

## Mystery Mutts

### Cutting-edge science reveals the makeup of mixed-breed dogs.

*Maureen Kochan*

Like millions of mutt owners, Beth and Maj Jafari loved to debate their dog's family tree. Maj would insist Kelsey is part Shetland Sheepdog, citing her herding instincts, Sheltie-like face and ears, and endearingly bossy personality. Beth would say Kelsey is part sighthound, most likely Whippet, because she loves to run and chase and can spot small animals from far away.

Kelsey wasn't talking, so the couple's debate always ended in a stalemate. "She looks like a lot of dogs, but at the same time, not any dog," Beth says.

When the Jafaris, adopted Kelsey almost a decade ago, they couldn't have imagined a day when science would reveal Kelsey's Heinz 57-like breed blend. But thanks to advances in canine genetics technology, that day has finally come.

#### Genetic revolution

When geneticists cracked the canine genome of a Boxer named Tasha in 2004, scientists at MetaMorphix Inc., a biotechnology company, sensed opportunity. "We knew that we now had the technological resources available to do some very unique work with dogs," says Dennis Fantin, Ph.D., MetaMorphix's chief of operations.

The company's researchers already knew from working with cattle DNA that it was possible to group animals by breed. The same could be done with purebred dogs, they figured, now that the dog had its very own genetic map.

Fantin says a turning point came when researchers discovered they could use the same technology to uncover the lineage of a mixed-breed dog. The development would hold profound implications for the health of mutts, they thought, since owners and veterinarians who knew a mutt's breed makeup could then infer the dog's genetic predisposition to specific health issues and behavior traits, just like owners of purebred dogs.

So far, MetaMorphix's Canine Heritage Breed Test, which became available to the public in March 2007, identifies 38 breeds. Fantin says the test will identify more than 116 breeds by the end of the year.

Although breeders have used DNA testing for several years to screen dogs for genes responsible for certain health issues and even physical traits like coat color, the Canine Heritage Breed Test was specifically designed to identify a mutt's breed composition. (A similar DNA test from Mars Veterinary, called the Wisdom Panel MX, entered the market this fall and is available through veterinarians. Mars says the Wisdom Panel MX identifies more than 130 breeds.)

The Canine Heritage Breed Test is painless, only requiring the owner to rub a swab along the inside of the dog's cheek to collect DNA. The owner then sends the sample to the company's laboratory in Davis, Calif., for analysis. Results take about six weeks, Fantin says, and the owner receives a certificate that details the dog's breed background. The Canine Heritage Breed Test sells for \$65, plus shipping.

#### Name that mix

Much like the Jafaris, mutt owners have been playing "Name that Mix" for ages. Visit any dog park, and "What kind of dog is that?" is often a more popular greeting than "Hi."

So before widespread breed-identification testing spoils all the fun in speculating about a mutt's unique provenance, we thought we'd play a little game. We selected three mutts from around the country and had the owners submit their dog's DNA for analysis using the Canine Heritage Breed Test.

We then asked three brave dog experts with more than a century of combined experience in dogs to speculate as to the breed composition of our subjects — not an easy task because they had to make their decisions based solely on the dogs' photographs.

Read on for our experts' and the owners' guesses, as well as the official findings, courtesy of this new cutting-edge science — and each dog's very own DNA.

Meet the experts D. Caroline Coile, Ph.D., is the author of more than 30 books about dogs, including “Encyclopedia of Dog Breeds” (Barron’s, 2005). She frequently writes about canine genetics and has shown purebred dogs for more than 30 years. Allan Reznik is DOG FANCY’s consulting editor, and the editor-in-chief of Dog World and Dogs in Review magazines. He has been involved with purebred dogs for four decades as a breeder, handler, dog show judge, author, and journalist. Betty-Anne Stenmark is a multi-group conformation judge who has served at the nation’s top dog shows, including the Westminster Kennel Club’s annual show in New York. She has also written several breed-specific books and volunteers at Palo Alto Animal Services, the municipal shelter in California.

Kelsey, 11 years old  
Owners: Beth and Maj Jafari of Virginia

#### The Owners

“Kelsey must have sighthound in her, probably Whippet,” Beth says. “She is a big snuggler and must be petted at all times, like Whippets and Greyhounds.”

Maj has a different idea. “I have always thought Shetland Sheepdog, because their faces and ears are very similar, and she has quite a herding instinct.”

#### The Experts

D. Caroline Coile, Ph.D.: “What a trim figure for an 11-year-old! I think it’s in her genes, and that trimness, combined with her slightly arched topline, shouts sighthound. Her color and head type remind me of a Collie or Sheltie. So, I’ll hazard a guess of Whippet and Shetland Sheepdog. By the way, sighthound crosses like that are known as lurchers.”

