

Applications:

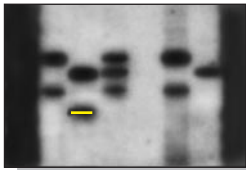
- Parentage Verification
- Estimation of Relatedness/Genetic Variation
- Identification of DNA Markers Linked to Performance Traits or Genetic Disorders
- Registry/Individual Identity
- Breed Differentiation

The ability to address questions of identity in pets and domestic animals is now dramatically enhanced. The DNA profile test offered by Therion International is more powerful than conventional blood protein analysis because it detects DNA-sequence information which is highly variable. This technology provides a sensitive method for parentage verification, individual identification and the estimation of relatedness. It can also be used to screen for markers linked to performance traits or genetic disorders.

Following are descriptions of four of the many pet and domestic animal genetics projects which have been conducted by Therion.

Parentage Verification

Parental / Offspring DNA Profiles



MWSS
Dam
Pup 1
Pup 2
Pup 3
Sire
MWSS

A greyhound bitch was believed to have been inseminated by two males. To verify sire identity, DNA profiles were produced from the dam, her pups, and the male to which she had been purposely bred. The DNA probe used was OPT™-05 and a portion of the autoradiograph is shown to the left. Note that a genetic marker (yellow band) found in the DNA profile of pup 1 appeared neither in the dam's profile nor in that of the alleged sire. This confirmed that the female had been inseminated by a second male and excluded the preferred male as sire of the pup. Other genetic markers and additional DNA probe assays corroborated this conclusion.



Greyhound

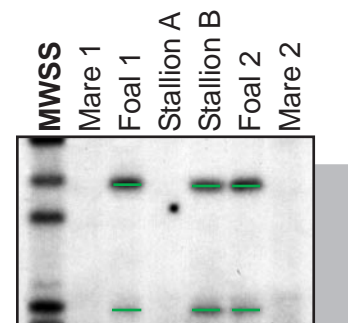
Parentage Verification

The DNA profile banding patterns from several thoroughbred horses are shown to the right. The paternity of the foals was in question as each mare was bred to the same two stallions (A and B). To complicate matters, stallion B is the son of stallion A. Several genetic markers that were observed in the DNA profiles of both foals were not present in the DNA profiles of their respective dams (green bands). These markers must have been contributed by the sire. Stallion B is therefore clearly shown to be the true sire of the foals.



Thoroughbred Horses

Equine Sire Verification



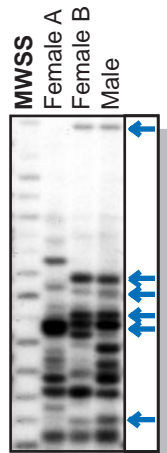
MWSS
Mare 1
Foal 1
Stallion A
Stallion B
Foal 2
Mare 2

Estimation of Genetic Relatedness

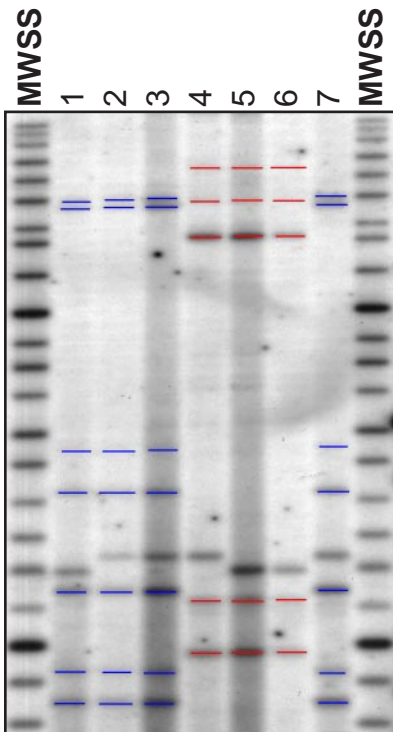


A breeder of macaws had recently purchased three young and allegedly unrelated birds (one male and two females) to add to her breeding flock. Since the male and female B were constantly observed together, the breeder wondered whether she should allow these birds to become a mated pair. DNA-profile testing was conducted to determine the relatedness of the three macaws. The DNA profile results in the figure to the right show a high proportion of shared bands or genetic markers (blue arrows) between the male and female B. It was concluded that the male and female B were probably related (possibly siblings) and therefore should not be paired.

Macaws



Estimation of Genetic Relatedness



A private breeder of reptiles needed to determine the paternities of a clutch of python snakes. The mother of this clutch had been bred to two males and because multiple paternities are common in reptiles, it was necessary to identify and partition the offspring into full sibling groups. The results were generated using probes OPT™-03 and OPT™-05 and enzyme HinF I. Visual inspection of the DNA profiles showed two subsets of similar banding patterns among the young snakes (figure at left). Computation of band-sharing coefficients corroborated that the clutch of offspring could be separated into these two distinct subsets. The average percentage of shared bands within both the first subset of offspring (blue bands) and the second subset of offspring (red bands) was 63%. Between the two groups the average band sharing was 26%. It was therefore concluded that each subset consisted of a group of full siblings, each with a different sire.



Photo and data courtesy of Roussis Reptiles

Pythons

Specimen Requirements

(Please call before shipping **any** samples)

Specimen Type	Volume	Container	Shipping Instructions
Whole Blood containing: Nucleated RBC Non-nucleated RBC	0.1-2 ml 5-10 ml	EDTA Purple Top Vacutainer™	Liquid— overnight on ice packs
Tissue	Call for instructions		

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