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GDC Interview
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**Malcolm B. Willis, BSc, PhD:**
**"The basic tool kit for responsible breeders"**

Dr. Willis is a visiting senior lecturer (semi-retired) in Animal Breeding and Genetics, Faculty of Agriculture and Biological Sciences, The University, Newcastle upon Tyne. He has been involved with German Shepherds since 1953 as a fancier and a breeder, and his wife Helen breeds Bernese Mtn. Dogs. He has judged German Shepherds since 1959 and Bernese Mtn. Dogs since1991. He serves as chairman of the German Shepherd Council and president of the Northern Bernese Mtn. Dog Club. He was made an Honorary Associate of the Royal College of Veterinary Surgeons in 1996 and analyzes hip score data for the British Veterinary Association.
Dr. Willis has written several articles recently for the *AKC Gazette*, and his books include:

The German Shepherd Dog, a genetic history; 1991 (HF & G Witherbys, London) ISBN 0-85493-207-0

The Bernese Mtn. Dog Today 1998 Ringpress, Lydney ISBN 1-86054-084-8

Practical Genetics for Dog Breeders.1992. HF & G Witherbys, London ISBN 0-85493-218-6

"Genetics of the Dog" (H.F.& G. Witherby Ltd,) ISBN 0-85493-176-7.

**GDC: In the U.K. you publish hip and elbow evaluations openly, and provide that data on a sire's progeny so that breeders can make decisions based on the quality of his puppies. How does that work?**

**Willis:** In the UK and in other European countries there are evaluation schemes, usually run by the kennel club, a veterinary group and/or breed clubs. In Britain the British Veterinary Association/Kennel Club hip scoring scheme allows any dog aged 12 months or more to have its hips "scored." Scoring involves eight radiographic features on a scale of zero to six and one on a scale of zero to five so that a dog can score from 0/0 (ideal) to 53/53 (worst). The worst breed average is the Cumber spaniel at about 42, and the best is the Siberian Husky at about six. A similar scheme exists for testing elbows (scale 0-3)

and also for testing for various eye diseases, but I am involved officially only in the hip scheme.

We publish sire figures, and, when a breed asks me, I publish records of what is happening in the breed. As soon as a dog through our scheme has ten progeny that we have scored, we publish data showing: (1) how many progeny he got; (2) how many mothers they were out of (the more the better); (3) what the best and worst progeny were; (4) the mean progeny score and how the scores were distributed in the progeny.
When I've got a dog I'm interested in, I would look at siblings, and I would get as many of them scored as possible. But once I start having enough progeny, I can throw away the siblings, I can throw away the dog's own score, and I can throw away the pedigree. If the progeny are poor, end of story. If they are good, carry on. I find a lot of good-hipped dogs who produce poor progeny, but I have never yet found a bad-hipped dog whose progeny record was wonderful. In other words if the dog is bad, stop using him now.

If we take a breed like Newfoundlands, for example, in the last 20 years they've made an improvement of about 0.73 points per year. Now that may not seem like a lot, but it means they've gone down from an average score of 37 to an average score of 22. When we publish sire data in that breed we have some who are producing mean hip scores for their progeny of around 8 compared with the breed average in the 20s. And we have also sires who are producing averages of around 43.

**Q: So a sire who is producing poor quality hips in progeny will be known to everybody?**

**A:** That's how it works. Peer pressure forces many breeders to hip score and take note of the results. And there is no question that once I publish those progeny data, the stud careers of some of these dogs are markedly affected. And there's not much a stud owner can do about it. Because even if he stops sending his own results in, he cannot stop people who've used his dog from sending in their results.

Now for example, one top winning German Shepherd has a hip score of 13 which is better than breed average. But the average in his progeny is 30-something. As soon as that became obvious, his stud career has gone down the tube. Now, he's still being used, because people say "I don't give a damn, such a lovely dog, I'm going to use him anyway." But he isn't getting used like he would have been if he were producing good hips.

Of course, you've got to weigh hip and elbow status alongside the other merits of the dog. A Bernese Mtn. Dog with excellent hips and elbows but with a very poor character may not be worth using for breeding. In contrast, a dog with less than excellent hips, but with outstanding merit and character may be worth using if mated to a carefully chosen mate.

**Q: Your book, "Genetics of the Dog," seems to be on the must-read list of many responsible breeders. So, in addition to buying your book, what does a person need to know to become a good dog breeder?**

A: In my view, the first need is to know history. If one does not know history one is forced to repeat it. Read all you can on your breed. That will include some books that are rubbish and some that are good. You have to learn to sort wheat from chaff, and you also have to start to put facts and figures to dogs. Breed surveys , if you're lucky enough to find one that has been done on your breed, are also a very valuable source of information. Then you have to start putting flesh on the names in your dog's pedigree or in the pedigrees of dogs you are seeing at shows and other events . You need to go to events and sit at the feet of some expert (if you can find one) to learn about the breed as it is. Going to a show is not enough if you spend it in the bar or just watching dogs go around without seeing what makes one better than another.

