



Basenji Health Information

Basenjis are a natural breed and are relatively healthy. Like all breeds, there are disorders that may occur more often in this breed than in dogs in general, or that are uncommon but known or suspected to be inherited. When evaluating health information, it is important to distinguish between the need for concern in planning breeding and evaluating its consequences for breed health, versus the likelihood of encountering the disorder in a pet. Health testing is important for the gene pool, not just for individual dogs that will be bred, to insure we have a good handle on overall gene pool health.

A problem that is rare or that has relatively little effect on the life of most dogs with the disorder may still be extremely important to check for in breeding, since without such checks, problems may rapidly become much more common.

Below is a list of problems that are believed to have a hereditary component and are found in Basenjis.

Fanconi Syndrome

Fanconi syndrome is a late-onset kidney problem that, at the time of discovery of the DNA test, was determined to occur in approximately 7% of all Basenjis. The incidence since then appears to be dropping rapidly. Untreated, the problem is fatal; with treatment, which consists of bicarbonate and other supplements, dogs with the disorder have a nearly normal lifespan.

A DNA test, which looks at multiple markers, has been developed, and is being used extensively. While the test is not infallible, dogs with at least one parent tested "Probable Clear" of Fanconi appear to be very unlikely to develop the disease.

Fanconi is a disorder in which the kidney does not properly reabsorb electrolytes and nutrients back into the body, but instead "spills" them into the urine.

Symptoms include excessive drinking (polydipsia), excessive urination (polyuria), and glucose in the urine (glucosuria.) If Fanconi is left untreated, muscle wasting, acidosis, and poor condition will also occur.

The onset of inherited Fanconi is typically between four and eight years of age, although onsets as early as three years and as late as ten years have occurred.

Untreated, a Basenji with Fanconi syndrome will generally die from the disorder. If caught early and put on the treatment protocol, affected Basenjis can do well. Studies indicate that dogs on the treatment protocol have a lifespan statistically similar to unaffected dogs.

For the owner

Owners should insist that at least one parent of any puppy they purchase be tested “Probable clear” for Fanconi, unless the pup itself has been individually tested and was not tested “Probable Affected.” While not a guarantee of health, studies to date indicate that dogs with one or both parents tested probable clear are very unlikely to develop the disorder.

Owners should periodically “strip test” their dogs for glucose in the urine, starting at age 3. Presence of glucose in the urine suggests the need for further testing to determine if the dog has Fanconi. This is especially important if the dog does not have a tested probable clear parent. In that case, monthly testing is generally suggested.

Urine glucose test strips (not blood test strips), such as those used by diabetics, are inexpensive and can be purchased at most pharmacies. The strip should be placed in the Basenji's urine stream and then read as specified in the strip instructions. If it is not possible to place the strip in the urine stream, then the owner may need to catch the urine. Some owners use a pie pan, ladle, or serving spoon.

A positive result (glucose present) suggests the possibility of Fanconi, but is not sufficient for definitive diagnosis. Owners should then go to their vet for further testing, which would normally include a blood glucose level.

Strip testing indicates only the current presence or absence of glucose in the urine. It does not diagnose Fanconi and it is valid only on that day. A dog that test strips normal now may later develop Fanconi.

Because elevated urine glucose is also found in diabetes, Basenjies with Fanconi are often misdiagnosed with diabetes. Diabetes will show high blood glucose along with urine glucose. In Basenjies, a combination of urine glucose and normal or low blood glucose strongly suggests Fanconi syndrome. Venous blood gas studies can verify an electrolyte imbalance consistent with Fanconi syndrome. A veterinarian should evaluate dogs that have Fanconi symptoms but are not spilling sugar.

Pets can be DNA tested to verify a Fanconi diagnosis or to help assess their likelihood of coming down with Fanconi. However, even if your dog is DNA tested clear or carrier, you should still strip-test, as there is a small risk of error with the linkage DNA test and a small number of false positives and false negatives have occurred.

