A New Kind of Breeder

by Dr. Carmen Battaglia

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Breeding is no longer an “elitist” hobby and its rewards as either a pastime or a profession are no longer a well-kept secret. All this spells opportunity and hope for those interested in breeding the purebred dog. Time, technology and information have changed how breeders are now able to produce the better dogs. Many of these are being driven by the phenomenal, worldwide knowledge revolution equal in significance to the industrial revolution that so drastically changed society for our ancestors of the 19th century.

Today, a legion of computers with mammoth storage capacity fuels the invisible network of the internet on which individual breeders, organizations and universities post files of data. The extent and breadth of this electronic material continues to mushroom daily. With new resources and a growing technology, more improvements are now within the grasp of more breeders. However, in the midst of all of these changes one concern continues and it still plagues most breeders. It is the quality of the information they are using. It can vary widely.

One of the key steps to breeding better dogs is the information they are able to collect about each ancestor. This is called pedigree analysis. It is a process of disassembly - breaking down the total complex number of ancestors into their constituent parts (virtues and faults). Pedigree analysis, if done properly, should show that some ancestors are better than others and that some will carry traits that are desired while others will be carriers. It should uncover the desirable and undesirable. This analysis should illuminate and approximate the nature of the genotypes, which are the inherited traits. The genotype is determined by the genes received from the parents, one-half from the sire and one-half from the dam. Tracking what is passed forward is the challenge. What complicates the search is that most inherited traits in animals are produced by polygenes. This includes: conformation, type, size, longevity, disease resistance, temperament, speed, milk production, growth rates, sexual maturity, and numerous diseases. Therefore, it is not surprising that those who rely on pedigree analysis will improve their chances of producing the better dogs sooner than those who don't.

What makes this approach so useful is that it helps to identify the essential features of a pedigree. In this regard, pedigree analysis becomes a means to an end. If we stand back and look at the process, we can boil it down to the reliability of our research and how well we apply our skills to the process. As professionals, we are expected to know the sources that exist for our breed through the whereabouts of their peculiarities. We are also expected to know the limits of the repositories and what is imposed on them

by the facilities who maintain them. In order to achieve an appropriate balance between the use of articles, materials and other kinds of related information, we must become familiar with databases and where they are published. An integral part of our analysis should involve the use of technology which provides several types of portable equipment needed to expedite our research. If used properly, they can enhance the quality of our work. Digital cameras, hand held scanners, lap tops, portable printers, specialized pedigrees and databases, all have become the tools of those who work smarter.

Given all of the changes that have occurred, there still remain a few problems that have not changed. For example, the best hedge against failure is to know the breed standard, coupled with the careful analysis of each ancestor. This coupled with knowing what traits are most reliable when choosing the best pups is what also helps to produce results by direction rather than chance. Without these skills breeders cannot craft a breeding plan that manages the carriers or concentrates the genes needed in the offspring. The process of pedigree analysis and information gathering when managed properly produces these results. Preparedness is the watchword of the future.

In a general sense, we know that all good breeders are dreamers. So let's take the time to identify our dreams and the elements that will convert them to reality. In our society, anyone can breed dogs. There are no entrance examinations and no rules or penalties for those who don't collect the critical information needed before they make a breeding decision. Nothing is required in the rules or regulations of the AKC and no organization serves to punish those who make mistakes. Any one of our neighbors can claim to be a breeder. There are no wrongdoers. What further complicates matters are the 78 chromosomes (humans have 46) and the thousands of genes that each one houses. Inside each gene there is information everyone is seeking. Another way to understand this problem is to appreciate how a new individual is formed. Its sire contributes one-half (39) of his chromosomes and the dam contributes one-half (39) of her chromosomes to their offspring. Each time this occurs there are no guarantees about the qualities or health of the litter. Part of the dilemma comes when we consider that 50-60% of the best dogs in most breeds are not owned by their breeders. This statistic should be sobering to those trying to breed better dogs. What it suggests is that the skills needed for breeding may be present, but those for selecting the best pups are lacking. Anyone who contemplates breeding should know the realities of what time and experience can do to help in the development of the skills necessary to breed the better dogs.

INTROSPECTION

Each of us knows deep down the unique talents and experiences we can draw upon when selecting sires and dams. Ideally, we should set aside a block of time in a quiet place - just to be alone with our thoughts. We need to think and dream concretely about our goals, visions, objectives, weaknesses and fears. This is a time when we can appraise the present and decide on the future. In the beginning, answers probably will come slowly and with some difficulty. The first hour may sometimes feel awkward as we fumble with little direction. So we try again and each time we try, we will coax up more information that we have or will need. We cannot skip this step even if we think we have already made up our minds. The insights we garner from thinking about the problems we want to overcome and those we choose to accomplish will soon begin to surface.

Identifying the strengths and weaknesses of each ancestor is only the beginning. The ability to work long, focused hours collecting information in order to analyze a pedigree is one of the defining attributes of a successful breeder. These individuals do not burn out quickly and most work well beyond the limit where others will become bored, disinterested or tired of the project. Because most of the genetic disorders are recessive or have a major recessive component, the identification of the carriers is an important part of this process.

Experts agree that genetic tests are some of the best tools available. They can help breeders to make informed decisions. In doing so however, we must be careful that we do not produce more problems as a

result of unwarranted culling. For example, by eliminating every carrier one could reduce the incidence of one disease and increase the incidence of another by repeated use of males known to be clear of the gene that caused the first condition (Bell). Typically, this occurs when breeders skip the step called pedigree analysis and go forward with their breedings before they determine what strengths and weaknesses are present in their sires and dams.

The goal of pedigree analysis and genetic testing is to use information to our advantage. The following was taken from a paper presented by Dr. Jerold Bell, a noted canine geneticist. “If one defective gene can be identified, through a genetic test, out of tens of thousands of genes it does not warrant the elimination of the breeding animal. The better approach is to use carriers who are of breeding quality in other areas such as temperament, performance and conformation. These carriers, if superior in quality, should be bred to normal-tested mates. If these offspring are tested prior to placement, better decisions can be made regarding their status as a pet or breeding prospect. The goal should be to replace the carrier parents with a quality, normal-testing offspring. If a quality offspring occurs and it is a carrier, it can be used to replace the original carrier if its conformation shows an improvement over one or both of its parents. Using this model, improvements will occur as the carrier frequency is diminished. For these reasons, breeders should limit the number of carrier-tested offspring they use. By not having a plan to select against the carriers, breeders will be selecting for a carrier frequency of fifty-percent which is higher than most breed averages” (Bell).

Generally speaking, the frequency of carriers in most breeds will exceed the number that are affected. As more genetic tests are developed, there will be a greater chance of identifying and managing more of the carriers. At the present time there are approximately 40 DNA tests available for this purpose. This means that the quality of our research coupled with pedigree analysis can be used to improve our breeding decisions.

As more testable disorders are identified, breeders will come to appreciate that there will only be a small population of dogs that are, in fact, normal. This is not surprising given what is known about the frequency of carriers in most breeds. What this means is that by collecting and sharing information, coupled with honest reporting, everyone in a breed can benefit. Those who take the path of silence or become reluctant to test will place a drag on their breed and will limit the usefulness of databases and registries.
In the end, the future will be in the hands of those who take the time to develop their skills, use the new tools and apply the resources available. They will become part of the movement that practices thinking smarter, not working harder. They are the new kind of breeders and they have arrived.

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