

Designer Genes

Genetic Management or Misery?

By: Catherine McMillan

In the early 1970s, Miniature Schnauzer breeders embarked on a program unprecedented and unduplicated in any popular breed: to eliminate the genetic defect that caused juvenile cataracts. Research had established that juvenile cataracts (CJC) were transmitted as autosomal recessive with complete penetrance and were present at birth. Early diagnosis permitted the use of test-breeding, sanctioned by the national breed clubs, in which certified affected dogs were paired with mates whose status was unknown. A litter of normal eyed puppies was known to generate a mathematical probability that the tested dog was clear (the more normals, the better his or her odds), while the diagnosis of a single affected puppy proved the dog a carrier.

There is no argument that the program met its goals. A breed with an estimated 40% carrier rate emerged from two decades of test breeding with show lines cleared of the defect. It was a spectacularly successful example of how a breeding community can come together to eradicate a defect... and cause devastating damage to the gene pool.

Enter Stage Left

It has been written that, as a result of the process to eliminate CJC, over 200 American Champions were retired from breeding. Important kennels quietly closed up shop, taking distinct family branches with them, and bitches were sent exclusively to test-bred stud dogs. It was a lonely time for an untested male.

Around the same time as CJC was defeated, PRA made its entrance. In a few short years, several leading sires were revealed to be carriers and retired. There was no test-breeding program for this late onset defect, so it became a lonely time for the stud dog or bitch with a carrier ancestor. The gene pool contracted again.

Had this been the end of the troubles there may have been time to pause and reflect on what was happening in the big picture, but this was not to be. A novel defect appeared on the scene – a muscular disorder called myotonia congenita. This problem found a solution in short order as a DNA test was developed, allowing breeders to identify carriers with a simple blood test. Those were retired, too.

My choice of the word “retired” has, of course, been deliberately inappropriate here. In the world of dogs, “retired” is usually a euphemism for “sterilized”. As a device for preventing genetic defects, it must rate as one of the most destructive practices ever employed.

In a sensible dog world, quality carriers of genetic disease might be pulled from widespread use, but they’d come out of “retirement” for special occasions (i.e., for research breedings and/or the general advancement and preservation of rarer family lines). However, the dog fancy – and, by extension, breed clubs – have never been famous for our ability to apply knowledge sensibly. There is a common caution against throwing the baby out with the bathwater. In purebred dogs, there is a tendency to gather up the siblings, cousins and parents and throw them into the dust as well. We “improve” our breeds by killing them off one family branch at a time.

When I first began breeding nearly 30 years ago, I accepted the conventional wisdom that largely prevails to this day—that genetic defects are the exception, that carriers should be removed from the gene pool and that health is more important than beauty.

But, as John Maynard Keynes said: “When somebody persuades me that I am wrong, I change my mind. What do you do?”

Managing the Unmanageable

A few years ago, some bright bulb at the Canadian Kennel Club launched a grand scheme to create a Code of Ethics. One of the rules proposed for this set of stone tablets was “Thou shalt not breed a carrier”. I recall writing to one of the Board members at the time to congratulate the CKC for devising an edict that would result in the immediate eradication of a number of breeds. For there are breeds today in which every single member is not merely a carrier, all or nearly all are affected with a genetic defect. The peculiar nature of Dalmatian urine chemistry is the most famous example.

Even in breeds with more moderate disease rates, the policy would have eventually resulted in genetic collapse and extinction. That’s because every normal living being is thought to

