annual Eye Examinations. Results registered with OFA
Patellar Luxation	OFA Evaluation
Cardiac Evaluation	*One of the following:* Congenital Cardiac Exam - Echocardiagrams recommended but not required Advanced Cardiac Exam - Echocardiograms recommended but not required Basic Cardiac Exam - Echocardiagrams recommended but not required
Autoimmune Thyroiditis	*(Optional but recommended)* OFA evaluation from an approved laboratory
Elbow Dysplasia	*(Optional but recommended)* OFA evaluation
Tracheal Hypoplasia	*(Optional but recommended)* OFA radiographic evaluation for Tracheal Hypoplasia.



1,044 French Bulldogs have achieved CHIC certification

CHIC Breed Ratio 2015-2017

(#CHIC/#Bred)=0.0%


Average 2015-2017 CHIC Ratio of
Top 1/3 population of breeds = 4%
French Bulldog CHIC Ratio = 0%
0.30
0.25
0.20
0.15
0.10
0.05
-
LABRADOR RETRIEVER
GERMAN SHEPHERD DOG
GOLDEN RETRIEVER
FRENCH BULLDOG
BULLDOG
BEAGLE
POODLE
ROTTWEILER
YORKSHIRE TERRIER
GERMAN SHORTHAIRED POINTER
Boxers
SIBERIAN HUSKY
DACHSHUND
GREAT DANE
PEMBROKE WELSH CORGI
DOBERMAN PINSCHER
AUSTRALIAN SHEPHERD
MINIATURE SCHNAUZER
CAVALIER KING CHARLES SPANIEL
Shih Tzu
BOSTON TERRIER
POMERANIAN
HAVANESE
SHETLAND SHEEPDOG
BERNESE MOUNTAIN DOG
BRITTANY
ENGLISH SPRINGER SPANIEL
MASTIFF
COCKER SPANIEL
VIZSLA
PUG
CHIHUAHUA
MALTESE
WEIMARANER
MINI AM/AUST SHEPHERD
NEWFOUNDLAND
CANE CORSO
BORDER COLLIE
BASSET HOUND
COLLIE
RHODESIAN RIDGEBACK
WEST HIGHLAND WHITE TERRIER
CHESAPEAKE BAY RETRIEVER
BELGIAN MALINOIS
SHIBA INU
BICHON FRISE
AKITA
ST. BERNARD
SOFT COATED WHEATEN TERRIER
BLOODHOUND
BULLMASTIFF
ENGLISH COCKER SPANIEL
PAPILLON
PORTUGUESE WATER DOG
AIREDALE TERRIER
AUSTRALIAN CATTLE DOG
SAMOYED
SCOTTISH TERRIER
ALASKAN MALAMUTE
BULL TERRIER
WHIPPET
GERMAN WIREHAIRED POINTER
DALMATIAN

BRED with H.E.A.R.T.

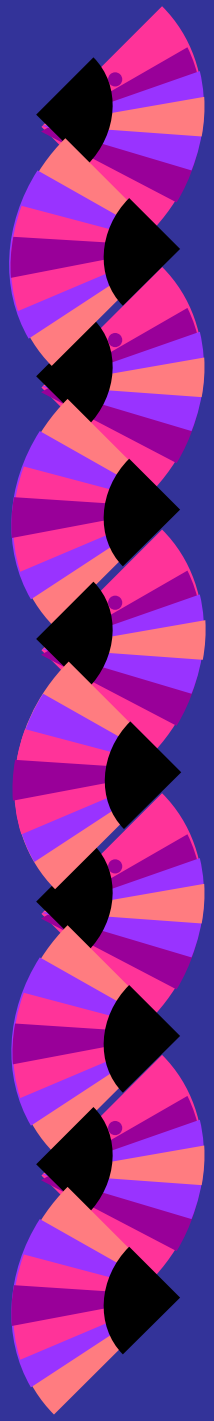
Health, Education, Accountability, Responsibility, and Tradition®

An AMERICAN KENNEL CLUB® Program

French Bulldog

Recommended Health Tests from the National Breed Club:

- Hip Evaluation
- Patella Evaluation
- Ophthalmologist Evaluation
- Cardiac Exam



Order DNA Tests | Pay My Bill | Log In to OFA Online | Search OFA Health-Tested Dog

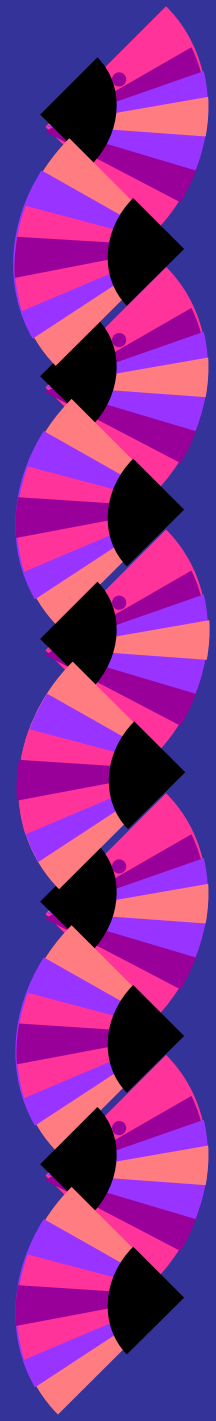
ABOUT | CHIC PROGRAM | DISEASES | BROWSE BY BREED | APPLICATIONS | HEALTH CLINICS

esting Vertical pedigrees | Combined Health pedigree | Add photo of your dog | Replace Certificates | Printer Friendly | Download | Copy to clipboard

