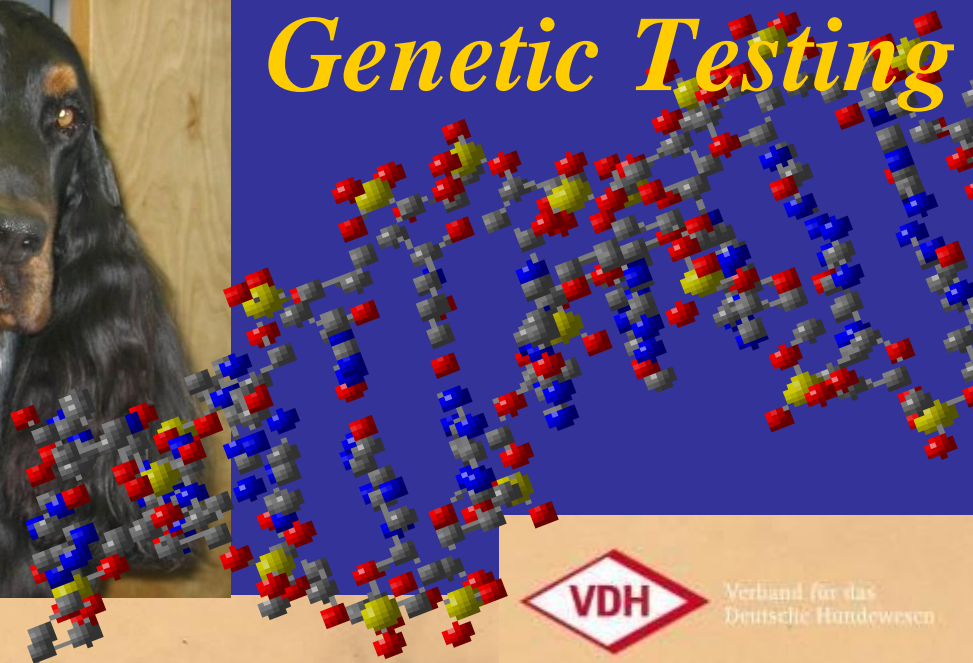


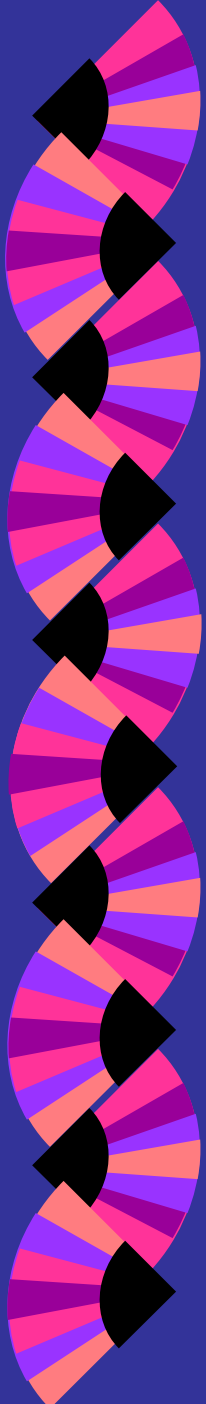
Workshop 3 Summation: Genetic Testing



Verband für das
Deutsche Hundewesen

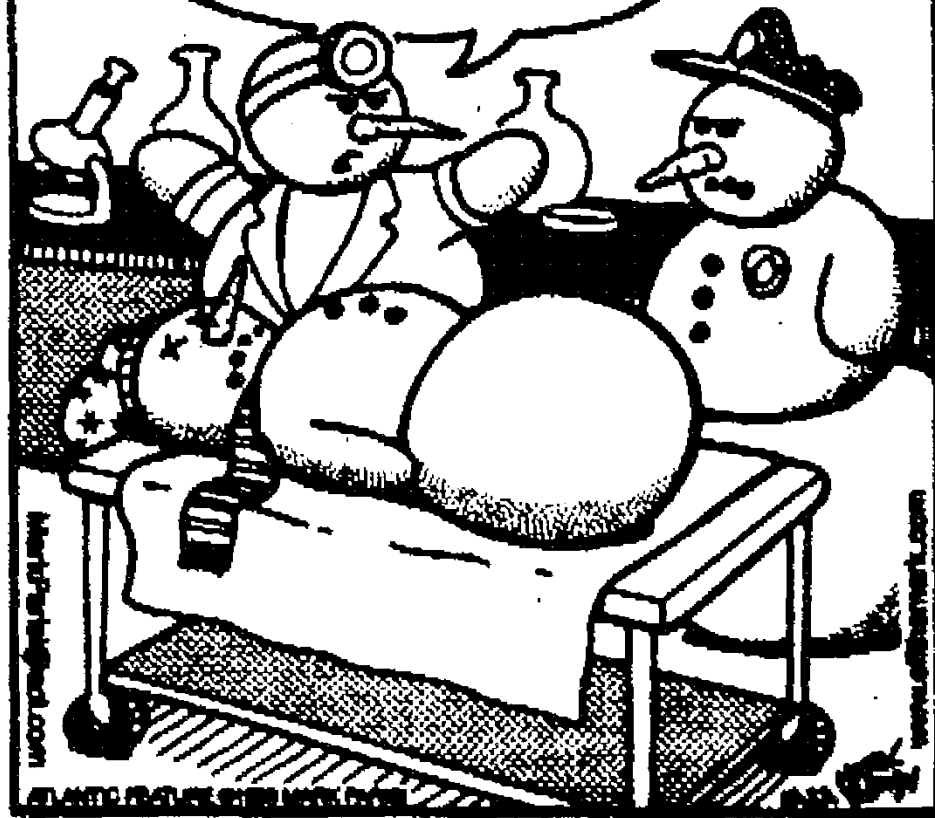


Jerold S Bell, DVM
Cummings School of Veterinary Medicine
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off the mark By Mark Parisi

OF COURSE THE DNA TESTS WERE
INCONCLUSIVE! WHAT DO YOU WANT
FROM ME? NO TWO DARN SNOWFLAKES
ARE ALIKE!





Topics For Genetic Testing

- DNA biobanking
- Validation
- Laboratories
- Genetic counselling
- Standards for parentage testing