Work is continuing on a direct DNA test for Fanconi syndrome, which will test for the actual mutation. This will increase test accuracy.

For Breeders

Breeding stock should be DNA tested for Fanconi. The linkage marker DNA test for Fanconi is available through the Orthopedic Foundation for Animals at www.offa.org and all test results are in the searchable open database on that site.

The test can determine if a dog is a carrier, clear, or affected with a high degree of accuracy, and can predict that a dog will become affected prior to the development of symptoms.

Any planned Basenji litter should have at least one parent that tests probable clear, to minimize the chance of producing affected puppies.

Treatment

In 1990 Dr. Steve Gonto developed a treatment protocol for dogs with Fanconi, based on the treatment human Fanconi patients receive. The protocol uses dietary supplements for acid neutralization and replacement of lost electrolytes and nutrients. This is accomplished with bicarbonate and other supplements in specified doses to re-establish the body's acid-base balance and keep electrolytes at appropriate levels. Dr. Gonto was given lifetime membership in the Basenji Club of America in recognition of the importance of his work.

The Gonto protocol was studied and validated for the veterinary literature by Jennifer Yearley, DVM, while she was completing her professional studies. This was an important step in expanding the awareness of the treatment. The protocol has been very successful in improving both quality and length of life for Fanconi-affected Basenjis. The disorder can be controlled by the protocol, but it cannot be cured.

IPSID

IPSID stands for ImmunoProliferative Small Intestinal Disease, but it is a disease of many names. It is also called basenji enteropathy, immunoproliferative lymphoplasmacytic enteritis, basenji diarrheal syndrome, and malabsorption. IPSID is a type of inflammatory bowel disease (IBD), which results in the dog not being able to utilize and absorb nutrients correctly from food.

A predisposition to IPSID is inherited, but inheritance appears to be only one of the factors involved. A dog genetically predisposed to IPSID and its resultant immunological impairment might present with usual IBD and eventually progress to IPSID. Physical and/or emotional stresses may be aggravating factors.

Pancreatic insufficiency (EPI) can be confused with IPSID, but the treatment is very different. EPI should be ruled out before a diagnosis of IPSID is made. If your dog is diagnosed with pancreatic insufficiency, or if you have questions about the disorder, information is online at <http://www.epi4dogs.com/>

Approximately 1% of Basenjis responding to the General Health Survey reported any type of gastrointestinal disorder (hereditary or non-hereditary, IPSID, EPI, IBD, or anything else.) Keep in mind that for late-onset disorders, statistics that are a snapshot in time generally tend to be incidence at that time, not lifetime risk of getting the disorder.

For the owner

Symptoms can include diarrhea, vomiting, weight loss, increased or decreased appetite, gas, and depression. The type of symptoms and their severity differ from dog to dog, and from one episode to another. Dogs with IPSID often will have good periods as well as bad spells.

IPSID requires a process of elimination for diagnosis. Blood serum protein levels may be low. Barium x-rays may show an enlarged section of the intestine. Biopsy is the only reliable way to diagnose IPSID; it is done to rule out irritable bowel syndrome, inflammatory bowel syndrome and other diseases, lymphangiectasia (which most basenjis with IPSID have as a secondary condition), colitis, cancer, and systemic fungal infections. Endoscopic biopsies are preferred to prevent complications with healing.

Traditional methods of treating IPSID include systemic prednisone and antibiotics. Some dogs do well on a holistic regimen; it is important to discuss it with your veterinarian. Symptoms may

diminish or increase over time, and a veterinarian must oversee treatment and changes to treatment. IPSID affected dogs can harbor microorganisms that may cause problems for other dogs in the household; proper household hygiene is important.

It may be required to change the dog's diet to optimize nutrient utilization. Some veterinarians suggest switching diets on a monthly basis. A homemade diet also can be used, and additional vitamin supplementation may be indicated.