Make this favorite on device | Breed Health Screenings | Exit Page

Registry	Test Date	Report Date	Age (m)	Conclusion	OFA Number
CATARACTS	May 14 2010	Oct 16 2014	4	CLEAR	FBU-CAT212/4F-VPI
CONGENITAL CARDIAC	Dec 27 2010	Jan 5 2011	12	NORMAL	FBU-CA897/12F/P-VPI
DEGENERATIVE MYELOPATHY	Mar 7 2011	Mar 31 2011	15	NORMAL	FBU-DM10/15F-VPI
HIPS	Dec 16 2011	Jan 10 2012	24	EXCELLENT	FBU-632E24F-VPI
CANINE HEALTH	Jan 20 2012	Jan 14 2016		CHIC	78254
*CERF **	*Mar 13 2012*	*Mar 16 2012*	*27*	*NORMAL*	*FBU-1155*
CONGENITAL CARDIAC	Dec 4 2012	Dec 13 2012	35	NORMAL	FBU-CA897/35F/P-VPI
THYROID	Mar 13 2013	Apr 2 2013	38	NORMAL	FBU-TH159/38F-VPI
*EYES **	*Mar 21 2013*	*Mar 27 2013*	*39*	*NORMAL*	*FBU-EYE52/39F-VPI*
CONGENITAL CARDIAC	Feb 25 2015	Mar 5 2015	62	NORMAL	FBU-CA897/62F/P-VPI
CYSTINURIA	Oct 1 2015	Jan 14 2016	69	CLEAR 3	FBU-CY3/69F-PI
PATELLA	Dec 30 2015	Jan 7 2016	72	NORMAL	FBU-PA962/72F/P-PI
CONGENITAL CARDIAC	Dec 30 2015	Jan 7 2016	72	NORMAL	FBU-CA897/72F/P-PI

* Eye Certification is valid for one year from the date of the exam.



Results

Parents (click name to view info)	Sex	Relation	Registration	Birthdate	HIPS	ELBOWS	CAT	CERF	CARDIAC	CY	DM
SHADY HARBOR'S CAPO DEI CAPI	M	Sire	NP13239901	Apr 18 2006			FBU-CAT48/55M-NOPI		FBU-CA929/58M/P-NOPI		
IMPERIALE BELLA RIDGE'S KISS ME KATE	F	Dam	NP14783404/1099644	Aug 22 2006			FBU-CAT193/44F-VPI	FBU-830	FBU-CA423/12F/P-VPI FBU-CA423/30F/P-VPI FBU-CA423/44F/P-VPI FBU-CA945/55F/P-VPI FBU-CA423/78F/P-VPI FBU-CA423/102F/P-VPI FBU-CA423/112F/P-VPI	FBU-CY2/109F-PI-CAR	FBU-DM16/

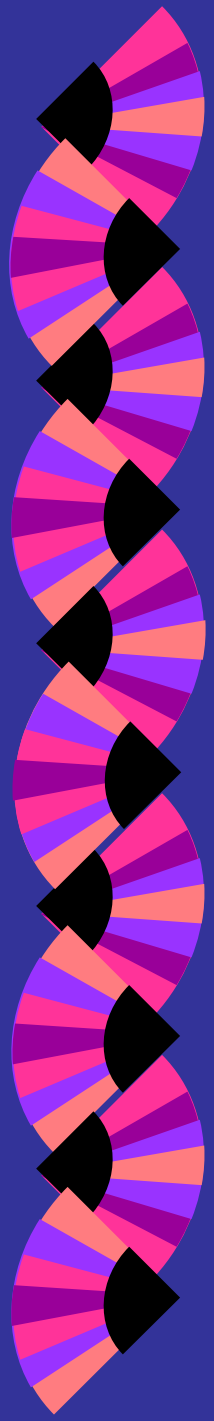
Grand Parents (click name to view info)	Sex	Relation	Registration	Birthdate	HIPS	ELBOWS	CAT	CERF	CARDIAC	CY	DM
FABELHAFT TOO HOT TO HANDLE	M	Mat GS	NP06803201/1109809	Mar 12 2004	FBU-512G75M-VPI		FBU-CAT190/74M-VPI	FBU-647	FBU-CA273/18M/C-VPI FBU-CA273/41M/P-VPI FBU-CA273/59M/P-VPI FBU-CA273/73M/P-VPI FBU-CA273/84M/P-VPI		FBU-DM15/

