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March 17, 2015

Dear IG breeders and owners:

You will receive a certificate with this letter that provides a great deal of information on the genetic make-up of your dog(s). There are several valuable pieces of information on each certificate. The first is the internal relatedness (IR) value. IR scores are calculated from the allele and allele frequencies of 33 genomic markers. The certificate lists each of these markers, the alleles inherited from parents, and whether they are identical (homozygous) or different (heterozygous). The alleles found in the breed and their breed-wide frequency is presented in table form on the IG genetic diversity website, <https://www.vgl.ucdavis.edu/services/dog/GeneticDiversityInItalianGreyhounds.php>. IR is a measure of the heterozygosity (genetic differences) that is contributed by each parent. The lower the score, the more outbred the individual; the higher the score the more inbred. The second piece of information is a graph of all of the IR scores determined for the breed. You will note that the breed has individuals that are much outbred and individuals that are highly inbred. However, if you use $IR \leq 0$ as a break point between more outbred and more inbred populations of IGs, you will note that one-fourth of the breed is reasonably outbred, and if you use an $IR \geq 0.2$, a somewhat smaller proportion are highly inbred. Your dog will have an IR score that will relate him/her to IR values of the breed as a whole. An IR score only applies to the individual for which it was calculated. As explained on the IG genetic diversity web site, two dogs can have identical IR scores but be very different in their genetic make-up. The certificate also lists the dog leukocyte antigen (DLA) class I and II haplotypes for each dog. The DLA and its importance are also explained on the IG website, as is a table of known haplotypes and their frequencies. As with genomic alleles and allele frequencies, the more inbred dogs tend to possess the more common DLA haplotypes and to inherit the same haplotype from each parent. Genetic diversity is important genome wide (genomic markers and alleles) and in the DLA region (DLA class I and II haplotypes).

We realize that this is a new concept and that it will take time to fully understand the importance of using IR testing to pick the best possible genetic matches and to test their puppies to measure the outcome. Every IG that is tested, whether it is highly inbred, highly outbred, or somewhere in between, has something to contribute to the effort that will be required to re-balance genetic diversity in the breed and in so doing, decrease the incidence of deleterious disease traits and improve overall breed health. A list of heritable disease traits for the breed has also been provided on the IG genetic diversity website. Specific mutations and genetic tests have been developed for only three of many genetic disorders in IGs.

Thank you for your support. I look forward to working with you more in the future,

A handwritten signature in blue ink, appearing to read "Niels C. Pedersen".

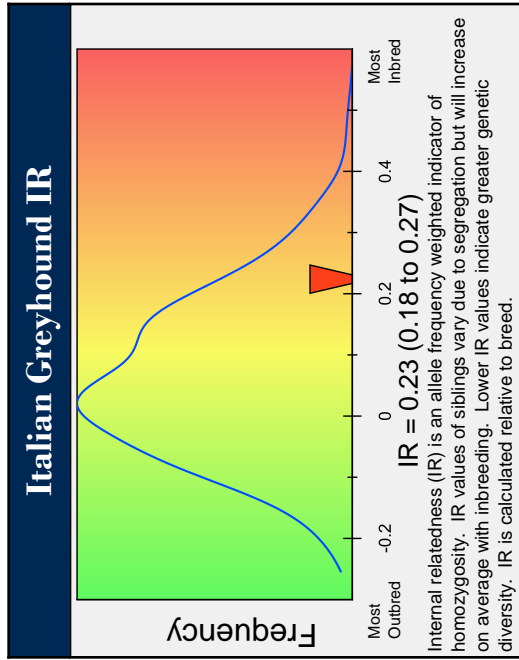
Niels C. Pedersen, DVM, PhD
Distinguished Professor emeritus

DOG GENETIC DIVERSITY ANALYSIS

PIASON ALL DRESSED UP IN HIS SUNDAY BEST

Breed: Italian Greyhound
Sex: Male
Color: blue and white
DOB: 2014
Reg:

Case: NCD22622
Print Date: June 9, 2016
Report ID: 3160-4577-5749-0159



Italian Greyhound DLA

DLA I	DLA II	DLA I	DLA II	DLA I	DLA II
Haplotype 1	1052	2017			
Haplotype 2	1052	2017			

Maintaining diversity in the DLA which helps regulate immune responses is beneficial to a breed. Choosing mates differing in their DLA haplotypes helps maintain diversity in litters.



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