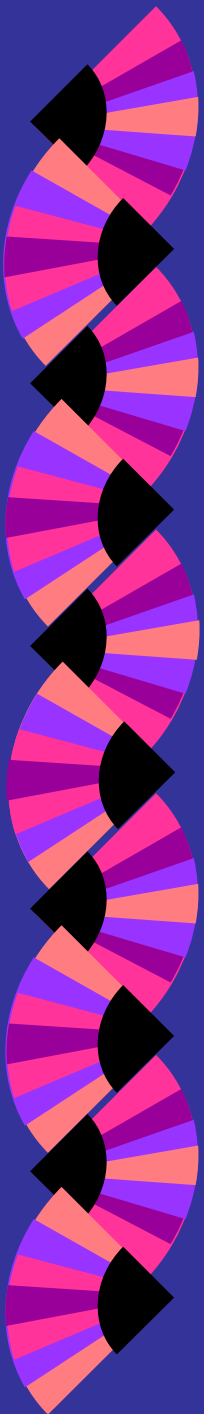


*Canine and Feline Hereditary
Disease (DNA) Database*

<http://research.vet.upenn.edu/DNAGeneticsTestingLaboratorySearch/tabid/7620/Default.aspx>

DNA Biobanks

- ◆ Many researchers and organizations have collections of dog DNA with or without disease phenotype information
- ◆ The IPFD should create a registry of stored DNA samples with location, numbers, and disease phenotypes which can then be use in a collaborative fashion between researchers
- ◆ Release forms for DNA Banks should contain a checkoff that allows for sharing with other researchers/projects