Offspring (click name to view info)	Sex	Relation	Registration	Birthdate	HIPS	ELBOWS	CAT	CERF	CARDIAC	CY	DM
BELLA RIDGE IMPERIALE SHADY HARBOR'S FRANK JR	M	Offspring	NP32494206	May 31 2012				FBU-375254		FBU-CY5/41M-PI-CAR	
BELLA RIDGE IMPERIALE SHADY HARBOR'S JULIE	F	Offspring	NP32494204	May 31 2012				FBU-375252			
BELLA RIDGE IMPERIALE SHADY HARBOR'S QUIN	M	Offspring	NP32494207	May 31 2012				FBU-375255			
BELLA RIDGE IMPERIALE SHADY HARBOR'S TOUCHE CRICKET	F	Offspring	NP32494201	May 31 2012	FBU-920F31F-VPI			FBU-375253	FBU-CA1627/31F/P-VPI	FBU-CY6/40F-PI-CAR	
BELLA RIDGE IMPERIALE SHADY HARBOR'S FIRE FLY	F	Offspring	NP37282401/1127060	Apr 1 2014	FBU-1056G27F-PI				FBU-CA1685/12F/P-VPI	FBU-CY7/18F-PI-CAR	
BELLA RIDGE IMPERIALE SHADY HARBOR'S FIRE STORM	M	Offspring	NP37282403	Apr 1 2014							
BELLA RIDGE IMPERIALE SHADY HARBOR'S FIREBALL	M	Offspring	NP37282402	Apr 1 2014							

Full Sibs (click name to view info)	Sex	Relation	Registration	Birthdate	HIPS	ELBOWS	CAT	CERF	CARDIAC	CY	DM
BELLA RIDGE IMPERIALE SHADY HARBOR BACIARE E DIRE	M	Full sib	NP25384004/1110310	Dec 16 2009	FBU-631E24M-VPI		FBU-CAT211/4M-VPI	FBU-1154	FBU-CA896/12M/P-VPI FBU-CA896/39M/P-VPI FBU-CA896/62M/P-VPI		FBU-DM9/15
BELLA RIDGE IMPERIALE SHADY HARBOR'S EL CAPITANO	M	Full sib	NP25384005	Dec 16 2009				FBU-1153			
BELLA RIDGE IMPERIALE SHADYHARBOR MAFIA CAMPCOVO	M	Full sib	NP25384003	Dec 16 2009	FBU-731G37M-VPI		FBU-CAT131/38M-VPI-BP	FBU-373079	FBU-CA1090/25M/P-VPI	FBU-CY9/69M-PI	FBU-DM155
SHADY HARBOR'S PICCIOLO CAPO BELLA RIDGE IMPERIALE	F	Full sib	NP25384002	Dec 16 2009	FBU-744G38F-PI		FBU-CAT49/11F-PI		FBU-CA930/14F/P-PI		
BELLA RIDGE SHADY HARBOR IMPERIALE'S ADELE	F	Full sib	NP31033603	Dec 19 2011				FBU-366965			
BELLA RIDGE SHADY HARBOR IMPERIALE'S ALEXA	F	Full sib	NP31033602	Dec 19 2011				FBU-366967			
BELLA RIDGE SHADY HARBOR IMPERIALE'S SOPHIA	F	Full sib	NP31033601/1118594	Dec 19 2011				FBU-366966	FBU-CA1214/12F/P-VPI FBU-CA1214/24F/P-VPI		

Half Sibs (click name to view info)	Sex	Relation	Registration	Birthdate	HIPS	ELBOWS	CAT	CERF	CARDIAC	CY	DM
KERIC'S ONE TO THE KISSA	M	½ sib (sire)	NP16992611	Jun 30 2007					FBU-CA586/17M/P-VPI		
JUSTUS EVERYBODY KNOWS	F	½ sib (sire)	NP18404503	Sep 20 2007		FBU-EL286F45-VPI					
COLBY'S BY DESIGN	M	½ sib (sire)	NP22697201	Nov 18 2008				FBU-348305			
CRUSADER'S RUMOR HAS IT	F	½ sib (sire)	NP23808702	Jul 1 2009				FBU-381486	FBU-CA1372/50F/C-VPI		
BELLA RIDGE SHADY HARBOR'S YOU'RE BREAKIN MY HEART	F	½ sib (sire)	NP27113501	Jul 4 2010				FBU-349765			
ELLA RIDGE IMPERIALE PREFERE'S ETRE TOUT OUIE	F	½ sib (dam)	NP27768204	Oct 30 2010				FBU-347170			