Allan Reznik: “Kelsey looks like a Greyhound-Collie cross. She has the lean, leggy body type, the head and muzzle of a Greyhound, and the sable color [each tan hair ticked in black] of a Collie or Sheltie. Her muzzle, along with her ears thrown back, are also reminiscent of a Collie or Sheltie.”

Betty-Anne Stenmark: “This dog is a real mystery to me, but a hound of some sort is what keeps coming back to me. She looks like a mix of Harrier, American Foxhound, and Smooth Collie.”

#### The Test

Doberman Pinscher, Collie, Shetland Sheepdog, and German Shepherd Dog.

“Wow!” Beth says. “We are very surprised at the breeds. We never would have guessed Doberman. I think it is fair to say we are very perplexed, and will have to go stare at her some more.”

Kylie, 1 year old  
Owners: Mary Ellen and Susan Kirkchaney of California

#### The Owners

“We think that Kylie is primarily Papillon, more specifically, the Phalene version,” Mary Ellen says. “But she must have a larger breed in her, as she is too big for just Papillon! We’ve read some breed characteristics of the Papillon, and they all seem to fit her — except for the ‘obedient’ word! We usually tell people she is a ‘cute as a button mix’ when they ask.”

#### The Experts

D. Caroline Coile, Ph.D.: “My first thought looking at Kylie’s head profile was Australian Shepherd, but nothing else bore that out. Her body type reminds me of a Shih Tzu. She has long hair, but patterned [shorter hair on her face and fronts of legs], which is more like the Papillon, as is her head type and coat patterning, and her ears are somewhat Papillon-ish. But she is too big, so what else is in there? Beagle? I would expect short hair. Cocker Spaniel? Maybe, but I’d almost expect fuller cheeks. But OK, my guess for her is Papillon and Cocker Spaniel.”

Allan Reznik: “I think Kylie is a combination of Papillon, Sheltie, and Whippet, maybe with some Jack Russell Terrier, too. The fringed, semi-dropped ears suggest Papillon or Sheltie. The brindle [striped] color would be the Whippet coming through. The rectangular body suggests Papillon or Jack Russell Terrier.”

Betty-Anne Stenmark: “At the shelter where I work, we would call Kylie a Papillon mix. What has actually contributed to her look? I am guessing Papillon, a spaniel of some sort, and a Sheltie.”

#### The Test

Shih Tzu, Collie, Shetland Sheepdog, and Basset Hound.

"I'm so not surprised!" Mary Ellen says. "Kylie has this funny-shaped body, which must be from the Basset Hound. And she loves to herd people. When I took her running a couple of times, all she wanted to do was nip at my heels!"

Shadow, 2 years old  
Owners: Kathleen and Ben Mooneyhan, Annapolis, Md.

#### The Owners

"Our best guess has been a Corgi-Shepherd mix," Kathleen says. "In fact, Ben has told many people that Shadow is a 'Shorgi.'" Ben says Shadow's herding instincts are unmistakable. "When Shadow is at the beach, he likes to run along the shore and herd other dogs, like our Labrador Retriever, back into the water. Some people say they believe he is part Beagle, but we don't really see the Beagle characteristics that other people seem to see."

#### The Experts

D. Caroline Coile, Ph.D.: "The first thing that Shadow's coat, especially color, screams out is German Shepherd Dog. A spitz or husky breed could also be in there. The other ingredients are trickier. Something smaller, obviously. Those semi-prick ears could be from a Sheltie, but then again, half the time such ears don't even occur in Shelties, and expecting a mix to carry them may be expecting a lot. A Beagle is a possibility. The tail could be carried like a Beagle's and shaped like a shepherd's. So that's my guess: German Shepherd Dog and Beagle. With some Maybelline for that eyeliner."

Allan Reznik: "Shadow looks like a combination of Sheltie, German Shepherd Dog, Beagle, and perhaps Welsh Corgi. The black saddle over his back is a Shepherd, Beagle, or Corgi marking. The ears and eyes have a Sheltie look about them."

Betty-Anne Stenmark: "I would call him a Corgi mix because of his lowness to the ground, his length of body, his spitz-like tail, and his somewhat erect ears. What else is he mixed with? Who knows!"

#### The Test

Main breed not identifiable. Mix includes Labrador Retriever with traces of Bernese Mountain Dog and Borzoi.

"I couldn't be more surprised!" Kathleen says. "In fact, 'absolutely shocked' is probably a better description! The only thing about the Lab that I can see is that he sometimes likes to retrieve, when it suits his mood. But he is not too fond of water and doesn't look or sound or feel like a Lab. Although, Shadow was 'raised' by a Lab — our female, Sundance — and now has a Lab named Beaux for a brother, so maybe some genes rubbed off!"