



Above, the Fila, right, the Tosa, and below the Dogo.
Photos from Eva-Maria Kramer's excellent
Der Kosmos Hunde Fuhrer



Are certain dog breeds more dangerous than others?

Whether or not certain dog breeds are more dangerous than others has been the subject of considerable discussion among ethnologists and veterinarians, especially with regard to the usefulness of breed-specific legislation to protect a community's citizens from dog attacks/bites. Such legislation is based on the assumption that there are genetic differences among breeds with regard to their dangerousness/aggressiveness. However, most veterinarians and ethnologists oppose breed-specific legislation, arguing that the genetic make-up of an individual animal is only one of many components that may enhance its aggressiveness.

Factors that may influence the specific danger of a dog bite/attack imposed by an individual dog include the temperament and body characteristics of a dog, the individual personality of the dog owner, the specific circumstances involved in a bite incident, and the individual personality of the victim (Stur, 2000). Breed-Specific legislation is based on the assumption that the first two criteria, characteristics of the animal itself, are the most important influence on the danger imposed by dogs. But if this were true, comprehensible differences in temperament and/or body characteristics among breeds would be expected. For example, we would expect that all pit bulls differ significantly in their temperament from other breeds.

Just operationalising the notion of temperament is complex. The temperament of a dog is defined as the sum of all its inherited and acquired physical and psychological traits, characteristics and abilities, which determine, shape and regulate the dog's responses to its environment (Seiferle, 1972). The fact that the environment, a variable difficult to control and standardize, is part of its definition makes the experimental investigation of temperament differences among breeds extremely difficult, since such experiments must be based on the objective temperament evaluation. This is also true for the investigation of the defined temperament trait of aggressiveness (Stur, 2000).

Aggressive behaviour in dogs is a species-specific trait which is firmly established genetically, because it has been highly influenced by natural selection during evolution as well as by artificial selection through man (e.g., selecting for intra-specific aggression in most guarding breeds and so-called fighting dogs) (Lockwood, 1995). However, the fact itself that the aggression level of members of certain breeds may be increased (or decreased) through artificial selection does not prove that aggressiveness itself is a highly hereditary trait. In most cases, dogs that are selected for higher levels of aggression are raised in a very aggression-stimulating

environment, which then in turn imposes the wrong impression of a genetically based hyper-aggression (Stur, 2000). In situations such as this, environmental factors are ignored and blame for aggressiveness is placed on certain body characteristics are also often blamed as an indicator of the dangerousness of a particular breed. These physical characteristics include measures such as body weight and height, power, jaw str

Body weight, height and length are measurable parameters which do vary immensely among breeds. Power and speed which are influenced by body characteristics also vary among breeds. However, the power of a dog is not only based on the dog's genetic make-up but on the training condition of the dog. Jaw strength is another measurable parameter. Although certain breeds such as Rottweiler or American Pit Bull Terrier have the reputation of stronger jaws than others, valuable scientific studies showing significant differences in jaw strength among breeds does not exist (Stur, 2000). It is obvious that a larger and more powerful dog can potentially do more harm than a smaller, weaker dog. Even a friendly greeting behaviour such as jumping up on a person can become a potential dangerous situation based on the size of the dog. However, it is a fallacy to assume that all members of large breeds are generally more dangerous than members of small breeds, because it is certain circumstances that make a situation more dangerous than others.

The sex of the dog is another body characteristic that plays an important factor in aggressive behaviour. For instance, it has been shown that a majority of dog bites is inflicted by un-neutered young males (e.g., Wright, 1985). Hence male dogs are, independently from their breed, potentially more dangerous than females.

Pain threshold is also a body characteristic which plays an important role in aggressive behaviour. However, currently no valuable scientific method to evaluate the tolerance to pain is available (Stur, 2000). Other body characteristics such as the animal's age and overall health are additional biological factors that can influence dogs the tendency toward aggression (Lockwood, 1995). However, health

conditions that elicit aggressive behaviour can occur in all breeds and do not justify indiscriminatory of certain breeds. In summary, "the classification of dog breeds with respect to their relative danger to humans makes no sense, as both, the complex antecedent conditions in which aggressive behaviour occurs, and its ramifying consequences in the individual dog's ecological and social environment are not considered" (Fedderson-Peterson, 2001).

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Is it possible to identify individual dogs as members of a specific breed?

For many of us the companionship of "man's best friend" is a daily source of joy, providing a connection to nature that helps us to appreciate the more simple things in life. However, dogs can also be a public nuisance, especially when bad behaved or aggressive. Every year throughout the world millions of dogs are euthanised by veterinarians because of behavioural problems, such as aggression towards people and/or other animals. In searching for reasons for these aggressive behaviours the blame is often put on certain dog breeds, which then receive the reputation as being vicious. Which breeds are affected varies not only from country to country, state to state or city to city, but even from one decade to another. For example, breeds that have been labelled as vicious in the U.S. over the past 70 years include the Bloodhound, Doberman Pinscher, Chow Chow, German Shepherd Dog, and more recently the Pit Bull. Dog breeds with the reputation of being dangerous have been and continue to be the target of local banning campaigns in an attempt to legislate against ownership of the breed(s) in question. In the last decade breed bans in European countries like Great Britain included mainly pit bull-type breeds (e.g. American Pit Bull Terrier). In 2000, local breed-specific legislation reached its climax in the German state of Nordrhein-Westphalia where 42 dog breeds were either banned or their ownership restricted, after fatal dog attacks on people.

