

## Breeder's Notebook

### Who's your granddaddy?

*D. Caroline Coile, Ph.D.*

Your Heinz 57 just might be a Borzoi 0.25–Beagle 0.25–Collie 0.50. At least, that's what two companies claim they can tell you.

Last year, MetaMorphix, Inc. offered the first commercially available test, the Canine Heritage breed test, for the determination of breeds behind mixed-breed dogs. Send off for their test kit (about \$70 with shipping), swab the inside of the cheek belonging to the dog in question, and mail the swab back. Six weeks later, a certificate arrives with your dog's DNA analysis and breed heritage. The heritage report lists primary, secondary, and "in the mix" ancestors. A primary ancestor is a breed that makes up at least 50 percent of your dog's DNA, determined by how strong a match it is to an existing breed. Such a match usually happens only if one parent is a purebred, although it could also happen if two grandparents were of the same pure breed. Secondary ancestors are those that contribute easily recognizable components of your dog's DNA, but make up less than 50 percent of it. "In the mix" ancestors have lesser influence on your dog's DNA composition but are still identifiable.

The company developed the initial test using a database of more than 10,000 dogs representing 108 breeds. The test matches DNA at 96 single-nucleotide polymorphism (SNP) markers. These markers are variations in the DNA sequence that happen when a single nucleotide is altered in some subset of the population – as in a breed. By looking at what SNPs reliably occur within one breed versus another, a breed signature is developed. When parts of these SNP signatures are found in a mixed breed, the chances are that they came from the purebred dog with that entire signature.

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