Start



HIPS

PRAIRIE GEM'S OBSIDIAN DREAM
NP45756501 Individual
GOOD

4 Siblings, Full or Half
1-GOOD
2-FAIR

0 Offspring

TINKERTIME'S CLASSY CHASSIS
NP28104503 Sire
FAIR

6 Siblings, Full or Half
4-GOOD
1-FAIR

4 Offspring
2-GOOD
1-FAIR

PRAIRIE GEM'S HEARTS ON FIRE
NP33598501 Dam
MILD

5 Siblings, Full or Half
3-GOOD
2-FAIR

2 Offspring
1-FAIR
1-GOOD

TINKERTIME'S FROGGIE DUNKIN
NP06838601 Pat. GS
FAIR

1 Siblings, Full or Half
1-FAIR

7 Offspring
4-GOOD
2-FAIR

MATISSE FREEDOM ROSE
NP17243503 Pat. GD
FAIR

1 Siblings, Full or Half
1-FAIR

5 Offspring
3-GOOD
2-FAIR

O'SNX'S SHADYHARBOR CHAMPAGNE DIAMONDAT PRAIRIEGEM
NP30749203 Mat. GS
GOOD

2 Siblings, Full or Half
2-FAIR

1 Offspring
1-MILD

O'S N X'S DIAMOND IN THE RUFF OF PRAIRIE GEM
NP27299001 Mat. GD
(untested)

1 Siblings, Full or Half
1-GOOD

2 Offspring
1-MILD

Signature of owner or authorized representative_____

Authorization to Release Abnormal Results

*I hereby authorize the OFA to release the results of its evaluation of the animal described on this application to the public if the results are abnormal*_____ *(initials of registered owner or authorized representative).*

Veterinary Information

This animal was restrained using: ❑ Physical restraint only ❑ Chemical restraint

❑ **I DID** verify the microchip/tattoo information on this dog ❑ **I DID NOT** verify the microchip/tattoo information on this dog

Only dogs with Verified Permanent Identification (VPI) will have their results transmitted to the AKC for inclusion in their registration and pedigree documents

Veterinarian Signature_____

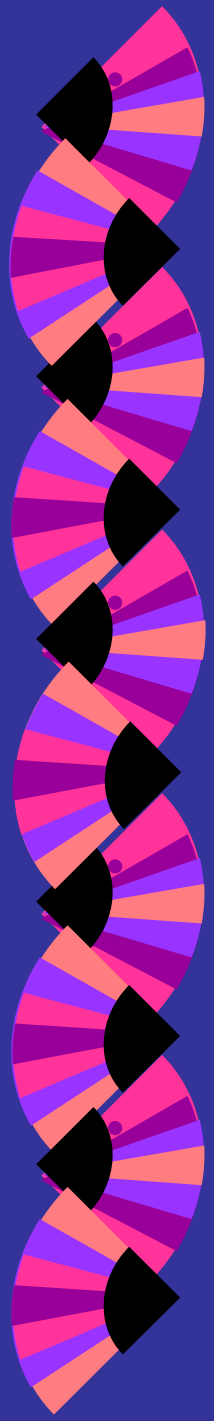
French Bulldog OFA Hip Open Health Reporting

Year	% Open
2001	13.0%
2002	16.0%
2003	8.0%
2004	20.0%
2005	13.0%
2006	16.0%
2007	13.0%
2008	20.0%
2009	19.0%
2010	21.0%
2011	25.0%
2012	30.0%
2013	24.0%
2014	16.0%
2015	27.0%
2016	21.0%
2017	14.0%
2018	15.0%
2019	16.0%
2020	21.0%
2021	16.0%

Ave. for all breeds =23%

"As long as we keep problems 'secret' we will not be ab
to deal with them."

Breeders need to be informed about the problems occurring in the offspring they produce



The days of stigmatizing conscientious, health-testing breeders who have produced dogs affected or carrying hereditary disease are over

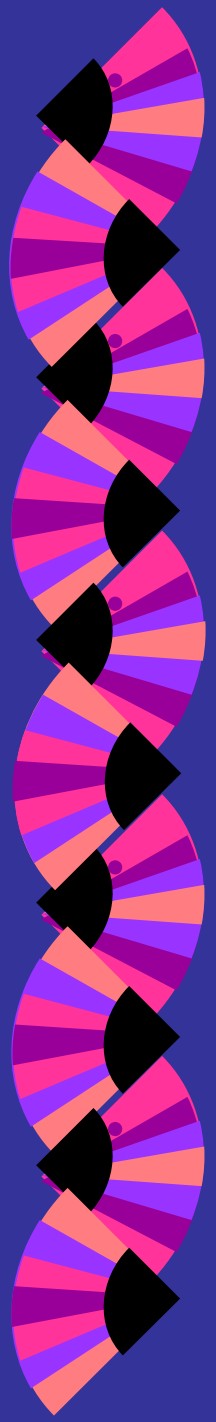
Using Genetic Tests

Direct Gene Test

- Test of the genotype
- Only need to know results of the breeding stock to make breeding decisions

Phenotypic Tests, Linkage tests, or No test for carriers

- Knowledge of the test results and carrier or affected status of relatives is important



