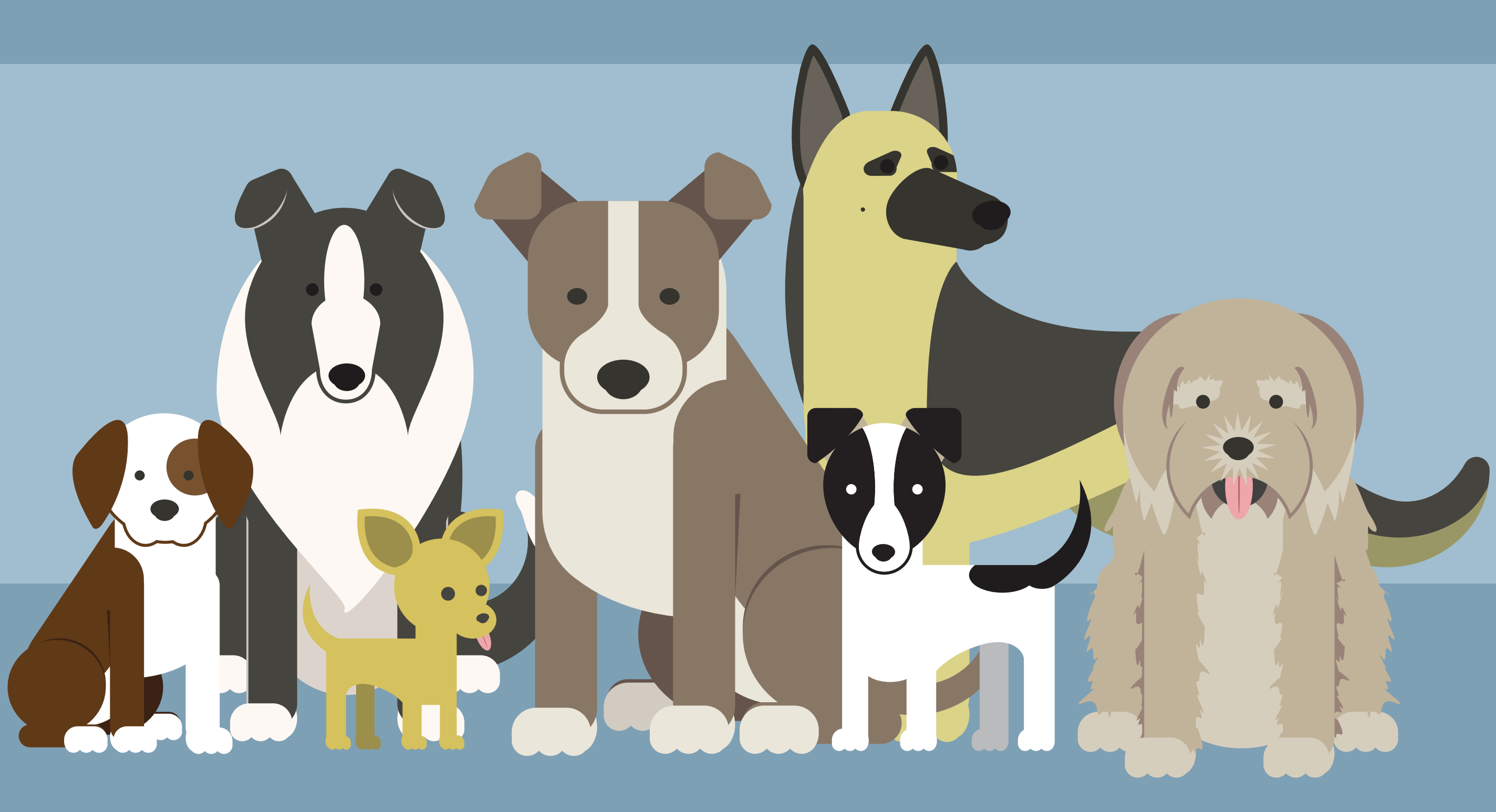
ALL DOGS ARE INDIVIDUALS

why looks don't equal behavior



MEET THE CANINE GENOME

The dog genome consists of approximately **20,000** genes

Variation across **50** genes determines breed defining physical traits

Variation in very few genes determines a dog's head shape. In BRACHYCEPHALIC dogs, *it's just* **1** *gene*

