



Universiteit Utrecht

Diergeneeskunde

Veterinary assessment of breeding animals: harmful conformational traits

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Specialist internal medicine of companion animals
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MSc Genetic Epidemiology

Dr. Hille Fieten

- Veterinary Specialist in Internal Medicine of Companion Animals
 - MSc Genetic Epidemiology
 - PhD in molecular genetics of copper toxicosis
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- Head of the Expertisecentre of Genetics, Utrecht University
 - Member of the Council on Animal Affairs

Scientific research implemented in practical tools

- PetScan diagnosis registration system for veterinarians
- Molecular genetic research and development of DNA tests
- Fit2Breed software for breeders
- Veterinary assessment for breeding animals



Demonstration of CFR measurement to Deputy Minister Rummenie



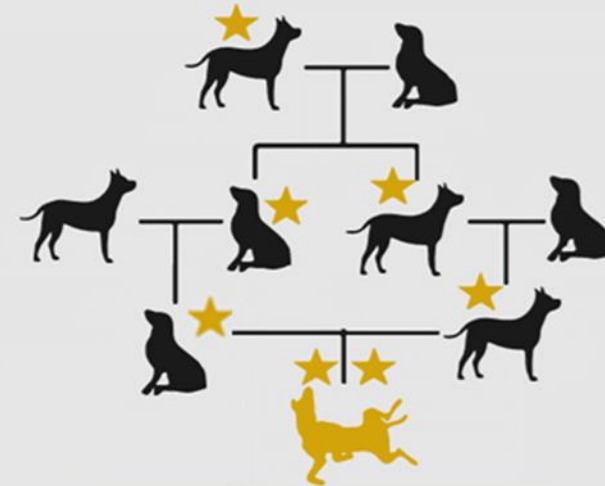
Molecular genetics lab, Utrecht University

Harmful conformational traits: selection on purpose

Hereditary diseases: due to inbreeding, insufficient screening



Harmful conformational
traits



Hereditary diseases

Harmful conformational traits

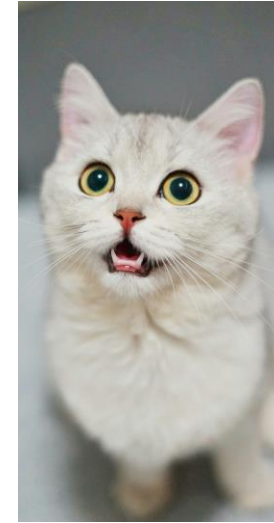
Binary traits:



Normal ears



Folded ears

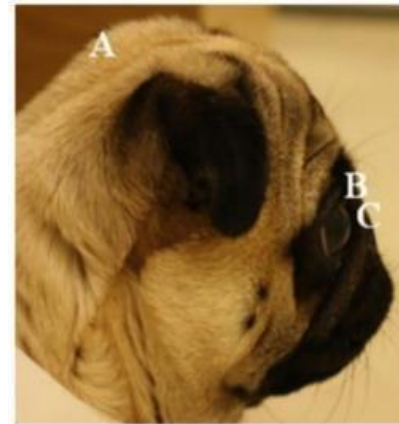


Normal coat



Hairless

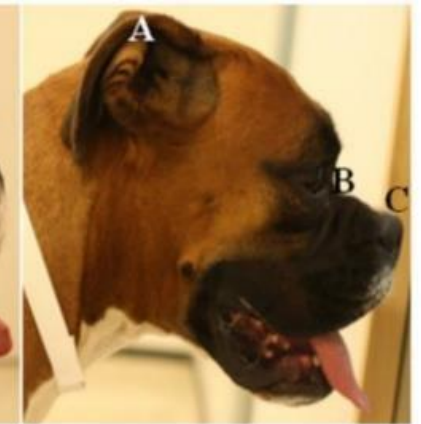
Ordinal traits: cranio-facial ratio (CFR)
nostril stenosis



CFR = 0,08



CFR = 0,23



CFR = 0,35

Genetic insights into harmful conformation: disproportional dwarfism

FGF4-L1 (CFA18):
disproportionate dwarfism
in multiple breeds

FGF4-L2 (CFA12):
skeletal dysplasia and risk
of disc herniation



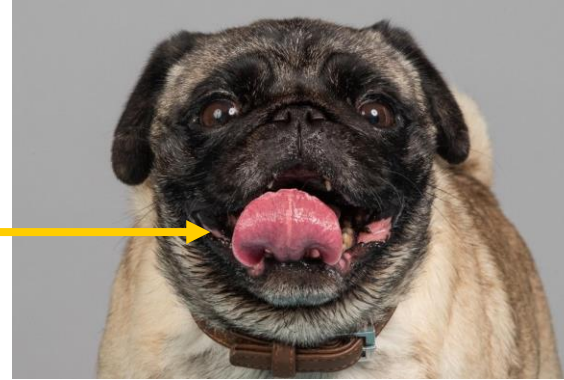
Role for veterinarians in assessment of breeding dogs

