GENETIC SCREENING IN PETS

A great deal of the illness we see in dogs and cats is breed related. All breeds of dogs have genetic susceptibility to particular medical and behavioral problems, and 40% of purebred dogs have actual genetic defects that will probably affect their health at one time or another. Many purebred cats have serious genetic problems as well, and even most plain old domestic shorthair or longhair cats have susceptibility to genetically-related diseases. Some of these diseases are very common and some are very rare. Some are common in one breed and rare in another. Some are dangerous and deadly while others are minor flaws easily dealt with.

Some inheritable diseases can be tested for, enabling earlier diagnosis and intervention. Some simply require awareness on the part of the owner as to what to watch for and when to call the veterinarian. We try to make sure that every owner of an at-risk breed knows about the diseases and problems that could affect their dog or cat and the testing that is currently available.

Websites with genetic information:
www.akcchf.org
www.caninehealthinfo.org
www.fabcats.org
www.offa.org
www.vmdf.org
Many breed associations and clubs have genetic screening information on their websites and some offer screening clinics for common diseases present in their breed.

Genetic testing is especially important if you are thinking about purchasing a purebred dog or cat or breeding purebred or mixed breed pets. It is the responsibility of anyone who breeds animals to do so carefully and with a good understanding of the genetic risks for their breed or breeds. Genetic testing before breeding is the standard of care today. No one should be breeding an animal without screening for genetic diseases. No one should be buying a purebred pet whose parents have not been screened.

Most genetic tests only need to be done once in a pet's life but some, like CERF testing or thyroid screening, must be repeated. For some problems we have DNA tests that look for the actual abnormality in a pet's genes. Others, such as hip radiographs for hip dysplasia, look for the disease symptoms caused by the genetic defect because DNA testing is not available.

Gene defects may cause a direct problem every time, or they may be turned on or off by factors such as the pet's environment, diet, infection, medications or surgery. For example, a cat may have a genetic susceptibility to diabetes but may only develop the disease if it becomes overweight. A collie may have the genetic defect that causes it to get sick from the drug ivermectin but if it never received that drug the problem wouldn't be evident.

Some traits that are defects are actually the ones that make a breed look as it does. It's a genetic defect that makes a Dachshund have short legs or a pug have a flattened face and a rounded head. Many traits that have been selected for by humans are very unhealthy for the dogs or cats themselves. Pugs and Persians may look cute but they spend their entire lives struggling to breathe and most require corrective surgery for their overly long soft palates, narrow nostrils and, in the case of the pugs, luxating patellas too – kneecaps that slip out of place, causing pain and arthritis.

Some breeds, such as bulldogs, are so strangely shaped that they cannot be born except by cesarean section. Collies are being bred to have ridiculously long,

narrow heads – so much so that in some the brain no longer fits in the skull and is so squished that it doesn't function properly. Some breeds, such as Cavalier King Charles spaniels, cocker spaniels and poodles, have so many genetic problems that it's impossible to find one that's completely normal and healthy. Most breeds have closed gene pools, which limits genetic diversity, and so it is very difficult to breed away from a widespread defect. This becomes even more of a problem when certain popular sires are used so heavily that they contaminate a large portion of the gene pool for that breed when they are a carrier for a genetic defect.

In the United Kingdom, the national kennel club organization has developed standards for breeds that help move them away from extreme traits that make dogs unhealthy. For example, the breed standard for Lhasa apsos was changed to change the brachycephalic (short muzzle that creates a flat face) standard to one that specifies these dogs should have a muzzle. Their slogan is Fit for Function, Fit for Life. They specify that all dogs should be able to see, breathe and walk freely. They have an accredited breeder program, called the Breeders of Merit Program, that identifies breeders that do health testing and adhere to specific breeding standards.

In the U.S. we don't have this program. Fewer and fewer dogs are being registered in the American Kennel Club or AKC, which maintains breed standards, and more and more are coming from puppy mills and unskilled backyard breeders. "Designer breeds" that are a mix of two other breeds are popular and many times these dogs have genetic defects coming from both their parent breeds. There are a lot of unscrupulous "breeders" out there. Fortunately, DNA screening can now tell us what breeds make up your dog's genes, and we've even had clients who purchased what they thought was a cockapoo only to have it turn out to be a Maltese mix.

A good breeder's goal is to select for healthy breeding animals with normal temperaments that can reproduce naturally. He or she uses genetic testing and genetic registries. If breeding mixed breed designer dogs both parents should be screened for the diseases present in their respective breeds. This means if you get a goldiepoo the golden retriever parent should have been tested for genetic diseases of golden retrievers and the poodle parent for poodle problems.

Conscientious breeders don't hide test results or deny problems. If test results are not available you should assume a parent dog is a carrier for a disease or problem. **A health guarantee that provides for replacement of a puppy or kitten that has been found to have a genetic defect is not a substitute for genetic screening!** A puppy or kitten is not a toaster that you can take back to the store and exchange for another one. It's a living, breathing, feeling being that you probably will have already grown attached to when you are told to bring it back for an exchange. Chances are you won't want to bring it back and you will be stuck dealing with whatever its health problems are.

Price and quality are usually linked. It takes time and money to do screening tests if you are breeding animals. It's also worth more money to get a pet with a good temperament. Behaviors are very much influenced by genetics – that's why retrievers retrieve and pointers point. You will be living with this new family member for many years. Make sure it's got a nice temperament to start with and that it has been well socialized to people. A smart and responsible buyer of a puppy or kitten looks for genetic screening to have been done and carefully selects for good temperament as well as health.

If you have an AKC registered puppy or dog you can input the registration number into the AKC database and it will list for you all the genetic tests that have been done on that dog or its close relatives, including European tests.

You should also notify your breeder if any problems arise that could be from a genetic problem. There are no tests yet for many genetically related diseases, so many times the only way a breeder will find out there's a problem in the lineage is if you contact them and report it. It is very much a breeder's responsibility to do the testing available for their breed, but there are hundreds of inheritable problems for which we have no genetic tests yet. In order for a breeder to know not to breed two dogs or cats again he or she has to be informed there was a problem with one of the offspring.

Bring any registration papers and health information with you to your first veterinary visit. Your pet's doctor will want to know what genetic screening has been done. If you have an AKC registered puppy or dog you can input the registration number into the AKC database and it will list for you all the genetic tests that have been done on that dog or its close relatives, including European tests.

Joining a local breed organization is a great idea. Breed organizations and clubs conduct health surveys, promote and fund genetic research and often are members of larger organizations that help provide clinics and screening testing. For example a boxer club may provide low-cost ECG screening at an annual gathering.

Lastly, read up on your pet's breed and learn all you can. The smarter you are about what might occur and what could be done about it the more you can help your pet to be a healthy, happy member of your family for many years.

Caring People Helping Pets

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