Validation of DNA tests

- ◆ Peer-reviewed publication is the standard
 - ◆ If a test is not patented, publication allows any commercial lab to start offering the test
 - ◆ Loss of research lab testing revenue to cover development costs and refine epidemiological questions
- ◆ A system can be developed where test validation can be graded based on whether it has undergone peer review, been submitted, or has not been submitted for peer review
- ◆ The IPFD should evaluate some form of test validation

Validation of DNA tests

- ◆ Is the test based on a causative or risk-associated mutation?
 - ◆ Is the test valid and correlated to the disease in;
 - ◆ The same breed in other countries/populations?
 - ◆ Other breeds?



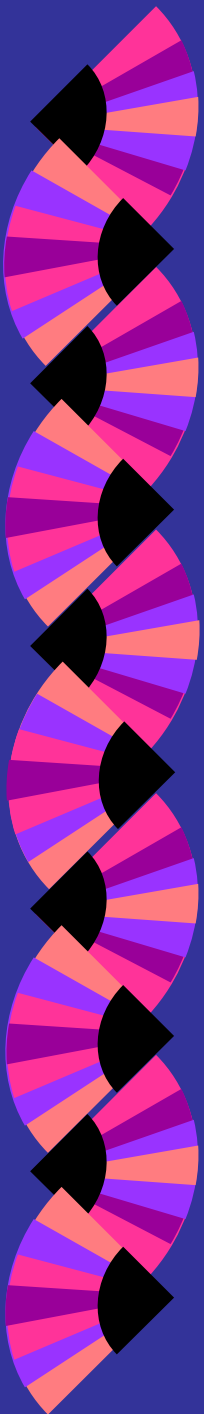


Validation of DNA tests

- ◆ We could not determine factors which would dictate whether a genetic test should be offered to/utilized by an entire breed
- ◆ There are too many variables including
 - ◆ Severity of disease
 - ◆ Frequency of mutation in the population
 - ◆ Population dynamics

Validation of DNA tests

- ◆ Identification of the dog being tested
 - ◆ Testing labs should identify on the test result certificate whether verification of identity (microchip) was validated by a veterinarian
- ◆ If dog identification is not validated, the “clear by parentage” designation should not be offered by registries



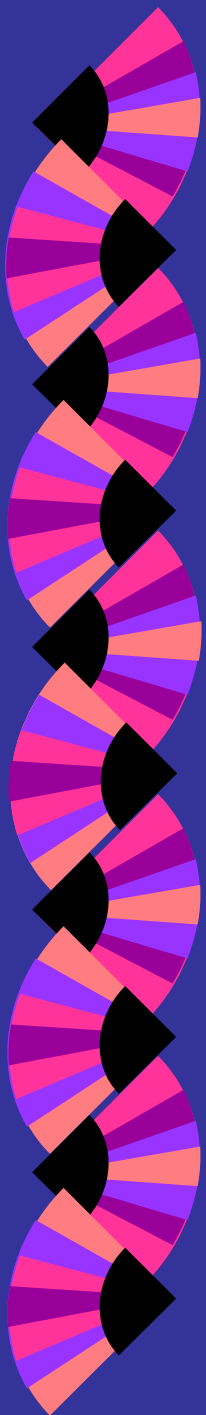


Validation of DNA tests

- ◆ Parentage testing
 - ◆ It would be beneficial to have a DNA fingerprint on tested samples to validate identification and parentage
 - ◆ However;
 - ◆ Would increase cost of tests
 - ◆ DNA identification has not been standardized
 - ◆ ISAG is working on standardizing dog DNA Identification