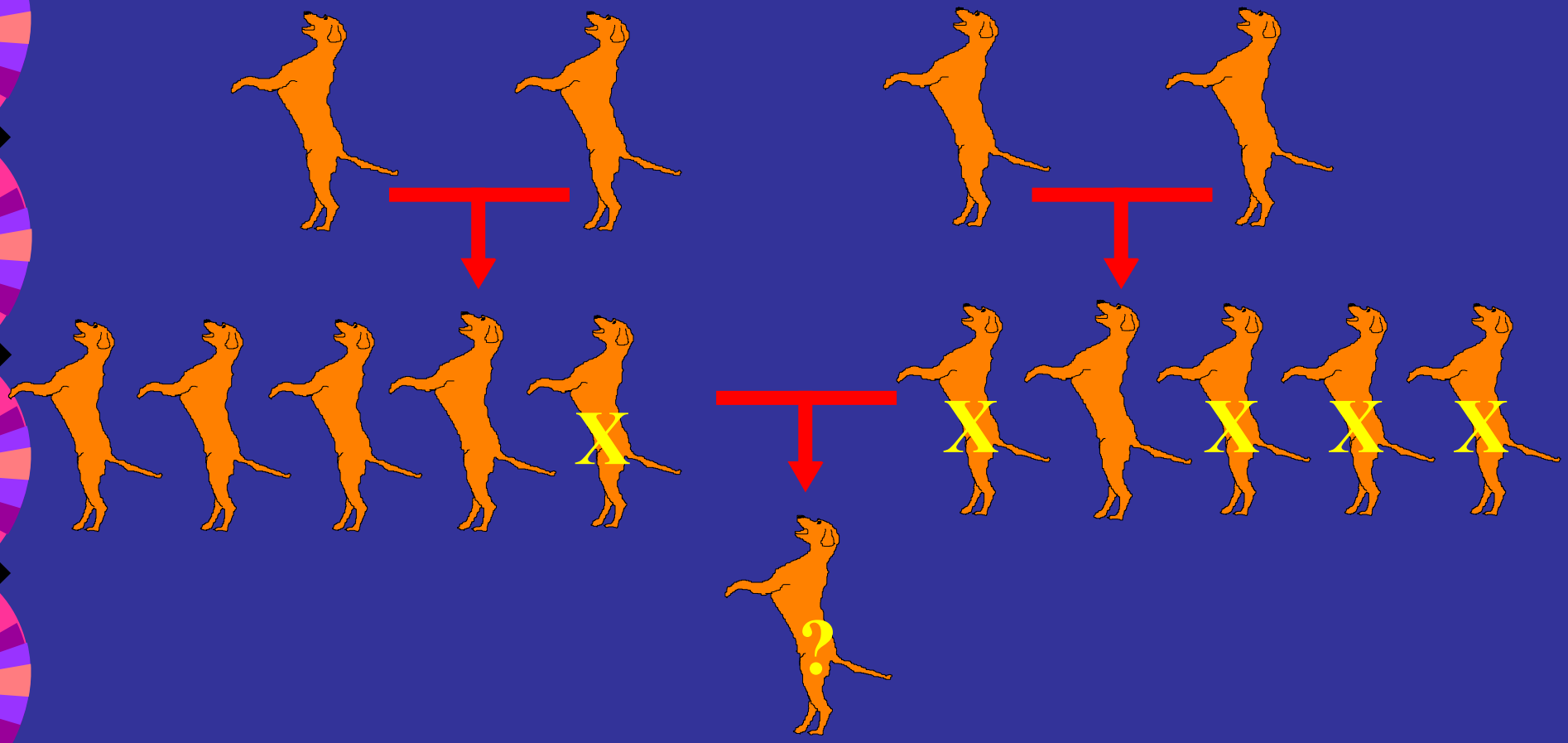
Without tests for carriers

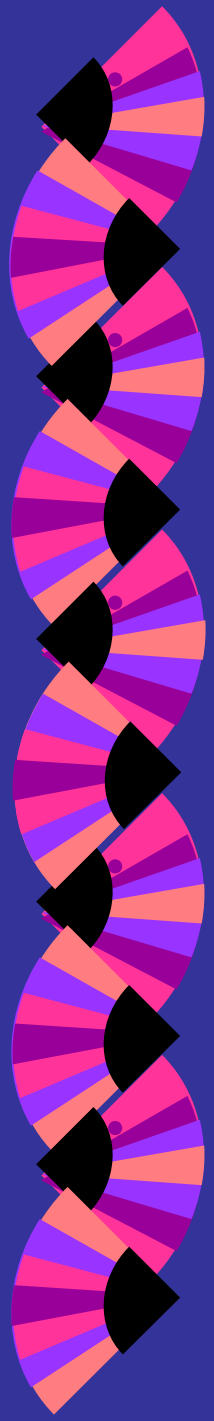
- Breed higher risk individuals to lower risk individuals.
- Replace the higher risk individual with it's lower risk offspring.
- Repeat the process in the next generation.
- Requires (open) health databases

Managing Polygenic Disorders

- Ex) congenital heart anomalies, hip dysplasia, patella luxation
- Identify phenotypic traits tied to the underlying genes
- Phenotypic breadth of pedigree provides information on the possible range of genes carried
- Treat disorders as threshold traits
- Breed normal dogs from (mostly) normal litters