Ask questions and listen to answers, trying always to sort the relevant from the useless. Do not become hidebound by specific ideas; question everything, even what I'm saying and what I write in my books. Think about everything, digest it, discuss it and ask more questions. Always try to learn and advance your understanding of the breed.

More than anything, what breeders have to do is breed for themselves and to further the breed in general. They should only breed a litter when they want to carry on the line, and not because they need to update their car, etc. And from that first litter forward, a breeder also has to keep complete records on his dogs, and make contracts with his puppy buyers so that he will look after the dogs he brings into the world. A breeder who has no interest in rescue of what he has produced is of no value to anyone, and of even less value to his breed.

As a responsible breeder you need to work with others, you need to collaborate towards the same ideal, so that the number of good quality breeding animals is increased. You also have an obligation to learn as much as possible about the genetics of animal breeding because that is what you are going to indulge in. You need to know basic genetics because you must put your dogs through the necessary schemes (screening and evaluation of hips/eyes/elbows, etc.) as appropriate.

Breeders need to understand how to select for simple recessive (single gene) traits and polygenic traits like hip dysplasia. They also need to understand the concept of heritability. With polygenic traits, if the heritability is very low (litter size, for example, has low heritability), then little progress results from direct selection because the performance of an individual is not a good guide to his breeding merit. With high heritabilities (hip dysplasia has a relatively high heritability), progress is better because the animal's performance is a good guide to breeding merit.

Even so, you must not breed only by the numbers. A good breeder goes about the job with a set aim of trying to produce functional dogs that approximate to the ideal. I see breeders who cannot see beyond a head or a light eye or a good set of hips. Such breeders are doomed to failure because they do not look at the whole dog.

And you've always got to try to select stock that is not only much better than the breed average, but much better than your kennel average. If you breed from parents that are better than average, their progeny will be better than average, but not, on average, as good as their parents. If you breed from parents that are worse than average, their progeny will also be worse than average, but not, on average, as poor as the parents. There is, in effect, a pull towards the mean. And that's why it can be so hard to improve the breed.

Finally, all breeders will produce defects if they breed long enough. Those who tell you that they do not produce defects have either stopped breeding, breed hardly at all or are being economical with the truth. There is no crime in producing a defect. The crime, if any, lies in what you do about a defect. If you bury yours quickly and keep quiet about it, and I do the same with mine, then sooner or later we may use each other's dogs and pay the penalty for not having been honest with one another and with the breed we probably profess to love.

In simple terms, breeding is all about selecting the best and then mating the best to the best. "Best" is a relative term and to a great many breeders best is what they happen to own. Sometimes they are correct in that assumption but more often than not they are wrong because they are not critical enough of their own stock.

You have to distinguish clearly between the pick of the litter and the best breeding material. Many breeders are quite capable of deciding which is the best puppy in a litter. Things can certainly go wrong with hips, mouths or other features between 8 weeks and adulthood but nonetheless pick of the litter is not very difficult to find given some experience of the breed and the bloodlines. The difficulty is in deciding whether pick of litter is an outstanding dog in breed terms. The pick in a litter may be little more than an ordinary dog when assessed against the breed standard. Breeding, if it is to be successful, requires the breeder to be able to distinguish between ordinary dogs and outstanding ones and, ideally, to be able to do this quite early in the dog's life.

Mating dogs is not dog breeding. It is the reproduction of dogs. A breeder should be seeking to mate the right dogs in the right way so that he produces the ideal (or as near to it as possible) in his kennels. That is only feasible if the breeder knows what the ideal is.

END

**Institute for Genetic Disease Control in Animals (GDC)**

Introduction

In 1990 a group including veterinarians, scientists, dog breeders and owners associated with the International Elbow Working Group (I.E.W.G) created the Institute for Genetic Disease Control in Animals (GDC) as the first national and international controlled-

access registry for canine orthopedic genetic diseases. The GDC registry was modeled after the Swedish open registry for canine hip dysplasia that contributed to a significant reduction in that disease in Sweden during the 1980s.
GDC expanded on the Swedish idea, creating a computer-based registry flexible and sophisticated enough to include all breeds and any known or suspected genetic diseases that breeders, veterinarians and researchers would want to collect data on.
At the request of various breed groups, GDC has established additional registries for soft tissue, eye, cardiac and other genetic diseases and has expanded the original orthopedic registry. GDC has also created a number of research registries for suspected genetic diseases.
GDC registers phenotypic data on both affected and unaffected dogs. A GDC KinReport™ on a particular dog links it with all close relatives in the database, providing genotypic information--in effect a genetic pedigree--for an entire family of dogs.
Because the KinReport™ shows the prevalence of genetic disease in a dog's parents, siblings, litter mates and offspring, breeders and owners can assess a particular dog's risk for acquiring or handing down genetic disease.
No other national registry provides this type of information.

The GDC genetic disease all-breed registry is based on four key principles:

- Affected as well as unaffected dogs are registered;
- As many dogs as possible from each litter are registered;
- Dogs in the same "family" are linked together in the data base, regardless of when or where they were registered;
- GDC provides controlled access to the registry information for any legitimate user.

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