Dr. Michael D. Willard of Texas A&M, an internationally recognized enterologist, is available for consultations by phone with vets needing more information on the disease. He asks that everyone understand that he often travels and holds clinics so at times he will be out of the office. He can be reached at 979-845-2351, e-mail address mwillard@cvm.tamu.edu

For breeders

While IPSID is not common, it is a serious disease. Dogs with IPSID should not be used for breeding. The mode of inheritance is not known, and it appears that a susceptibility, rather than a simple inheritance, is involved.

Hemolytic Anemia

Pyruvate kinase-deficient hemolytic anemia was first diagnosed in Basenjis in the 1960s, although prior to that date Basenjis had died of a then-unknown form of anemia. Research on this anemia began in the 1960s, culminating with a carrier test available in 1972. At that time, incidence was around 4%, with about 18% being carriers. The inherited form of the disease now is extremely rare.

Pk-deficient HA is different from idiopathic autoimmune hemolytic anemia (IAHA), a non-inherited hemolytic anemia that occurs in all breeds of dogs. Because of the great reduction in the frequency of the inherited form, the non-inherited form is now the likeliest cause of any hemolytic anemia in Basenjis

For the owner

The disorder has been virtually eliminated from the breed, and testing has been largely discontinued. Owners can ask for information about whether or not the dogs have been tested or are entirely descended from tested clear stock. Because a DNA test is available, a definitive diagnosis can be made to rule out pk-deficient HA.

For breeders

Testing for pk-deficient hemolytic anemia can still be obtained at some DNA testing labs. Because of the low incidence of this form of the gene, testing for pk-deficient hemolytic anemia was removed from the CHIC tests at the recommendation of Basenji researchers, who recommended replacing it with the Fanconi DNA test.

Most Basenjis are now descended from tested clear stock. A few carriers still exist in the gene pool, so it is a good idea to use only dogs descended from tested clear stock or dogs that have themselves been tested. A list of labs that perform the HA test is online at http://www.offa.org/dnatest_1.html OFA has an open registry for hemolytic anemia DNA status.

This DNA testing gives a definitive reading of the dog's status as a clear, carrier, or affected, so the testing does not have to be repeated.

The gene is inherited as a simple recessive. Affected dogs may faint, are likely to have low energy levels, typically have very white gums and mucous membranes, and have light, "golden" colored stools. Affected dogs typically die by age 2, with age 4 being the outside limit of survival.

Thyroid problems

Hypothyroidism is known to occur in Basenjis. The most common symptoms include weight gain, poor coat, reduced activity level, and irritability. Other symptoms, i.e., weight loss have been described. The Orthopedic Foundation for Animals reports that, of Basenjis tested, at the time of this writing, 82.9% were normal in all respects, 6% had autoimmune thyroiditis, 0.4% had idiopathic hypothyroidism, and 10.8% were equivocal. Autoimmune thyroiditis is known to be inheritable.

For the owner

Hypothyroidism is easily treated with an inexpensive thyroid supplement; the dose may need periodic adjustment, and this should only be done with veterinary supervision.

Pet owners may want to have their vet periodically check their dogs, especially if they show any symptoms that suggest hypothyroidism.

Thyroid panels test only for current thyroid status. They cannot predict future changes, and they do not indicate if a dog can produce offspring with hypothyroidism.

For breeders

It is a good idea for breeders to periodically check their breeding stock with a full thyroid panel beginning in early adulthood. The Orthopedic Foundation for Animals has an open registry for dogs that have been tested for autoimmune thyroiditis at 12 months or older, using approved labs. This thyroid test is part of the CHIC panel for Basenjis.

Testing for breeding stock is done primarily to rule out autoimmune thyroiditis, which is known to be inheritable. A full thyroid panel is used, one that includes total thyroxine (T4), thyroid-stimulating hormone (TSH), free T4 by dialysis, and thyroglobulin autoantibody (TgAA or TAA.)

