

Health-focused Breeding

A Background and General Statement

The purposeful breeding of dogs and cats has created many different breeds with desirable characteristics that are valued by the public. However, selective breeding can also produce pets with hereditary diseases and/or extreme conformations (looks that have a negative impact on health and welfare). Health-focused breeding is the best way to improve the genetic health of purposely bred dogs and cats. Selection of breeding stock to improve and maintain the genetic and conformational health of animals must be a primary factor in breeding decisions. Many breeders aim to improve the health of their breeds by prudent selection within existing breed populations. That will work if there is a sufficient healthy population present in the breed. Some breeders will perform purposeful crossbreeding to improve genetic health and conformation. Health-focused breeders should be allowed to breed and improve their dogs' or cats' genetic health and conformation following scientifically established breed improvement schemes.

Selection of breeding animals must avoid extreme conformation that predisposes to disease, including but not limited to extremes in size, skin, limb length, angulation, and skull conformation. Breeders must actively select against the common hereditary diseases seen in all pedigree, designer-bred, and mixed-breed dogs. These include for example, allergies, hip dysplasia, heart disease, slipping kneecaps (patella disease), torn cruciate ligaments, inherited cancer, immune-mediated disease, and hereditary eye diseases. Breeders must also select against breed-specific hereditary disease, and for the maintenance and improvement of genetic diversity. Assessment of breed health must be determined based on valid breed health surveys and the results of genetic screening for clinical disease.

Some hereditary diseases might be screened for at an early age to predict the risk of clinical problems. For some there are DNA tests available. Screening tests and DNA tests must be scientifically validated to differentiate between affected and unaffected animals and, if possible, for carriers. Each disease has different parameters that must be evaluated and controlled by the selection of healthy breeding animals. Diseases due to extreme conformation must be controlled by selection for breeding animals with moderation of breed-specific conformation to the point where it does not predispose to disease. This starts with sensible and precise wording in breed standards and their interpretation in judges' education. Diseases with an age of onset beyond breeding age must be controlled by multi-generational breeding schemes that monitor the parents, grandparents, and close relatives to assess the predisposition for disease in prospective breeding dogs. This can be accomplished by health screening and DNA test results made publicly available in on-line databases. Many kennel clubs and health foundations incorporate these familial data into estimated breeding values (EBVs) to aid in mate selection and reducing the risk of specific diseases.

Addressing the specific breeds and diseases of the Norwegian breeding ban

Short-nosed breeds such as the English Bulldog once more commonly had a well-defined, longer muzzle. Currently, due to increasing popularity and selection for a more extreme (flat-faced) anatomy many dogs suffer from lifelong breathing issues, as well as other diseases related to their conformation. Animals suffering from these problems may experience lifelong distress, invasive surgery, and possibly death. While increased muzzle length does reduce the risk of brachycephalic obstructive airway syndrome (BOAS), research shows that within each breed, single anatomical measurements do not differentiate between normal dogs and those that suffer from BOAS. Respiratory function grading (RFG) of prospective breeding dogs by trained veterinarians is an essential tool introduced to improve the respiratory health of these breeds. Dogs that cannot pass RFG should be closely monitored for health concerns related to BOAS and should not be considered for breeding. RFG should be used in addition to selection for less exaggerated anatomical features.

The Cavalier King Charles Spaniel was included in the Norwegian ban due to their propensity for early-onset heart disease (mitral valve disease (MVD)), which is a hereditary disease, and a painful hereditary brain condition called syringomyelia (SM), which is related to the conformation of the skull. Due to an onset beyond breeding age, some national kennel clubs have embraced multi-generational breeding schemes for selection against MVD. SM can be diagnosed with MRI, including in dogs not yet demonstrating clinical signs. Multi-generational breeding schemes also work with SM, as increasing numbers of affected dogs show clinical signs as they get older. Published studies show that 25-40% of SM affected dogs will show clinical signs by one year of age providing the possibility for breeders to select against clinical disease. Published research has also shown that dog show judges properly examining the conformation of the skull can indicate dogs predisposed to SM. This is an example where changing breed standards and judges' education along with health screening would work to improve breed health. National screening programs established to reduce the frequency of SM are also in place and have to be monitored.

In summary, the most effective way to improve the health and welfare of purposely-bred companion animals is by breeding to standards that promote good health, and through health screening and the selection of healthy parents for breeding. If health-focused breeding is made a priority by breeders, veterinarians and the public, our dogs and cats will be genetically healthier.