

**Nicole Jewett**  
**Class of 2022**  
**Forensic Science- Biology Concentration**  
**Decoding Dog DNA: The Reliability of At-Home Dog DNA Test Kits**  
**Mentor: Claire L. Glynn, Ph.D.**  
**Forensic Science**

The field of pet genomics has boomed over recent years, and with its popularity has come many direct-to-consumer (DTC) DNA testing companies that offer at-home canine genetic testing for dog owners to determine their pet's breed composition and screen for health issues and conditions [1]. Many of these companies make impressive claims about their breed determination accuracy and the many benefits of their services to a pet's health and wellness, but they also come with hefty price tags and a surprising lack information regarding the scientific validation for their DNA testing methods that they base their results upon [2]. Pet owners tend to make a lot of decisions based on dog breed; they want to know how their pet will look, act, and how to provide them the best care. Among the most commonly reported influences on a pet adopters' preferences are appearance of the animal, social behavior with the adopter, and personality— with many of these characteristics being related to dog breed [3]. A study performed by researchers at Arizona State University in 2016 found that dogs in shelters that are either labelled as or have the physical appearance of an undesirable breed are perceived more negatively by adopters and tend to have a longer length of stay compared to dogs that appear to be a more desirable breed [4]. This is important because many shelters determine the breed of surrendered dogs solely based on their physical characteristics, according to a follow up study conducted by the same group in 2018 [5].

In this study, breed identification kits from the top three DTC dog DNA testing companies (Embark, Wisdom Panel, and DNA My Dog) were tested using DNA samples from four dogs of varying breed compositions. All three companies were able to correctly identify the breed compositions of the purebred and hybrid samples, however, due to the results of the mixed breed samples and the services provided by each company, not all three of the companies tested are recommended as a reliable source of breed mixture identification. Embark is the highest recommended testing company for breed mixture identification given the results of this study. While Embark's test comes with the highest price tag of the three, it provides accurate breed mixture results combined with the most unique and extensive additional services that provide much more genetic information than any other company. While Wisdom Panel is certainly a comparable testing company in terms of reliable breed mixture identification for all dogs, it does not provide quite as many tools and services as Embark, and therefore is not regarded as the best value testing service. DNA My Dog is the most affordable mainstream dog DNA testing option but given the lack of information provided in their testing kit, imprecise breed estimates, and questionable results reported for mixed breed samples, it is not recommended as a reliable dog DNA test.

### **References**

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