This means that **LESS THAN 1%** *of a dog's genes determine* **PHYSICAL APPEARANCE**

When we look at a dog and see breed, we are seeing **ONLY ROUGHLY 50** of their nearly **20,000 GENES**

That is **0.25%** of a dog's **ENTIRE GENOME.**

The set of **50** genes associated with physical appearance is **DIFFERENT** from the set of thousands of genes responsible for ***brain development*** and ***function.***

LOOKS
DON'T
EQUAL
BEHAVIOR

How are PURE BREED and MIXED BREED dogs different?

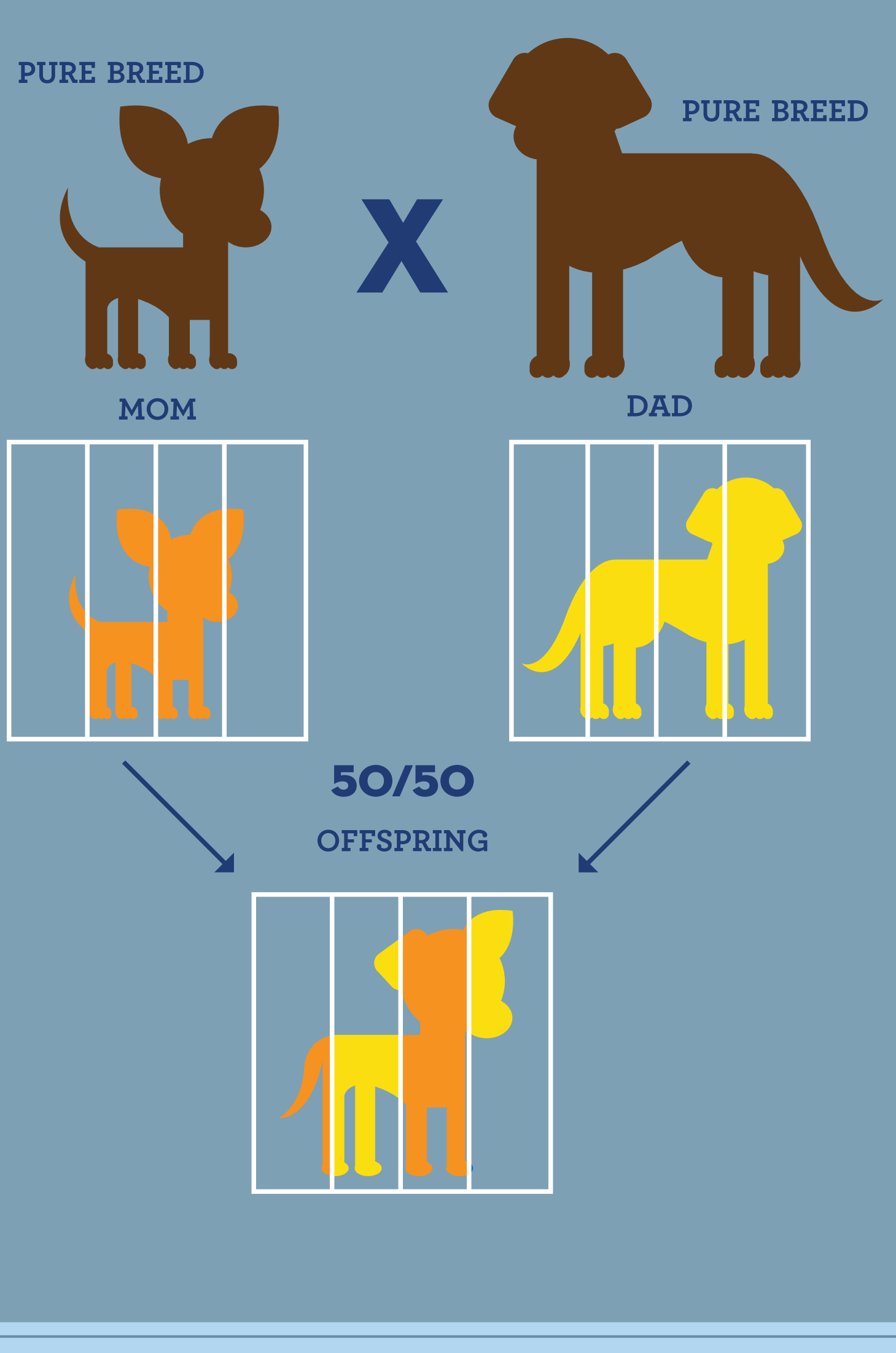
Pure breed dogs come from a **CLOSED** gene pool.

