

Dog breed identification is no basis for shelter policy.

A new study further confirms the unreliability of visual breed identification used in dog adoption, lost and found, and regulation.

The study, underwritten by Maddie's Fund® and reported on the Maddie's Fund® website,¹ dealt with the limited problem of identifying "pit bull" dogs in four Florida animal shelters. Shelter staff and veterinarians regularly assign breed descriptors to the dogs in their care; but, the authors asked, what are the reliability and repeatability of these breed assignments? They developed their project based upon this question, to test the hypothesis that agreement among staff members regarding identification of "pit bull" dogs would be poor, and that there would be poor agreement between staff breed identifications and DNA breed signatures.

The results from the four shelters participating confirmed the hypothesis. The authors report that shelter staff named twice as many dogs as "pit bulls" based on visual inspection as were identified as "pit bulls" based on DNA analysis. Further, shelter staff frequently disagreed with each other regarding the breed composition of the more than 100 dogs examined.

(Note: "Pit bull" is a term applied to an ever-increasing group of dogs of a number of breeds, along with dogs suspected, based on visual inspection, to be mixes of those breeds. "Pit bull" is not recognized as a breed by kennel clubs, dog registries, or companies offering DNA dog breed analysis.)²

The authors' findings regarding "pit bull" dogs are consistent with the findings of Dr. Victoria Voith and her colleagues regarding other mixed breed dogs.³ Breed identifications based upon visual examination correlate poorly with DNA breed analysis, and are subject to disagreement among observers.

These results echo the findings of modern canine genetics. A remarkably small amount of genetic material exerts a remarkably large effect on the size, shape, etc. of a dog.⁴ For example, Mars Wisdom Panel™ uses 321 genetic markers to differentiate breeds of dogs. However, Mars cautions that many, perhaps most, of these markers determine traits that are not observable.⁵ According to geneticists, as few as six markers may determine the shape of the dog's head, with the rest influencing other internal and external traits.⁶ This being the case, how could one examine a dog's head and then name the breed of the dog, or predict its behavior, or its suitability for a particular adopter? In fact, a paper published last year in the *Journal of Veterinary Behavior* reported that predicting behavior differences (with respect to aggression) in dogs based on appearance, including the shape of the head, is incorrect.⁷

The percentage of America's dog population documented as pure bred has been declining in the 21st century. Estimates of the percentage of the 78 million American dogs who are undocumented or mixed breed range from a low of 44% to a high of 67%.⁸ It is not unreasonable to assume that the percentage of dogs in U.S. shelters who are undocumented or mixed breed is at the highest end of these estimates.

Deciding whether or not a dog is a "pit bull" dog -- or a lab mix, or a shepherd mix – does not advance the welfare of dogs. There is so much behavioral variability within each breed, and even more among breed mixes, that we cannot reliably predict behavior differences on the basis of breed identifications, however derived.⁹ Reports based on professional behavior evaluations and pet owner surveys in Europe and North America have borne this out.¹⁰ A recent survey of the available literature by a founding faculty member of the San Francisco SPCA Academy for Dog Trainers has put the relevance of breed in the selection of a companion dog into a new perspective, suggesting that reliance on breed identification as a primary guide in either pet-dog selection or dangerous-dog designation should be abandoned.¹¹

We honor our obligations to the dogs in the nation's shelter system when we treat each dog as an individual, focusing on personality and behavior, and stop making guesses regarding breed and then being influenced by preconceptions arising from those guesses.

Visual breed identification has also exerted a harmful influence on public policy. We have placed an entirely unwarranted confidence in dog bite studies, bite reports and news accounts that attempt to relate incidents to breed. Visual breed identification did not only become inaccurate after Dr. Voith and the Maddie's Fund® researchers pointed it out. These researchers are calling our attention to what has always been the case. As Dr. Voith pointed out to the American Veterinary Medical Association in 2009, "The discrepancy between breed identifications based on opinion and DNA analysis, as well as concerns about reliability of data collected based on media reports, draws into question the validity and enforcement of public and private policies pertaining to dog breeds."¹²

¹ K. Olson, J. Levy et al. "Pit Bull Identification in Animal Shelters": A poster that illustrates the project and its result can be found at http://www.maddiesfund.org/Resource_Library/Incorrect_Breed_Identification.html (Accessed 7 February 2012)

² J. Berkey, "Dog breed specific legislation: The cost to people, pets, veterinarians, and the damage to the human-canine bond," *Proceedings*, Annual AVMA Convention 2009; 1-5.

³ V. Voith, et al, "Comparison of adoption agency breed identification and DNA breed identification of dogs," *Journal of Applied Animal Welfare Science*, 2009; 12 253-262

⁴ AR Boyko, et al (2010) "A Simple Genetic Architecture Underlies Morphological Variation in Dogs," *PLoS Biol* 8(8): e1000451. doi:10.1371/journal.pbio.1000451

⁵ Mars Wisdom Panel™ FAQs, <http://www.wisdompanelpro.com/faq.html> (Accessed 7 February 2012)

⁶ Personal correspondence with Kristopher Irizarry, Assistant Professor of Bioinformatics, Genetics and Genomics, Western University.

⁷ Martinez, A.G., Pernas, G.S., Casalta, J.D., Rey, M.L.S., Palomino, L.F, dIC., "Risk factors associated with behavioral problems in dogs," *Journal of Veterinary Behavior* (2011) 6, 225-231

⁸ J. Bradley, *The Relevance of Breed in Selecting a Companion Dog*, National Canine Research Council Vision Series, 2010.

⁹ A. Marder and B. Clifford, "Breed labeling dogs of unknown origin," National Canine Research Council, at http://www.nationalcanineresearchcouncil.com/uploaded_files/tinymce/Marder%20viewpoint.pdf (Accessed 7 February 2012)

¹⁰ S. Ott et al, "Is there a difference? Comparison of golden retrievers and dog affected by breed-specific legislation regarding aggressive behavior," *Journal of Veterinary Behavior*, (2008) 3, 134-140; A MacNeil-Allcock, NM Clarke, RA Ledger, D Fraser, "Aggression, behaviour, and animal care among pit bulls and other dogs adopted from an animal shelter," *Animal Welfare*, 2011: 20:463-468; D.L. Duffy et al, "Breed differences in canine aggression," *Appl. Anim. Behav. Sci.* (2008), doi:10.1016/j.applanim.2008.04.006

¹¹ J. Bradley, op. cit.

¹² V.Voith, "A comparison of visual and DNA identification of breeds of dogs." *Proceedings*, Annual AVMA Convention 2009; 1-3.