DNA test- Recommendations by the Swedish Kennel Club

Far from all tests offered on the market can be considered reliable and / or suitable for use in a breeding program for the barbet. In the worst case, the use of a DNA test that is not reliable or applicable in a dog breed can mean that breeding animals are falsely beaten, or worse, falsely judged to be free from disease. There may be various reasons why a test is not reliable or applicable: The inheritance of the disease in question may be more complicated than the test takes into account (with several genes, and sometimes also environmental factors involved), which among other things can cause the dog's genotype (test result) and phenotype (its clinical status) do not always match. The test can be validated for any or a few dog breeds, but not for others. In addition, the test may be relatively uninteresting in that the disease does not occur, or is very rare, in the current breed. The risk is then that the test takes focus and space in the breeding work from other which is of greater clinical importance, something that risks leading to a deterioration with respect to other health aspects. One such example is VW1, a disease that is not yet considered validated for the breed barbet and where the disease is not a clinical problem either. SKK / AK particularly wishes to emphasize the importance of providing the information provided by the DNA test in relation to other properties, eg other diseases, which are included in the breeding goal of a particular breed of dog. Otherwise there is an obvious risk that the breeding work is focused on the diseases and defects that are easy to "measure" and register. Therefore, it is of great value that the breeding strategy, RAS, for each breed of dog shows which priorities should be made in the breeding work taking into account all the characteristics that are included in the breeding goal. The overall health status of the dogs and the long-term perspective on genetic variation are important components of this priority.

Unfortunately, when the discovery of a mutation is broadened to include other breeds, in many cases it has been found that the gene change that causes the disease A in a breed does not necessarily have the same effect in another. An example of a condition caused by various mutations is the eye disease PRA (progressive retinal atrophy). PRA is a collective term for various forms of retinal depletion, all of which provide similar changes in retina appearance and lead to blindness. For some types of PRA, for example the variant called prcd-PRA and occurring in a large number of breeds, one knows which gene change is behind. For several other forms of PRA, the genetic cause is not known. In many breeds there are several different variants of PRA, which in practice means that a dog that has been found to be free from a variant of PRA by DNA test can be a carrier for or affected by another form of PRA. SKK / AK wishes to emphasize that a dog that exhibits clinical symptoms of a serious illness is not suitable for breeding, regardless of what the DNA test shows. The dog's clinical disease status is in this respect always superior to the genetic.

Many of the common diseases and defects in our dogs are governed by several genes and environmental factors in interaction. For such diseases, it is more difficult to map the genetic background and thus also more complicated to produce DNA tests. In some cases, the researchers succeed in identifying a single gene variant (mutation) which proves to have a major impact on the disorder, but where also other so-called modifying genes affect the expression. In some cases, DNA tests are also launched for such mutations, which, although admittedly, may indicate an increased risk for a disease, but where far from all genetically affected dogs become ill. This type of DNA test is more difficult to utilize in the practical breeding work because it is often unclear how great a risk a dog with the current gene change has to develop the disease. It is also not known what other genetic risk factors for the disorder that the dog carries, or to what extent environmental effects affect it. For some of the tests that are marketed for diseases with complex or not fully understood inheritance, the so-called penetrance is not greater than 2-5%. By this is meant that dogs with the current gene variant (mutation) have a 2-5% risk of getting the disease.

An obvious risk with tests for diseases where the inheritance is not yet fully understood, or where one knows that the genetic background is complex, is that in breeding work on very unsafe grounds excludes breeding animals that can be valuable in other respects, or that one incorrectly classifies individuals who are free of a disease for which they may have other genetic risk factors. SKK / AK's general attitude is to discourage DNA tests for diseases and defects where the inheritance is unclear. Tests for diseases that are affected by many genes should only be applied in cases where good scientific documentation can establish that the particular mutation (s) cause

a significant and defined risk for a disease, and provided that the condition is of clinical importance in breed.

A relatively new phenomenon in the DNA test market is to offer "combination packages" containing DNA tests for a large number of different diseases and other properties (ie for several different mutations). In other words, the laboratory clumps tests for many different gene variants into a "multi-test" that is offered to all dog breeds, or in some cases groups of breeds, where the animal owner receives an answer to the dog's genotype in from a dozen to over a hundred different loci (places on the genome ). This may seem to be a smooth and cost-effective way to get the most out of your dog's genetic material. The problem, however, is that the results these tests give are both difficult to interpret and many times of limited value, or even misleading, for their own dog breed. The packages also contain tests for diseases with established autosomal recessive inheritance and for diseases where the inheritance is unclear or quantitative. In most breeds, it is at most somewhat single or a couple of the tests included in the package that are properly validated and of value for that particular breed. That then "in the bargain" also get information about what possible mutations the dog carries in other genes is not only of good value, among other things because it can have consequences for the breeding selection. It is important in this context to know that, as a breeder, or owner of a breeding dog, regardless of a DNA test's reliability or relevance to the breed, it is obliged to take into account the test result in the breeding work. Dogs that have been found to be carriers for a disease mutation may only be mated with an individual who is free from the corresponding fetus. In practice, this entails an obvious risk that this type of multi-test entails great difficulties in matching breeding animals and negative consequences for the breeding base. SKK / AK recommends against the above from the package tests / multi-tests that are currently available. The positioning is based on the deficiencies in validation and / or relevance that exist for some of the included tests, and the negative consequences for breeding work an uncritical testing risk may have. SKK / AK instead recommends dog owners / breeders to test for the specific gene variant (s) that are of importance in the current breed of dog, of course, provided these tests are validated. For the breed barbet, there are no validated tests today.

The above means that it is always contrary to SKK's Basic Rules to use "genetically affected" dogs for serious illness in breeding. It is also not allowed to mate two carriers with each other. It is also important to keep in mind that, if you choose to test your dog for a disease, according to SKK's regulations, it is always obliged to provide truthful information about the result (see SKK's Basic Rules 3: 2). As a breeder you must of course also take into account the results of your breeding work, even if it was not what you hoped for. These obligations apply regardless of whether the result from the DNA test is registered by SKK or not. Current regulations and legislation regarding genetic testing are largely based on tests for diseases with simple recessive inheritance. The regulations are therefore not adapted to the fact that the tests that are currently offered relate more often to diseases with more complex (quantitative) inheritance, where the gene variant to which the test relates only entails increased risk (often unclear how large) in order for the dog to become ill or inherit a disease. In other words, what consideration you as a breeder is obliged to take to this type of test result in breeding work is not as obvious. However, it must be considered extremely doubtful that, taking into account both animal welfare legislation and the consumer purchase law, ignoring information in the form of DNA test results, even if one as a breeder does not consider the test result to be reliable or relevant. For example, paragraph 2: 3 of SKK's Basic Rules, "in the breeding work must avoid mating combination that, based on available information, increases the risk of serious illness / disability in the offspring.