Elevation of both TSH and TgAA levels are used to diagnose autoimmune thyroiditis - however, as the disease progresses, these levels may decrease due to complete destruction of the thyroid gland. Dogs that have had autoimmune thyroiditis for several years but have never been tested might not show the elevated TSH and TgAA needed for definitive diagnosis.

Hip Dysplasia

Hip dysplasia is a hereditary condition in which the hip socket is badly formed, often leading to lameness and arthritis. It is believed to be polygenic, with multiple genes involved in its expression. Approximately 3 - 3.5% of Basenji x-rays submitted to the Orthopedic Foundation for Animals (OFA) are dysplastic.

For the owner

When purchasing a puppy, the parents should have been tested for hip dysplasia, and the x-rays should have been read by the Orthopedic Foundation for Animals (OFA.)

For breeders

Breeding stock should be x-rayed for hip dysplasia. The Orthopedic Foundation for Animals has a web site that permits downloads and searches of dogs that have passed with a grade of Fair, Good, or Excellent. In addition, the OFA has recently added the option of having results placed in an open health registry, so that Borderline and Dysplastic ratings can be made public.

Good and Excellent are the preferred grades for breeding stock, although Fair is not considered dysplastic. OFA status at 2 years of age is generally considered definitive of that dog's hip status. However, there is a small chance a dog can go dysplastic later in life.

For permanent results, dogs can be X-rayed for hip dysplasia at 2 years of age or older, with the films reviewed by the OFA for the definitive reading. Dogs can be x-rayed earlier for preliminary results if they are being bred prior to 2 years of age. Hips can also be examined by PennHip, and PennHip results can be included in the OFA database.

Breeding from tested normal stock, and using vertical pedigrees to consider the scores of relatives are the recommended methods of controlling hip dysplasia. A discussion of the use of pedigree data to avoid genetic disease is online at <http://www.offa.org/hovanart.pdf> While this article features hip dysplasia, the techniques are useful for avoiding any genetic disease.

Patellas

Some Basenjis have been reported with patellar luxation – at the time of this writing, approximately 1.5% of those checked have been reported affected by the Orthopedic Foundation for Animals.

For the owner

Patellar luxation can be diagnosed by a veterinarian.

For breeders

The Orthopedic Foundation for Animals has an open registry of dogs whose patellas have been evaluated at 12 months of age or older. The exam is non-invasive and inexpensive.

Persistent Pupillary Membrane (PPM)

Persistent Pupillary Membrane is a condition where the fetal membrane of the eye does not completely reabsorb. It is a minor and normally benign disorder that is extremely common in Basenjis. Based on CERF statistics through 2006, about 77% of all Basenjis have some PPM as puppies, with about 70.5% having the mildest form – a form that is permitted in dogs certified by the Canine Eye Registration Foundation and is generally agreed to have no affect on quality of life or vision. Of the remaining 6.5%, about 1.8% have sheets as puppies, the more severe form that can cause visual blurring.

PPM does not progress, and in fact often puppies with mild PPM have it reabsorb and disappear completely as they age. For this reason PPM can get better, and it does not get worse.

For the owner

Most PPM has no effect on a dog's life. PPM severe enough to cause visual problems is normally visible to a non-specialist vet, but PPM that severe is extremely uncommon.

For breeders

While most PPM does not have a negative effect on a dog's life, severe PPM can. Severe PPM is now quite rare in Basenjis, but it was more common early in the breed's history. Breeders were able to successfully breed away from it.

To prevent severe PPM from becoming common again, it is a good idea for breeders to have an ACVO certified veterinary ophthalmologist check their puppies at 7-9 weeks of age, to determine the presence or absence of PPM. All breeders should be aware of the PPM status of their dogs.