- Independent professional with knowledge on diagnosis of (hereditary) diseases
- Assessment of conformational traits and associated health issues
- Knowledge on fertility and role in management of mating, whelping
- Role in screening (i.e. HD, ED, patella, ECVO-eye exam)
- Identification of dogs (chip)
- Ability to collect DNA samples (blood or swab)



Six criteria for assessment of brachycephalic dogs (2019)

1) No stridor



2) Open nostrils

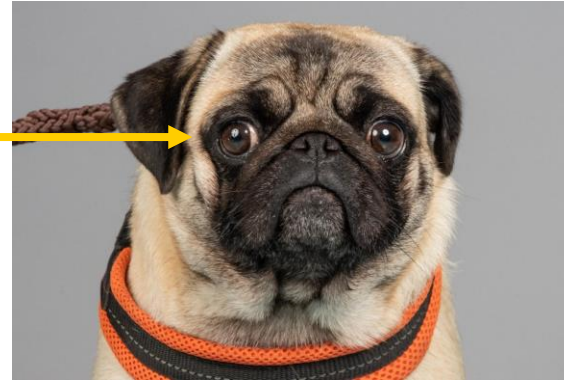


3) No nasal fold in contact with the eye

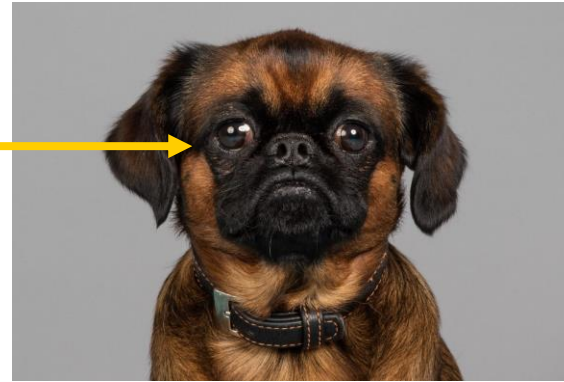


Six criteria for assessment of brachycephalic dogs (2019)

4) No bulging eyes



5) Possibility to close the eye



6) Cranio facial ratio $> 0,3$





Veterinary assessment of brachycephalic dogs

- Interactive scoring form in PetScan system
- Traffic light score **good**, **acceptable**, **insufficiënt**
- Monitoring in PetScan database



PetScan



Universiteit Utrecht

Expertisecentrum
Genetica
Diergeneeskunde

Scoringsformulier kortsnuitige honden

Met dit formulier kunt u een volgroeide hond scoren op basis van de 6 handhavingscriteria voor het fokken met kortsnuitige honden. Voor informatie en [instructievideo](#) kunt u terecht op de [website](#) van het Expertisecentrum Genetica Diergeneeskunde.

Doet de hond mee aan het onderzoek "schedelontwikkeling kortschedelige pups"?

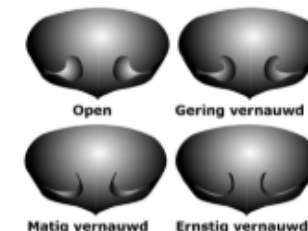
- ☐ Ja
- ☒ Nee

1. Is er een abnormaal ademgeluid aanwezig in rust?

- ☐ Ja
- ☒ Nee

2. Neusopeningen

- ☐ Open
- ☒ Gering vernauwd
- ☐ Matig vernauwd
- ☐ Ernstig vernauwd
- ☐ Niet te beoordelen, want hond heeft neusvleugelcorrectie gehad



3. Craniofaciale ratio

Neuslengte (neuspunt tot stop) [cm]

Schedellengte (achterhoofdsknobbel tot stop) [cm]

Craniofaciale ratio (neuslengte/schedellengte)



4. Aanwezigheid neusplooi

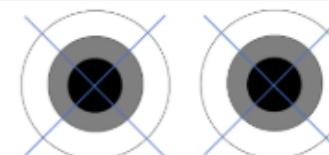
- ☒ Afwezig
- ☐ Aanwezig maar niet in contact met het oog
- ☐ Aanwezig en in contact met het oog