Mixed breed dogs come from a **VARIED** gene pool.

Once a dog is **LESS THAN 100%** *of a single breed, they have genetic variations that make them* **DISTINCT** *from that breed.*

A MIXED BREED DOG IS NO BREED AT ALL!

MEET THE PARENTS



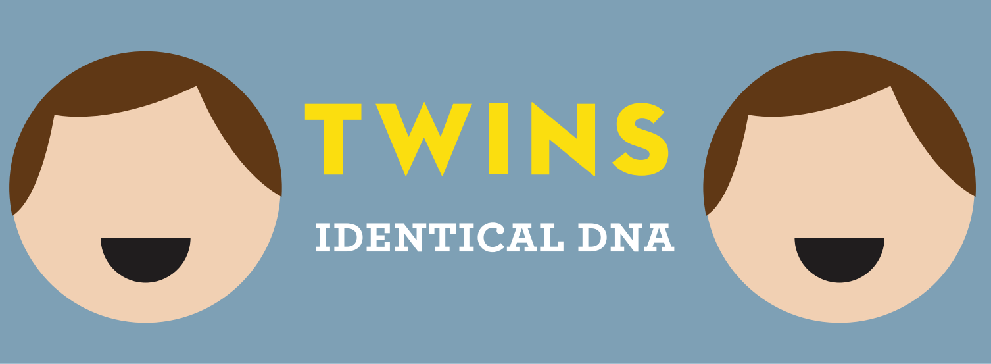
We can't accurately predict the behavior of **MIXED BREED DOGS** by comparing them to **PURE BREED DOGS**, even if the pure breed dog is a parent.

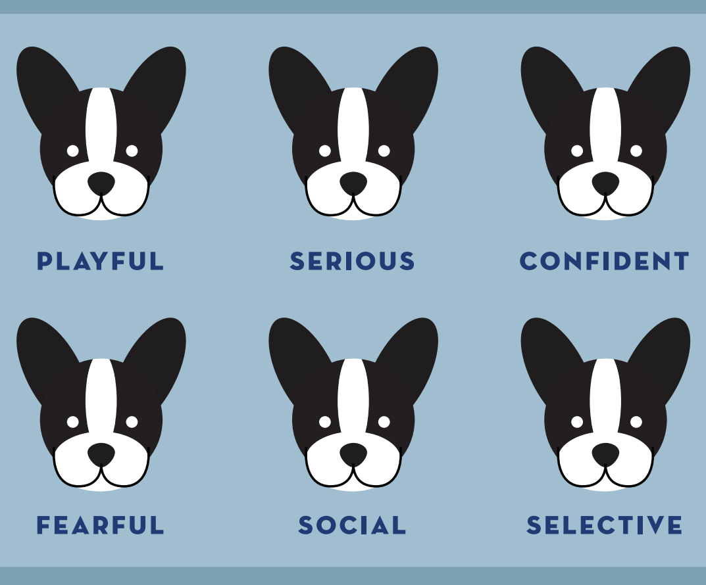
The offspring of 2 different pure breed dogs isn't a member of either parent's breed.

