

The Mars-Breed-test established with the sighthounds from the DWZRV

The DWZRV got a unique offer from the firm Mars, to provide a gene data collection for every separate sighthound breed, in order to establish a Purebred test.

The lab Eurofins-Medigenomix, which already carries out our DNA-analyses, was charged to do this. Mars took over the expenses.

Our breeding administration decided to use the very diverse gene pool of the association instead of using the already existing data bank of Mars. This contains only the Afghan, Borzoi, Greyhound, Saluki, Whippet, Italian Greyhound, Ibizan Hound, and Pharaoh Hound. For the other sighthound breeds, and the group 5 breeds, there was still no test.

The project was presented by me at the meeting of the breeding commission members on 3.12.2011, and we asked the breeding committee members to propose, for the production of the required base of "their" breed, dogs (both sexes) matching the standard, as little as possible, or better, not related to each other, and well covering the entire range of the breed.

Among these, 20 to 25 dogs, who are analyzed for us free of charge, were selected by the breeding administration. In total, there were 462 samples from 19 breeds. Of which 8 samples could not be evaluated for quality reasons.

Breed	Abbreviation	Number of Samples
Afghan	A	24
Azawakh	Az	25
Borzoi	B	25
Chart Polski	CP	25
Deerhound	D	25
Galgo Espanol	GA	26
Greyhound	G	25
Irish Wolfhound	IW	23
Magyar Agar	MA	27
Saluki	S	25
Sloughi	SL	24
Whippet	WH	25
Italian Greyhound	WI	25
Pharaoh Hound	Gr5 P	25
Cirneco del Etna	Gr5 CE	23
Podenco Ibicenco	Gr5 PI	21
Podenco Canario	Gr5 PC	23
Podengo Portugues pequeno	Gr5 PPp	25
Podengo portugues medio	Gr5 PPM	21

(Table from Mars)

For the procedures (in general):

We know the normal DNA profiling as parenthood proof. It is analyzed with 9 markers and can thus define exactly the parents, but not a breed affiliation.

Here's an example:

Results of the analysis :

Ergebnis der Untersuchung:

Marker	Allel 1	Allel 2
FHC 2010	234	234
FHC 2054	164	176
PEZ 1	116	120
PEZ 12	267	271
PEZ 20	182	186
PEZ 5	105	113
FHC 2079	275	275
PEZ 6	182	187
PEZ 8	242	246

Erstellt von Eurofins Medigenomix GmbH, Ebersberg

In contrast, **321 markers** are used to establish the breed tests. It is about a very large amount of data, that of course provides an appropriately accurate statement. As a result appear no numbers but graphics, that provide information about how the genetic specification of each dog shows up. That means, to what breed his inheritance can be assigned (from the 321 markers).

General findings from the studies of the analyzes of the individual breeds:

- Assignment of purebred dogs is possible
- Historical and population-related influences have been demonstrated
- Certain groups need to be revised (Podengo Portugues medio)

Comparison of the Sighthound group :

Some breeds have a greater proximity to each other than to the rest.

Deerhound and the Irish Wolfhound (which show the greatest distance to the rest)