Breadth of Pedigree

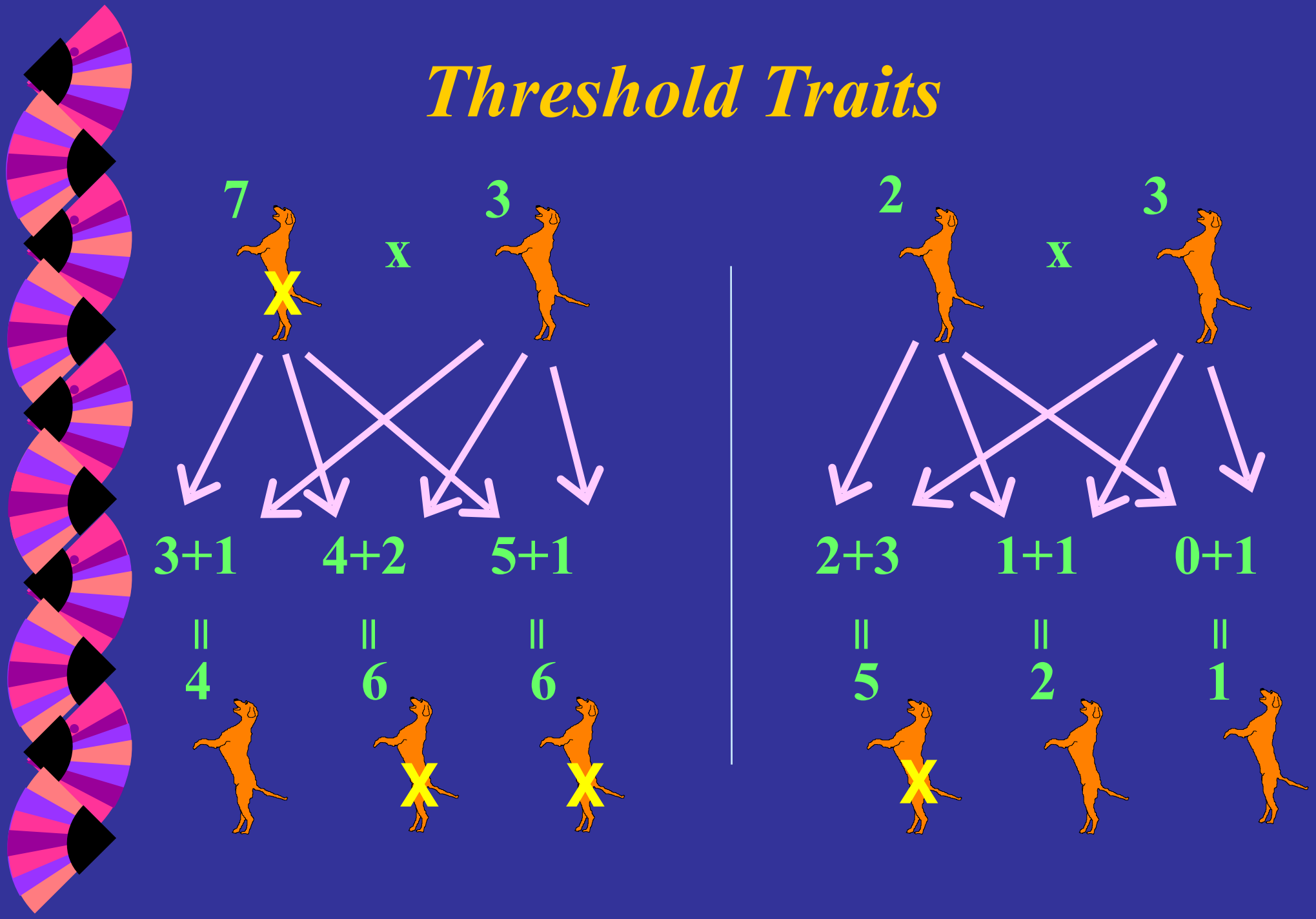




Polygenic disorders are Threshold Traits

A number of genes must combine to cross a threshold to produce an affected animal.