A Basenji with iris to iris PPM can receive a Canine Eye Registration Foundation certificate. All other grades of PPM (iris to lens, iris to cornea, and iris sheets) cannot. Most Basenji breeders will not disqualify a dog from breeding solely due to mild PPM. A CERF exam will show current PPM status, but it does not tell you whether or not the dog can produce offspring with PPM.

Basenji Retinopathy / Progressive Retinal Atrophy

Basenji retinopathy, or progressive retinal atrophy (PRA) is an eye condition in which the retina begins to deteriorate later in life, causing night blindness and, if the dog lives long enough, causing deterioration of day vision that can lead to blindness. Onset as diagnosed by specialist eye exam varies, typically between ages 4 and 10, although some cases have been reported between as early as age 3 and as late as 13. Based on Canine Eye Registration Foundation Statistics through 2006, approximately 25% of Basenjis age 8 and older showed signs of retinal changes, although most changes were characterized as PRA suspicious rather than PRA affected. Not all of those dogs have hereditary eye disease, as retinal changes may be acquired or may be due to other disorders.

It is not currently known if Basenji PRA is one disease or more than one. Mode of inheritance is presently unknown.

Basenjis can also have some unusual, but benign, forms of retinal pigmentation that can easily be confused with PRA or retinal degeneration. Both false positives and false negatives are common with Basenji PRA.

For the owner

Most Basenjis diagnosed with retinopathy show little change in behavior until very late in life. Reduced vision in low light tends to occur first, typically in mid to late life for affected dogs. Daytime visual deficits do not tend to occur until late in life for most affected dogs. There are rare

exceptions that go blind in mid-life. Blindness before mid-life is extremely rare. This is primarily a disease of older dogs, and one in most cases with very subtle symptoms until very late in life.

For breeders

Although retinopathy has limited effect on the quality of life for most affected dogs, it is a serious disorder that must be considered in breeding. Because dogs rarely show any sign of the disease until mid-life, an affected dog may be bred prior to diagnosis. Without specialist exam, affected dogs often go undiagnosed throughout their lives.

Canine Eye Registration Foundation (CERF) exams by an American College of Veterinary Ophthalmologists (ACVO) certified veterinary ophthalmologist include examinations for retinal abnormalities and PRA, as well as the other eye anomalies noted below. CERF exams are recommended annually for breeding stock. Dogs that test normal can receive a certificate.

A CERF exam indicates only the present state of a dog's eyes. Since retinopathy/PRA onsets later in life, a CERF exam cannot predict whether or not a dog will develop the problem in the future. Further, a CERF exam cannot evaluate whether or not the dog will produce it.

Basenjis used for breeding should be tested throughout their life, including after they are retired for breeding, so their retinopathy status is known. Dogs diagnosed with retinopathy should not be bred. Dogs with a parent or offspring with retinopathy should not be bred to each other.

If your dog is diagnosed with PRA, blood samples of your dog, his or her parents, any offspring, and any full siblings should be sent to Dr. Gary Johnson at the University of Missouri. Please contact BCOA for instructions to send samples. There are plans to do research on Basenji retinopathy, with a goal of identifying the mode of inheritance and the causative gene.

Other Eye Anomalies

Coloboma

Coloboma is the absence, complete or partial, of a portion of the eye. The mode of inheritance of coloboma is not yet understood. Basenjis with colobomas typically have optic nerve colobomas. Colobomas are not common in Basenjis – about 1.6% of Basenjis have them (2006 CERF statistics.)

For the owner

A Basenji with a coloboma may or may not have visual deficits, depending on the location and type of coloboma. Colobomas are generally not progressive. Basenjis with colobomas generally lead a normal life.

For breeders

A Basenji with a coloboma will not receive certification from the Canine Eye Registration Foundation (CERF), and the American College of Veterinary Ophthalmologists (ACVO) breeding

recommendation is not to breed an affected. Since Basenjis can, in some cases, have normal optic nerves that are somewhat more deeply cupped than other breeds, it is possible to have a false positive. If a Basenji is diagnosed with a coloboma, a second opinion, with an ophthalmologist familiar with Basenji eyes, has been recommended by some of our researchers.

