Dog Breed Prediction
Through Computational Genetics

What Kind of Dog is It?
And Other Common Questions

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Carlin...Male...2yrs
ARL40804

Species:	Dog
Primary Breed:	Labrador Retriever
Secondary Breed:	Chow Chow
Size Group:	Large
Primary Color:	Black
Secondary Color:	None
Coat Description:	Short Smooth
Tail:	Long
Identifying Features:	too protective of family, tried obedience training, but still aggressive towards people outside of the family

What is a Breed?

- A Name

- A Breeder Network

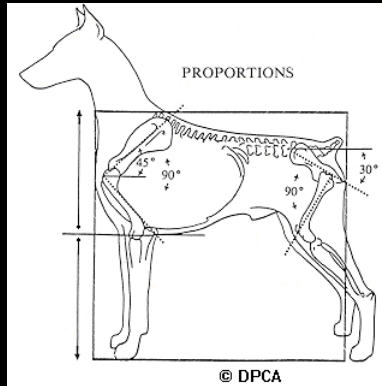- A Reputation

- A History

- A Set of Characteristics

Official AKC

Standard of the

Doberman

Pinscher

PROPORTIONS

45° 90° 90° 30°

© DPCA

- GENERAL APPEARANCE
  - The appearance is that of a dog of medium size, with a body that is square. Compactly built, muscular and powerful, for great endurance and speed. Elegant in appearance, of proud carriage, reflecting great nobility and temperament. Energetic, watchful, determined, alert, fearless, loyal and obedient.

- SIZE, PROPORTION, SUBSTANCE
  - Height at the withers: Dogs 26 to 28 inches, ideal about 27 1/2 inches; Bitches 24 to 26 inches, ideal about 25 1/2 inches. The height, measured vertically from the ground to the highest point of the withers, equaling the length measured horizontally from the forechest to the rear projection of the upper thigh. Length of head, neck and legs in proportion to length and depth of body.

    ...and so on...

Canine Genetic Highlights

- 39 Chromosomes, viable between:

  – Wolves

  – Greyhounds

  – Chihuahuas

  – Coyotes

  – Newfoundlands

- 'Stud Books' and 'papers'

- Superior Human Comprehension (*and other behaviors*)

- *Single Common Ancestor?*

Study of Canines

- Many Inherited Diseases

- Shared Human/Canine Disorders

- Fancier... Fanatics

*(And there is **money** in it)*

- International Research

  - Canine Genome Project

  - Several Breed-Specific/Multi-Breed DBs

  - DogMap Project

  - *Fast-tracked by* NHGRI (`genome.gov`)

Breed Prediction

- Probability Models and Expert Systems

- More Informed "Guess"

- Superseded as Characteristics are Identified

- Would be Affordable