Toelichting: Neusplooi is in contact met het oog indien:

- Er haren in contact staan met het oog *en/of*
- De haren op de neusplooi nat zijn *en/of*
- Er gerelateerde ontstekingsverschijnselen zijn in één of beide ogen

5. Zichtbaarheid van het oogwit bij de rechtvooruitkijkende hond

- ☒ Niet zichtbaar
- ☐ Enkel zichtbaar in 1 kwadrant
- ☐ Zichtbaar in 2 of meer kwadranten



Opdeling van de ogen in kwadranten

6. Oog sluit volledig bij het opwekken van de ooglidreflex

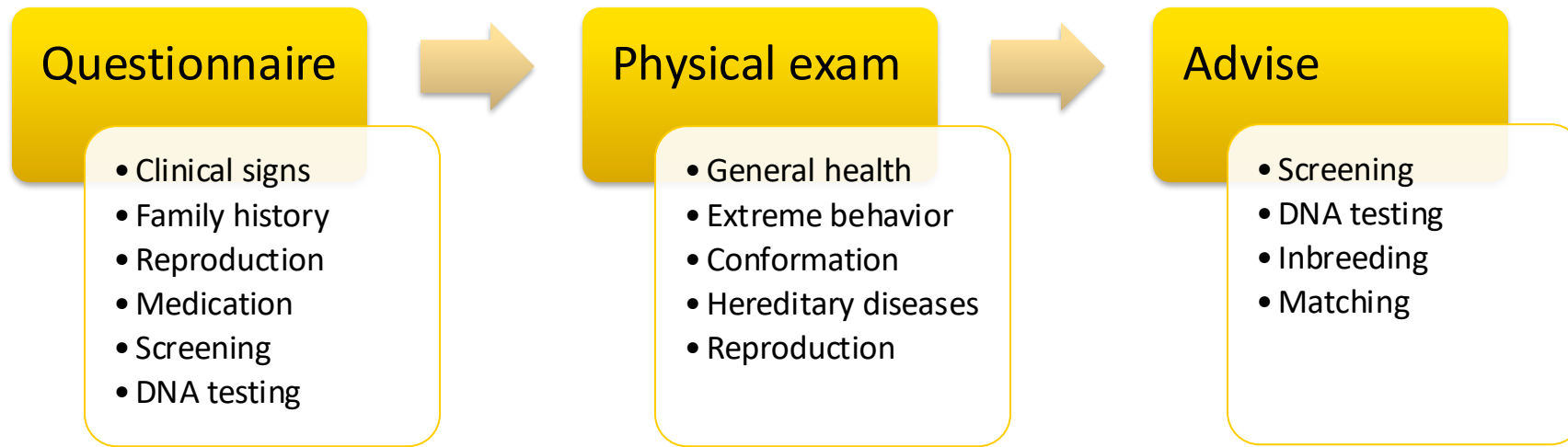
- ☒ Ja
- ☐ Nee

Conclusie: Onvoldoende. Voor meer informatie zie de [Beleidsregel](#).

Dit formulier bevat observaties van de dierenarts met betrekking tot criteria voor hondenschedel- en snuit. De wettelijke controlerende en handhavende taak ligt bij de NVWA. Aan dit formulier kunnen derhalve geen rechten ontleend worden.



Framework for veterinary assessment of breeding dogs



Physical exam

General impression

- Size
- Body condition score
- Extreme behaviour
- Mentation

Gait analysis

- Lameness
- Ataxia
- Stance

General examination

- Physical exam
- Reproduction
- Auscultation heart and lungs

Conformational traits

- Body conformation
- Coat, skin, nails
- Head
- Reproduction
- Tail and rear



Veterinary assessment guides breeding decisions

- Fit for reproduction
- Absence of harmful conformational traits
- Advise for additional necessary screening
- Advise for DNA testing

Cave combination

- Inbreeding
- Late onset hereditary disease
- No information on the population

Development for cats in preparation





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Prevent hereditary disorders

At the Expertise Centre for Veterinary Genetics, we are dedicated to preventing hereditary diseases and welfare issues caused by extreme conformations in dogs and cats. We focus on identifying DNA mutations that cause hereditary disorders and develop DNA tests to support breeders in informed decision-making. By sharing knowledge and by close collaboration with veterinarians and breeders, we aim to shift veterinary care to preventive medicine. Through innovative research, we're working towards a future where inherited health problems are drastically decreased.

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