IT IS MISSING 50% of each parental breed's DNA, and we don't know ***which 50%!***

PURE BREED DOGS ARE NOT CLONES

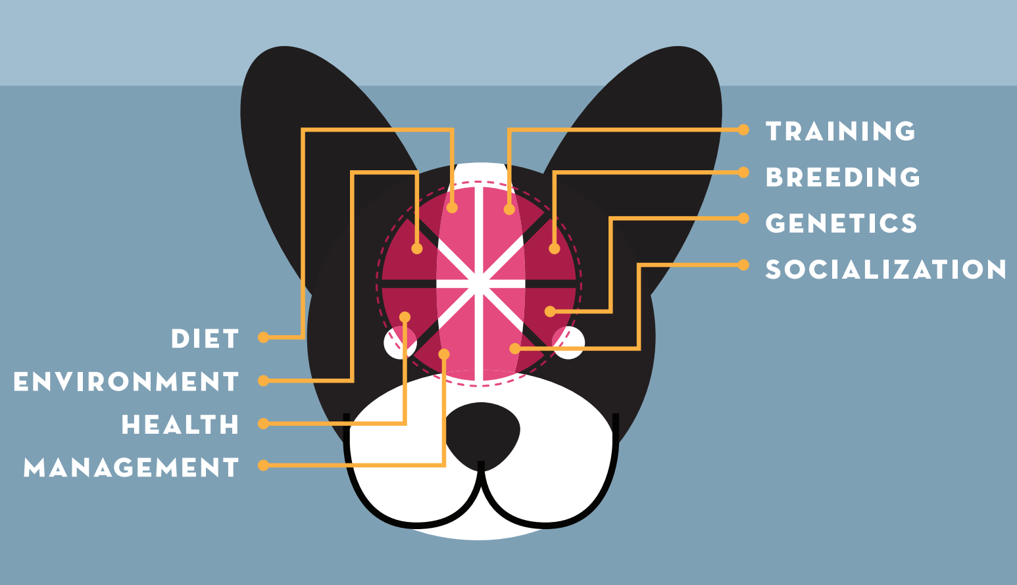
Unlike human identical twins, pure breed dogs have different DNA





Dogs may look alike, but only **0.25%** of their genome determines their breed defining physical traits. ***The rest can vary.***

The behavior of ALL dogs is influenced by many factors. That is why **breed traits are POSSIBLE but NOT GUARANTEED.**



What about DNA tests?