Borzoi and Chart Polski

Greyhound and Magyar Agar

Saluki and Afghan

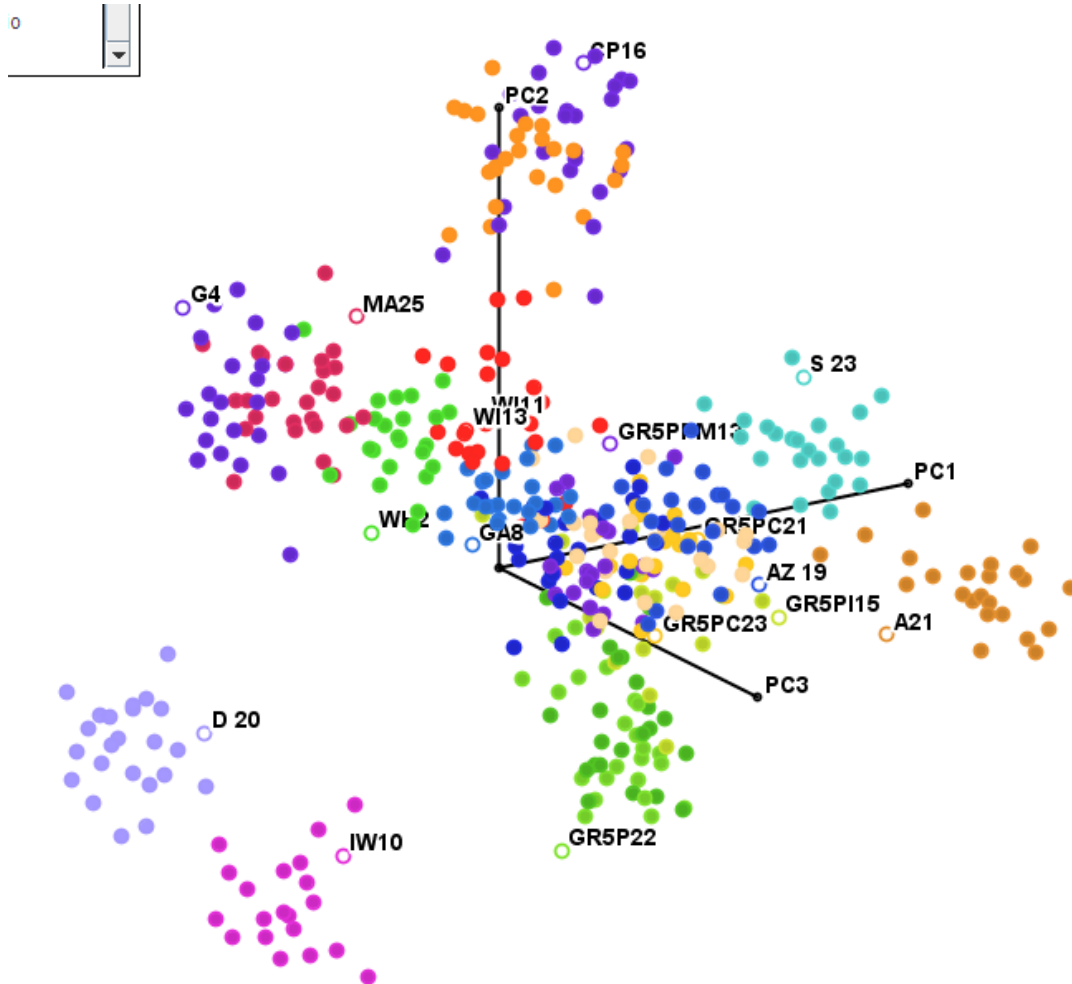
Whippet and Italian Greyhound

Sloughi and Galgo on one side, Sloughi and Azawakh (in the same line toward the Basenji) on the other side

Mediterranean breeds together and Galgo as well as Sloughi

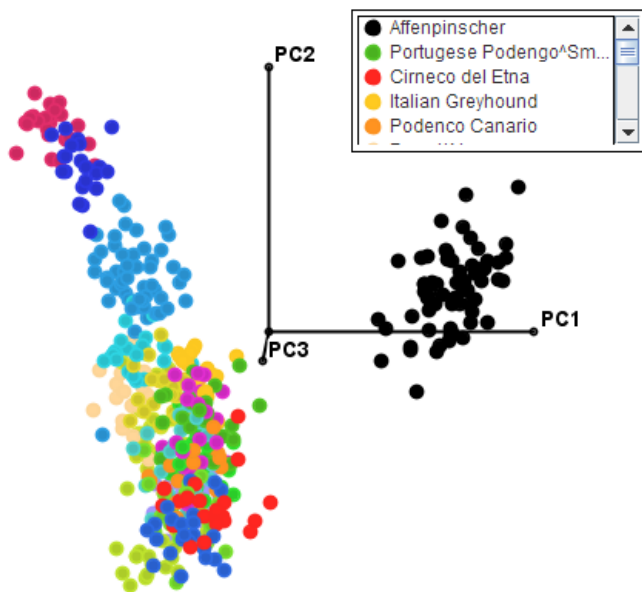
All breeds originating from West Africa, North Africa, Middle East and Middle East show good resolution and form separate breed-specific clusters. The same applies to the individual Occidentals breeds.

Formation of distinct substructures



With the three axes one can recognize that the graphics are actually three dimensional, but of course can be represented only in two dimensions. So, from this view some breeds that are adjacent or even at a greater distance from each other overlap. Individual breeds graphics are represented much clearer in the corresponding breed information. I've omitted their publication in this article for space reasons.

Comparison of the Sighthounds Group with a Non-Sighthound Outside-group shows that the breeds within the Group have a greater genetic proximity to each other than to the Outside-group.



The relations of all breeds to each other as well as to breed groups (for example Mediterranean) were shown in graphics and documented. I have produced for all breeds separate information about this project, which I provided to the owners of the participating dogs as well as to the breeding committee members after the breed meetings..

At the meetings of the Sloughi and Saluki breeds, and the Mediterranean breeds of group 5, I presented "our" project to very interested participants. During the lectures also many questions were answered. Even afterwards, I am still getting numerous emails with questions, further scientific contributions and impulses for possible applications of these tests.

Over all, the information on the different and common cultural history of backgrounds of our sighthounds let us (the interested in the project and me) still philosophize

When Mars made us this offer, my first reaction was: nobody needs it.

But, in regard of our really big gene pool, compared to other countries, for the Saluki, Sloughi and Azawakh breeds, it appeared to us very meaningful that the DWZRV (and not other association or breed club) takes care of the establishment of the breed tests.

I gladly look back at the very good co-operation with the breeding committee members.

The project leader of Eurofins kept me always informed and contacted me very often to get background information about the breeds. All in all a perfect co-operation.

We actually expected nothing but a breed test established after the genetic material of our dogs, but we did get a lot of informations about our breeds, many assumptions were confirmed and some others amaze us.

I thank you very much, you all who helped me!

Ursula Arnold

The graphics were provided by the project leader of Eurofins Ms Dr. Wimmer.