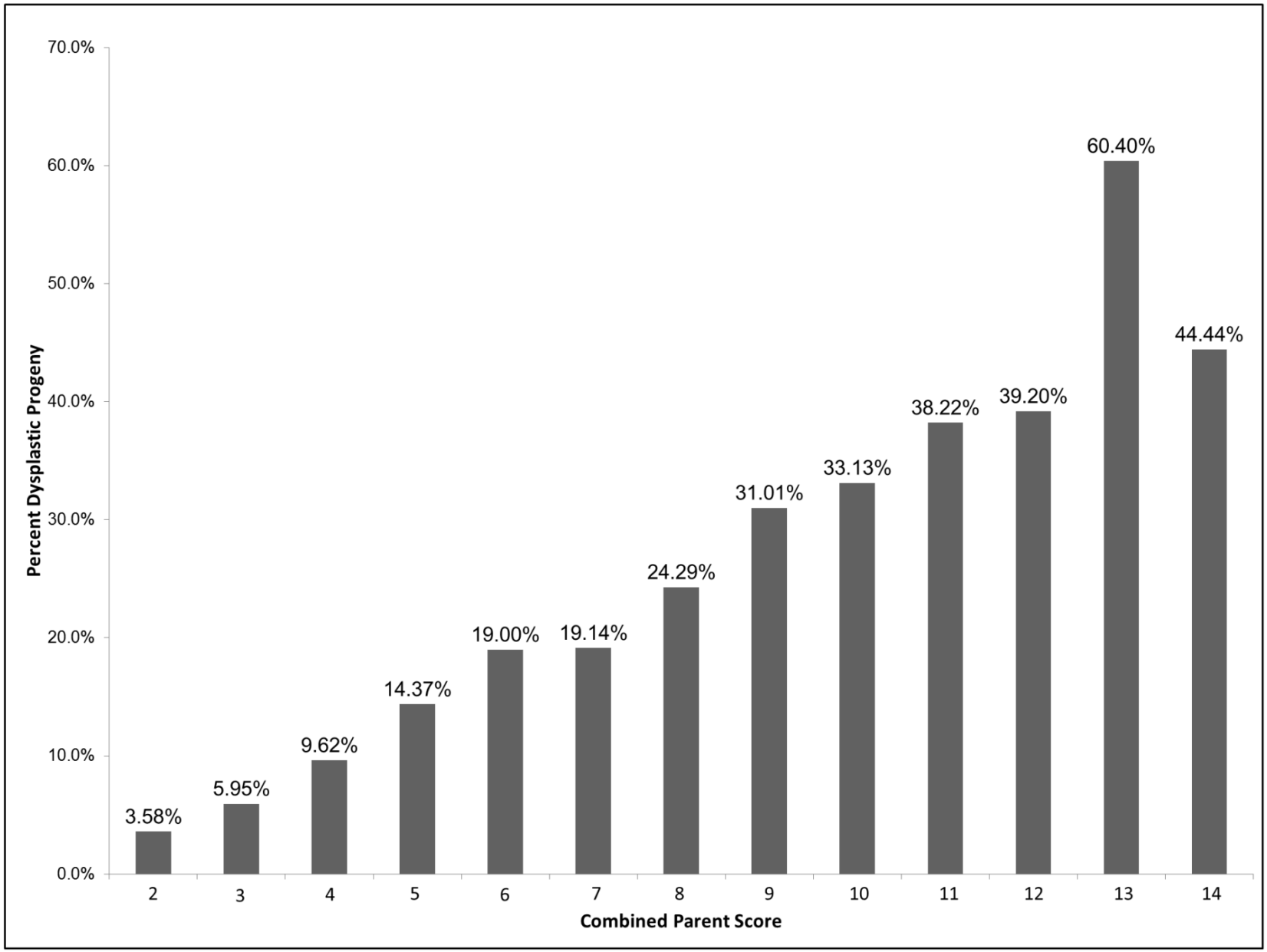
Threshold Traits



Progeny Results of Matings Between Parents with Known Hip Scores

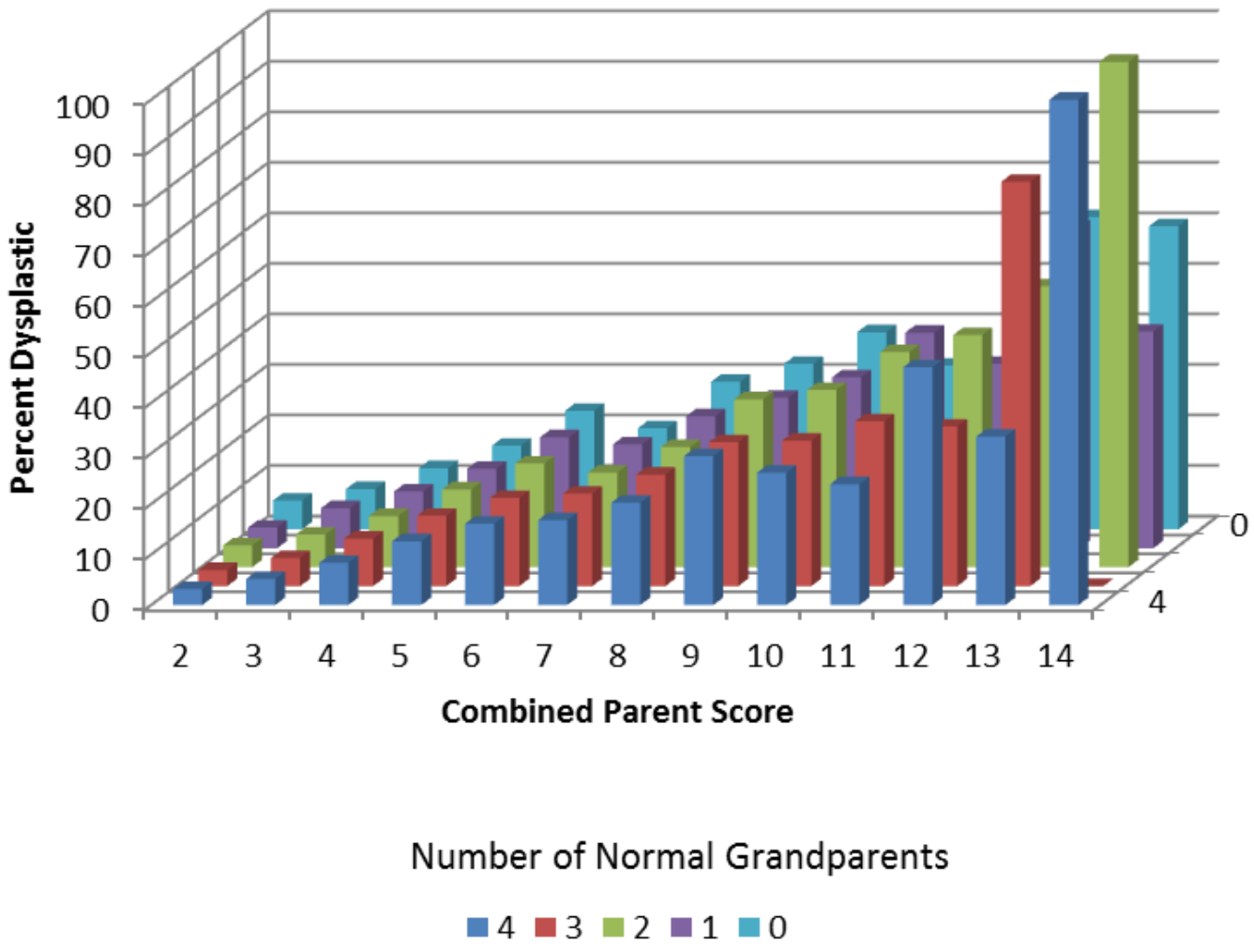
Sire			DAM: Excellent 1	Good 2	Fair 3	Borderline 4	Mild 5	Moderate 6	Severe 7	Total
	Excellent 1	Dysplastic	3.6%	6.1%	9.6%	12.3%	13.4%	18.7%	18.5%	82,015
		Total	17,972	52,784	9,039	155	1,271	729	65	
	Good 2	Dysplastic	5.8%	9.6%	14.6%	17.5%	18.9%	23.0%	31.5%	329,810
		Total	50,485	217,938	49,212	811	6,930	3,973	461	
	Fair 3	Dysplastic	9.4%	14.1%	19.8%	22.8%	26.5%	32.2%	37.1%	65,441
		Total	6,241	41,628	13,513	263	2,301	1,328	167	
	Borderline 4	Dysplastic	8.9%	17.7%	20.2%	22.2%	30.8%	50.0%	50.0%	861
		Total	79	532	168	9	39	30	4	
	Mild 5	Dysplastic	16.4%	18.3%	27.2%	36.2%	29.6%	41.4%	45.0%	7,655
		Total	807	4,531	1,532	47	459	239	40	
	Moderate 6	Dysplastic	18.9%	22.8%	31.6%	34.4%	35.0%	38.0%	65.3%	4,502
		Total	428	2,618	896	32	266	213	49	
	Severe 7	Dysplastic	22.0%	24.2%	36.0%	44.4%	39.6%	55.8%	44.4%	682
		Total	59	360	136	9	48	52	18	
Total			76,071	320,391	74,496	1,326	11,314	6,564	804	490,966