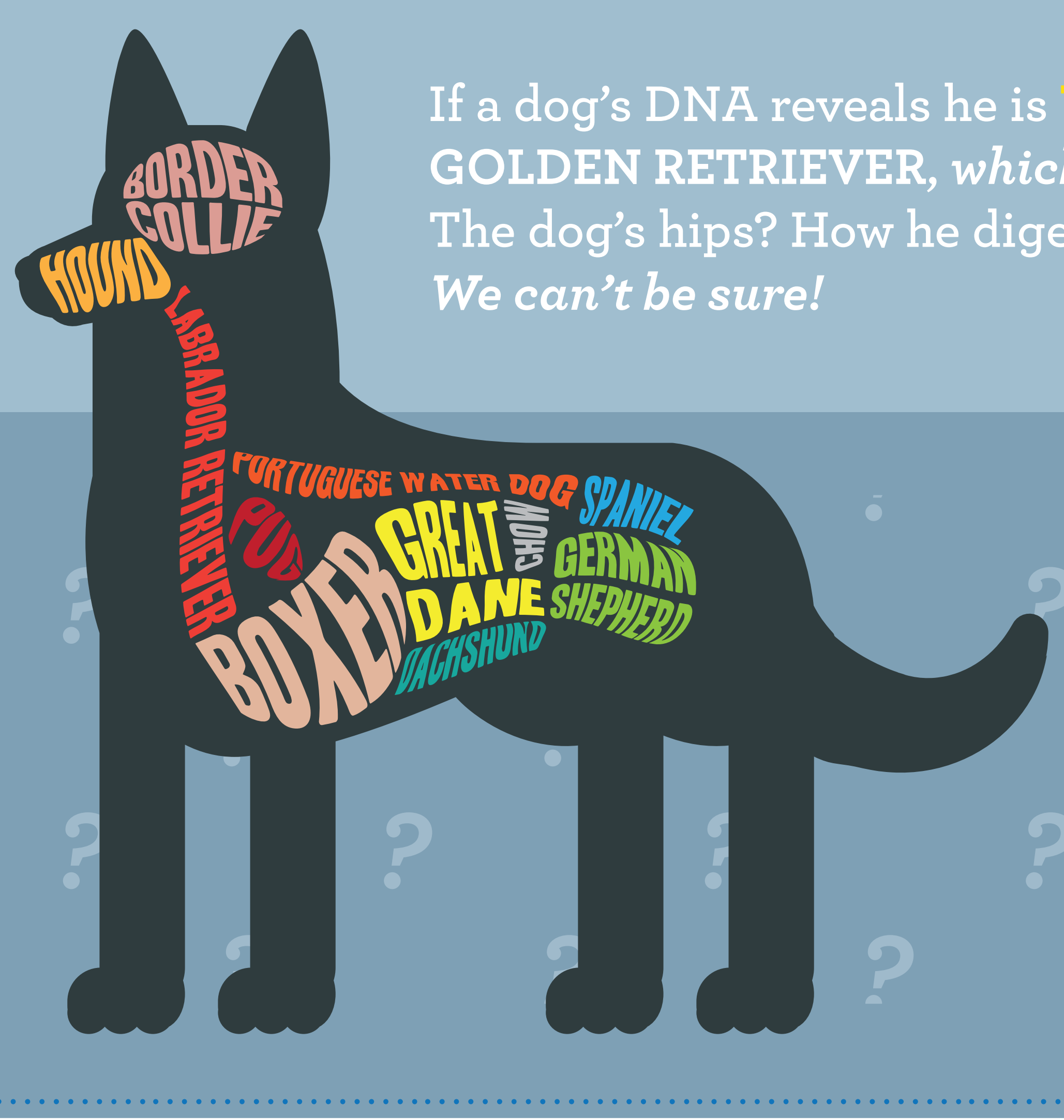
DNA tests help identify a dog's ancestors. Knowing a dog's breed mix will not help us determine behavior because:

1. *the* **BEHAVIOR** *of* **ALL** *dogs (pure breed or mixed) is always influenced by a variety of outside factors.*

2. ONCE A DOG IS A *mixed breed dog, they are not a member of any breed. Each mixed breed dog, even those from the same litter, will have a unique genome.*

