CROSSES TO BEAR

Such possibilities of clandestine crosses no doubt exist in many performance breeds in which a cross to another breed might give an advantage. In my own breed, Salukis, Country of Origin imports are allowed to be integrated into the stud book after three generations of backcrossing to registered Salukis. But in so doing, brindles came into the AKC gene pool, where they never were before. Do they compete better in coursing or run like Greyhounds, as some assert? Could they be part Greyhound? As with the Siberian, if a bit of blood from another breed is advantageous in some competitions, is that really fair to the breed or those who own "true" purebreds. But unless it can be caught in the initial generation through parentage testing, at this point there's not much to be done about it.

The good news is that a single cross to another breed probably has far less influence than assumed. Yes, it can be used to introduce a new trait, such as a color, into a breed provided it can be selected for in subsequent generations. In the case of Salukis, the AKC requirement of backcrossing to AKC Salukis for three generations negates nearly any possible advantage if it were due to another breed–although after those three generations the dogs could be bred back to one another in an effort to emphasize the introduced traits. Still, it would not be easy.

A recent study published in the Journal of Animal Breeding and Genetics showed that without selection, outcrossing only had a limited short-term effect unless repeated continuously generation after generation. (Reference: Limits to genetic rescue by outcross in pedigree dogs. https://onlinelibrary.wiley.com/doi/ 10.1111/jbg. 12330).

THE LUNDEHUND PROJECT

Which brings us back to crossbreeds that may–or may not–be registerable. As we've seen, you basically need parent club approval before embarking on a crossbreeding endeavor even if it has the best of intentions. The current effort is the Puffin Project, a crossbreeding program for the Norwegian Lundehund.

One of the rarest of AKC breeds, the Lundehund has suffered through several genetic bottlenecks in its history, partly due to loss of employment and several devastating distemper outbreaks that nearly wiped it out. The result is that all existing Lundehunds descend from four individuals, who were already related to one another. The breed suffers from small litter sizes, with many producing only one puppy. The average lifespan of just over 9 years is low for a breed of its size, and almost 30% of Lundehunds die from intestinal lymphangiectasia, a gastrointestinal disease that causes diarrhea, vomiting, and even heart failure. Many cases can be managed with diet and medication, but so far breeding away from it has been unsuccessful because it doesn't seem to be caused by just one gene, and the lack of genetic diversity makes it impossible to get away from. To lose a breed with a fascinating history and physique would be a tragedy, but many consider it in peril. Lundehund breeders have worked hard to reduce the breed's inbreeding coefficient and increase its effective population size, but it's still not enough because they just don't have much diversity to work with.

In Norway, the Lundehund Club has undertaken drastic measures to save the breed: they are crossing Lundehunds with Norwegian Buhunds, Islandic Sheepdogs and Norrbottenspitz. These breeds were selected because of their similarities in looks and geographic origins, increasing the chance that they are–to some degree–related. In fact, using these breeds has been described by some as "reintroducing" genes that were lost rather than introducing new genes.

Two female Lundehunds were mated to each of the three breeds, then these offspring back to pure Lundehunds, and subsequent generations again mated back to Lundehunds. Each dog must pass health requirements and is selected on its similarity to Lundehunds before being bred to produce the next generation.

What makes this project so different is the degree of planning and oversight. The project is in collaboration with The Norwegian Kennel Club, The Norwegian University of Life Sciences, The Norwegian Genetic Resource Centre, NordGen, and The Norwegian University of Science and Technology, as well as the Lundehund parent club in Norway. (Reference: Genetic rescue of the highly inbred Norwegian Lundehund. https://pubmed.ncbi.nlm.nih.gov/35052503/). Most of the dogs are still in Norway, but it will be interesting to see their impact, if any, on AKC Lundehunds.

A CENTURY-PLUS OF CLOSED STUDBOOKS

When the AKC was formed in 1884, it relied upon closed breeding populations to maintain the integrity of the pure breeds. But science has advanced since that time. Recall that at that time Gregor Mendel's genetic findings (though published) were still largely unknown; population genetics theories had yet to be postulated; chromosomes had yet to be discovered; DNA hadn't even been envisioned. Darwin's theory of selection and evolution were known, however, and in that light, it seemed the obvious path to their goals was through relatively closed breeding schemes founded by the best individuals.

Coefficients of inbreeding were calculated in the early 1900s, and even before then animal breeders knew that breeding too closely was bad for health and fecundity. But it's almost as if kennel clubs considered dogs immune to the effects of small gene pools. Over a century of closed stud books has generally not been good for our dogs. In some cases, the only solution is to carefully open the books and allow genes to flow. But such endeavors need to be done with careful oversight by geneticists, tempered by breed advocates. Preserving a breed's purity to the point the breed is unhealthy is foolhardy but saving it by allowing other breeds to swamp it is not preserving it at all.

While it is clear that in some cases the AKC will consider "breaking the rules" to promote genetic health and diversity, no set guidelines seem to exist by which a parent club can petition for such an exception. Shouldn't a published set of criteria be available so that breed clubs know at what point they may reasonably resort to this step? Should the breed club or the AKC be the final authority when deciding if such exceptions are to be made?

Unfortunately, few breed club members have the proper background in genetics to make these decisions. Some clubs have large health committees, headed by fanciers with a good knowledge of medicine, genetics, research, and the breed, but by far the vast majority do not. Most people with the time to do club work are not at the forefront of research. Breed health committees are typically headed by well-intentioned, but unqualified fanciers.

For an organization whose very existence depends on genetics, it seems the AKC should have a department of genetic advisers rather than relying on parent clubs or individual breeders to make decisions. What do you think? Should crosses ever be made? Who should decide? Can a purebred be too pure bred?