While public policy has moved toward the banning of certain breeds in an attempt to protect the public from vicious dogs, many ethnologists, veterinarians and veterinary organizations (e.g., the American Veterinary Medical Association) oppose breed specific legislation. Reasons for such opposition are that such legislation does not improve the control of vicious dogs but rather discriminates against owners of breeds that have a reputation of being dangerous. What is more, legislation against so-called "dangerous" dog breeds poses another serious problem: enforcement. How do animal control officers determine whether a dog is a member of a breed in question?

To understand the problem of determining an individual dog's breed we first must look at the history of the domestic dog and the development of modern breeds. Archaeological evidence indicates that the dog was the first animal domesticated by hunters, gatherers and foragers of the last Ice Age about 14,000 years ago (Clutton-Brock, 1995). According to the most wide-spread and accepted theory, the domestic dog "likely originated from a

large genetically diverse population possibly derived from wolf populations existing in different places and at different times" (Vilà et al., 1999). Although dogs are taxonomically considered a separate species (*Canis familiaris*), from a geneticist's point of view they are not a true species. In fact, researchers have recently shown that there is less genetic difference between dogs, wolves and coyotes than there is between the ethnic groups of the human species (Coppinger and Schneider, 1995).

So what exactly is a breed? Per definition, breeds are groups of related animals, which are sufficiently similar in their genetic make-up and physical appearance to produce physically similar offspring when mated with each other (Blood and Studdert, 1999). For example, the mating of two members of the Golden Retriever breed will produce offspring with physical characteristics that resemble those of Golden Retrievers (i.e., golden coat colour, dark-brown eyes, floppy ears etc.). Most of the modern dog breeds have a recent origin, with many breeds having been developed only within the past 150 years (Dennis-Bryan and Clutton-Brock, 1988). The development of breeds is based on artificial selection by humans, a process where dogs are selected for certain physical characteristics (e.g., coat colour) or behavioural traits (e.g., guarding). During this process dogs have become a morphologically diverse species that is unique among mammals (just think about the differences in size and conformation between a Great Dane and a Chihuahua). Such morphological diversity has been maintained and perpetuated through breeding controlled by breed societies. Each dog breed is managed by a national breed society (e.g., the American Kennel Club), which is organized under an international umbrella organization, the Fédération Cynologique Internationale. The breed society maintains a register of the animals that are members of the breed and sets the standards for physical appearance that must be attained.

Because of this focus on a high degree of phenotypic uniformity (coherent physical appearance) many breeds became closed gene pools during their development. Therefore, low levels of genetic variability within a breed and the occurrence of breed-specific genes or haplotypes (DNA sequences) would be expected within most dog breeds. The identification of genes or haplotypes that are specific for a certain breed would enable us to determine a dog's breed scientifically. However, comparison of DNA sequences among members of different dog breeds revealed that there are high levels of genetic variability within breeds (Vilà et al. 1999). At least two reasons have been proposed for this finding. First, the founding stock of our modern dog breeds was likely drawn from a large and genetically diverse pool of dogs (Dennis-Bryan and Clutton-Brock, 1988). Many of our modern dog breeds were

created by crossbreeding, e.g., Golden Retrievers are believed to originate from the mating of a Flat-coated Retriever with a Tweed Water Spaniel and interbreeding of the offspring with Irish Setter, Labrador Retriever and Bloodhound (Alderton, 1993). Second, dog breeds were actually not as highly inbred during the development of our modern breeds as it was assumed. Although the goal of high phenotypic uniformity within a breed led to closed gene pools at some point during the development of modern breeds, dog breeders occasionally outcrossed their purebred dogs to avoid negative effects of inbreeding on health and behaviour (Ubbink et al., 1992). Thus, the introduction of foreign haplotypes

due to genetic exchange between breeds and the short history of our modern dog breeds hindered the accumulation of breed specific genes (Vilà et al., 1999). In fact, genetic differences among breeds are so minute that we cannot currently identify an individual dog's breed based on DNA analysis (Templeton, 1990).

In summary, a dog's breed cannot currently be determined by using scientific methods such as DNA analysis. Identification of an individual dog's breed based on papers from a kennel club relies on the integrity of the breeder and does not guarantee pure genetic ancestry. "Breed-specific ordinances imply that there is an objective method of determining the breed of a particular dog, when in fact, there is not at this time" (Canine Aggression Task Force, 2001). Thus, the usefulness of such legislation is highly questionable.

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