Keller, Dziuk & Bell: Veterinary Journal, August, 2011



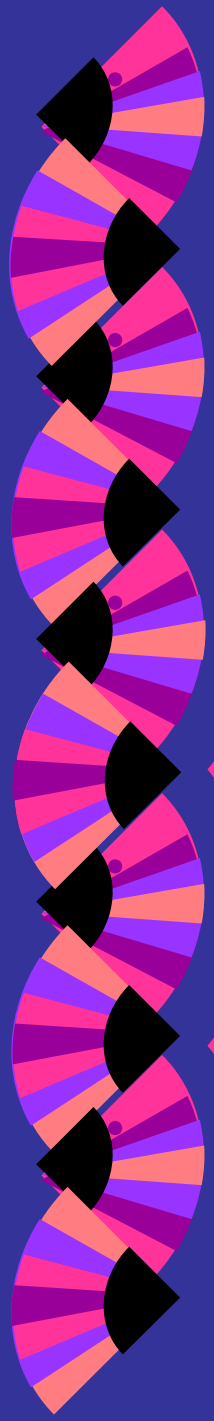
Keller, Dziuk & Bell: Veterinary Journal, August, 2011

Results of Matings with Known Parent and Grandparent OFA Scores



Breeders should use health screening tests to :

- Identify carriers or risk of carrying disease liability genes
- Work to breed away from the defective gene(s)
- Prevent the reintroduction of the gene(s) in future breedings



Each breeder must assess their own breeding stock and determine their own rate of progress

- Replace carriers with normal-testing offspring
- Decrease carrier frequency or carrier risk with each generation

A Healthy Breeding Program

- Does not continually multiply carriers
- Does not limit the genetic diversity of the population
- Is geared toward producing quality, genetically normal dogs

How Can We Educate the Public?

- Make them more informed consumers of dogs and puppies
- Able to discern responsible breeders
- Knowledgeable about genetic testing

Questions?