Corneal Dystrophy

Epithelial/stromal corneal dystrophy occurs occasionally in about 2.6% of Basenjis with CERF exams (using 2006 statistics.) This is a condition where the cornea becomes clouded. It is believed to have a hereditary component, but does not normally compromise vision.

For the owner

Corneal dystrophy does not normally cause quality of life or visual issues in pets.

For breeders

The ACVO breeding recommendation on epithelial corneal dystrophy is Breeder's Choice - the breeder should consider this, but it is not a reason, in and of itself, to disqualify a dog from breeding. Basenjis with epithelial corneal dystrophy will CERF.

Endothelial corneal dystrophy is even less common, occurring in about 1.5% of Basenjis with CERF exams (2006 statistics.) This is a more deeply-seated disorder than epithelial. The ACVO breeding recommendation on this condition is No, and Basenjis with endothelial corneal dystrophy will not CERF.

These anomalies can be detected in a CERF exam (see above under PRA.) An annual CERF exam is recommended for all breeding stock. Coloboma and PPM are present from puppyhood, but many other eye disorders, such as corneal dystrophy and PRA, can onset later in life. Thus, a normal CERF exam does not guarantee that the dog will not later develop a hereditary eye problem. And a CERF exam cannot measure whether or not a dog carries genes for a hereditary eye problem.

Umbilical and Inguinal Hernias

Umbilical hernias are very common in Basenjis, with most being minor hernias that do not normally cause problems for the dog.

For the owner

Umbilical hernias can be repaired at any time; the surgery is often done when a pet is spayed or neutered or during any other procedure requiring anesthesia. Small closed hernias generally do not cause problems; large or open hernias can cause problems if a loop of intestine gets caught in the hernia. Some breeders routinely repair even small closed hernias. Dogs which have had umbilical hernias repaired are still eligible for participation in AKC conformation events.

Inguinal hernias are uncommon in Basenjis. They generally do require surgical repair. Dogs with repaired inguinal hernias are not eligible for participation in AKC conformation events.

For breeders

Small closed umbilical hernias generally are not an issue in breeding, although selection away from umbilical hernias is desirable. Large or open hernias should be considered as a strike against breeding stock.

Inguinal hernias are a serious defect, and dogs with inguinal hernias should not be bred.

Cardiac Certification

Some Basenjis have been reported with heart murmurs. This can be diagnosed by a veterinarian. The OFA has an open cardiac registry of dogs whose hearts have been evaluated at age 12 months or older. OFA statistics at the time of this writing show 100% of tested dogs as normal.

Cardiac exam results can change over time, and a dog with a current normal cardiac exam may later develop a heart problem. Additionally, cardiac exams cannot test for whether or not a dog can produce offspring with heart problems.

CHIC certification

The Canine Health Information Center at <http://www.caninehealthinfo.org/> maintains a registry of dogs that have received all of the core set of recommended tests for their breed. Dogs receive a CHIC number if all tests are performed, even if one or more test results is abnormal.

The four CHIC tests for Basenjis are OFA hip certification, OFA thyroid certification, CERF eye certification, and OFA DNA certification for Fanconi.

For More Information

The CERF statistical reports are available through the Canine Eye Registration Foundation at http://www.vmdb.org/member_order.html - ask for the statistical report. The cost is \$15 per report.

Current OFA statistics are available online at <http://www.offa.org/stats.html> - just highlight Basenji and click Search. Percent normal are dogs that are neither carriers nor affected. Percent abnormal is the same as percent affected.

For DNA tests, if you take 100, subtract the % percent normal, and subtract the percent affected, you will get the percent that are carriers, equivocal, or indeterminate.

Note that all percentages are cumulative. For Fanconi, the percentage affected of newly tested dogs is lower than the cumulative average, because the higher original incidence is averaged with the lower new incidence.