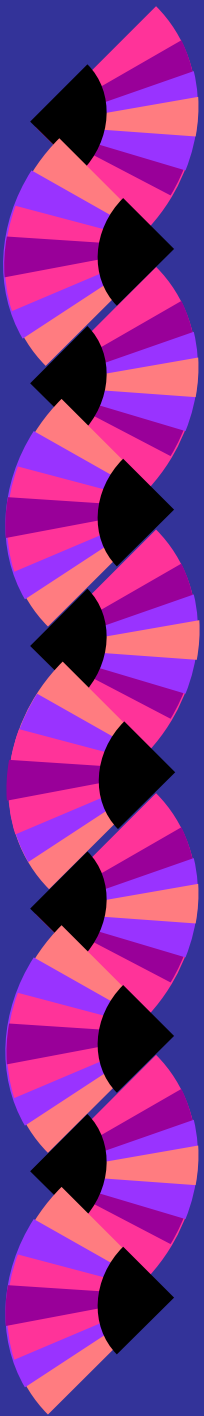
Laboratories

- ◆ There should be some minimum standards for laboratory quality control
 - ◆ Laboratory standards
 - ◆ Ability to run new tests
- ◆ The IPFD can work with representatives from testing labs to set standards



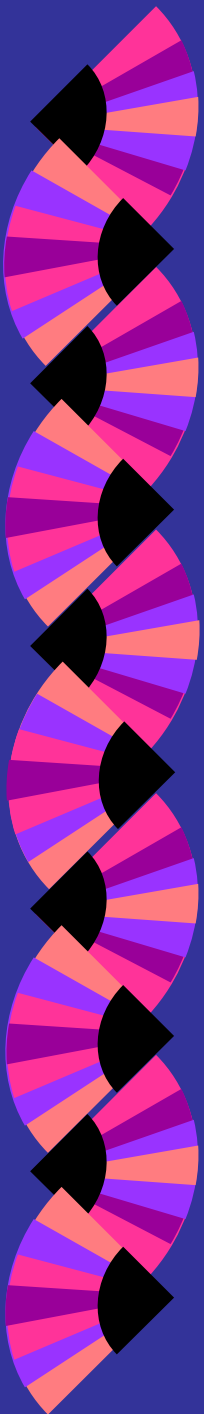
Laboratories

- ◆ Intellectual property rights
 - ◆ If a lab holds patents and licensing rights on a test, they should be honored by other labs, and registries
 - ◆ Legal aspects of patents and breeding recommendations will have to evolve with the times



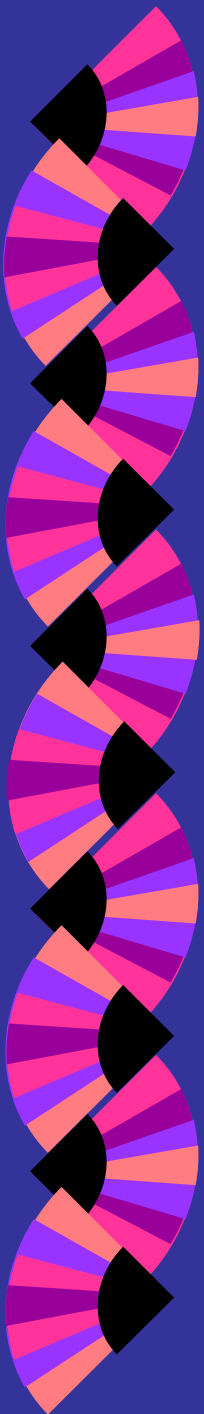
Laboratories

- ◆ If multiplexing or whole genome sequencing in a commercial setting identifies mutations not known to occur in the breed, the testing lab should investigate and validate the results (prior to informing the owner?)



Genetic Counseling

- ◆ Laboratories have a responsibility to provide information to the owner regarding;
 - ◆ The nature of the genetic test
 - ◆ What the results mean
 - ◆ Basic genetic counseling
 - ◆ Resources where they can go for further information
- ◆ Breed clubs also have a responsibility to breeders and owners regarding applicability of genetic tests and genetic counseling



Genetic Counseling

- ◆ Veterinary education lags behind regarding the understanding of genetic disease testing and genetic counseling
 - ◆ WSAVA has a role to recommend more in depth veterinarian education