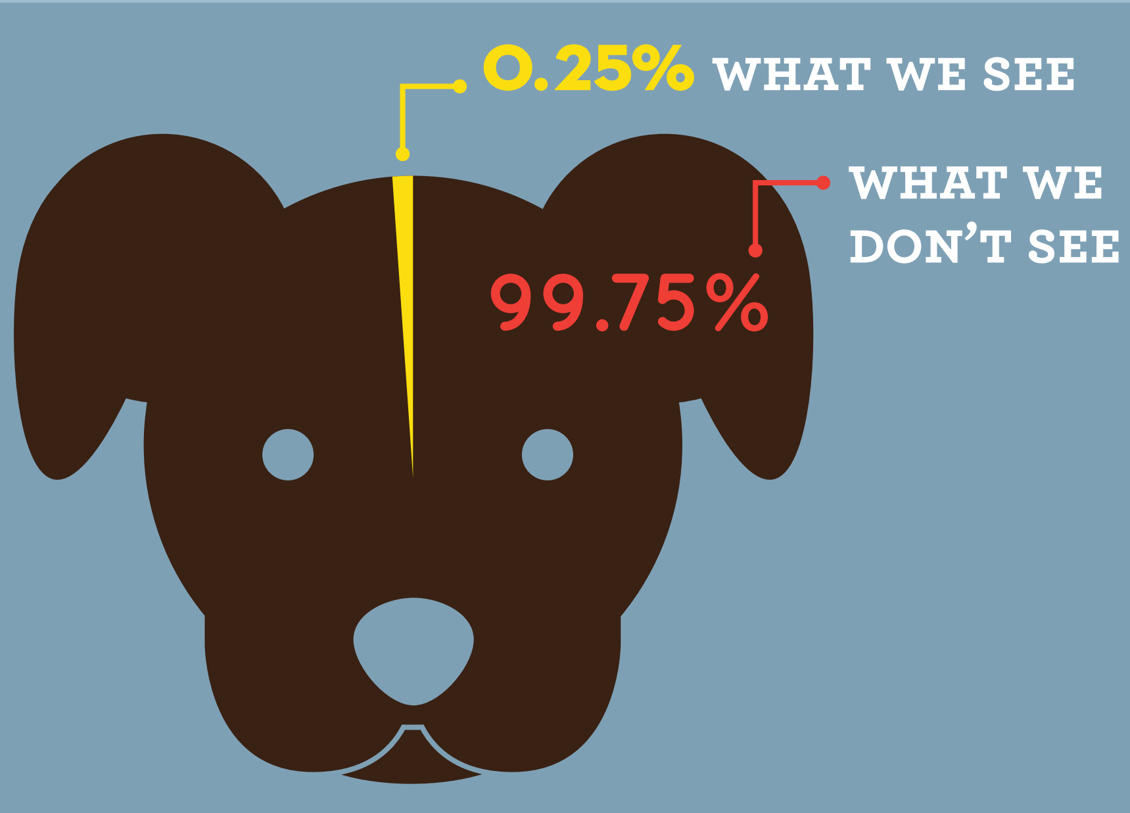
3. EVEN IF WE KNOW *the breeds present in a mixed breed dog's DNA, we do not know which parts of the dog are influenced by those breeds.*

FOR EXAMPLE



If a dog's DNA reveals he is **12.5% GOLDEN RETRIEVER,** ***which 12.5% is it?*** The dog's hips? How he digests food? ***We can't be sure!***

YOU CAN'T JUDGE A BOOK *by its cover*



Visual identification of mixed breed dogs is highly inaccurate.

We cannot accurately predict future behavior based on how a dog looks on the outside, their breed, or their DNA results.

ALL DOGS ARE INDIVIDUALS

GET TO KNOW EACH DOG IN FRONT OF YOU!

CITATIONS:
- The Dog and It's Genome by Elaine Ostrander
- Genetics and the Social Behavior of the Dog by Scott and Fuller
- National Geographic: http://ngm.nationalgeographic.com/2012/02/build-a-dog/ratliff-text
- Kristopher J. Irizarry, PhD: https://vimeo.com/26975521
- Janis Bradley, The Relevance of Breed in Selecting a Companion Dog: https://vimeo.com/63168961
- Dr. Victoria Voith: http://www.nationalcanineresearchcouncil.com/breed-identification-1/

ABSTRACTS:
- Brachycephalic traits: http://www.ncbi.nlm.nih.gov/pubmed/20224736
- Morphological traits: http://www.ncbi.nlm.nih.gov/pubmed/20711490
- Brain development genes: http://www.ncbi.nlm.nih.gov/pubmed/22031440
- Cranial facial development: http://www.ncbi.nlm.nih.gov/pubmed/16782454
  http://www.ncbi.nlm.nih.gov/pubmed/20083217
- Canine skull development: http://www.ncbi.nlm.nih.gov/pubmed/23396475

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