



## VIP RECOMMENDED GENETIC AND HEALTH TESTS FOR MINIATURE POODLES

In order to obtain a Canine Health Information Center (CHIC) number, the Miniature Poodle must have completed testing and be registered with the Orthopedic Foundation for Animals (OFA) in the following areas:

- Progressive Retinal Atrophy (PRA) DNA testing from an approved laboratory
- Eye clearance by the Canine Eye Registry Foundation (CERF) or OFA
- Hip Dysplasia evaluation from an approved agency
- Patellar Luxation OFA evaluation

The above tests are considered the minimum testing required for Miniature Poodles that will be used for breeding. Please note that designation with a CHIC number does not show that the dog actually passed the testing, only that the tests were administered.

To check the testing that has been done on a dog, you will need either the dog's OFA number, the CHIC number, the registration number, or the registered name of the dog. To check the dog's testing status, go to: <http://www.offa.org/search.html>.

Many breeders will perform additional testing on their breeding stock. All testing is valuable and gives information regarding the breeder's interest in the future of his/her breeding program. Using the tools that are currently available will allow the breeder to successfully use the entire gene pool in combinations that provide for a healthy future of the breed. Other health problems that can currently be tested for include Legg-Calve-Perthes (LCP), thyroid, elbow dysplasia and von Willebrand's disease.

Also, there is a true difference in types of testing. Very few of our available tests measure genotype (actual DNA sequence of a gene). Most of our tests measure phenotype (a physical evaluation is used to measure the health of an individual in the hope of providing information about genotype). For a variety of reasons, phenotypic testing provides less reliable information about the genes a given dog might pass on to offspring. For a full explanation of the interpretation and use of phenotype testing, see the article found on the OFA web pages: <http://offa.org/hovanart.pdf>.

## **REQUIRED TESTS FOR MINIATURES TO OBTAIN CHIC CERTIFICATION**

### **Orthopedic - Hip Dysplasia (HD)**

**Disorder:** Hip dysplasia is an inherited polygenetic disease that manifests itself in a malformation of the hip joint in which the ball and socket do not properly fit together. Mildly dysplastic dogs may not exhibit any outward signs. Moderate to severe cases may exhibit rear-end lameness and/or discomfort when getting up. Arthritis often occurs over time from wearing on the hip joint. Young dogs, five to ten months, may be affected, and older dogs may develop chronic degenerative joint disease. For more information see: <http://www.offa.org/hipinfo.html>.

**Test:** X-ray.

**When:** At 24+ months for OFA hip certification, at 16+ weeks for PennHIP scores (although a more accurate score may be obtained at six months, or even twelve months).

**Where:** Many veterinarians are experienced in x-raying dogs' hips. These films are sent to the OFA registry for a reading. Only PennHIP certified orthopedic and radiological specialists can do the PennHIP films; however, all PennHIP results can be sent to, and certified by, OFA.

### **Orthopedic - Stifles for Patellar Luxation**

**Disorder:** The patella, or kneecap, is part of the stifle joint (knee). When the kneecap luxates, the kneecap slips, or pops, out of joint either to the inside or to the outside of the knee. One or both knees may be affected. Patellar luxation is often a hereditary condition although it can also be caused by an injury. Surgery may be required to fix this problem. Patellar luxation may be evident as soon as the puppy begins to walk. Other forms manifest as late as eight years old and may vary in severity. When the kneecap has slipped out of place, the dog will often carry its leg with the knee joint bent and the foot turned inward. For more information on patellar luxation, see: <http://www.offa.org/patluxgeninfo.html>.

**Test:** Palpation.

**When:** At 12+ months of age for OFA certification.

**Where:** Your local veterinarian or orthopedic specialist can do this examination and results should be certified by OFA. Orthopedic specialists (Diplomates) are certified from the American College of Veterinary Surgeons. The OFA recommendation is for all phenotype testing to be done by a specialist, if possible. There are just over 100 of these specialists in the USA. Many states and areas do not have one available; therefore, OFA does accept examination from a veterinarian who has the "advanced training necessary to perform an accurate diagnosis."

## Eyes

**Disorder:** Poodles may have eye abnormalities which include progressive retinal atrophy (PRA), optic nerve hypoplasia, distichiasis, micropapilla, and microphthalmia. PRA is considered hereditary, and some other eye abnormalities are presumed to be hereditary. Many of these abnormalities lead to blindness, although some can be corrected with surgery. For more information see: <http://web.vmdb.org/home/> and [http://www.offa.org/eye\\_overview.html](http://www.offa.org/eye_overview.html).

**Tests:** The OptiGen *prcd*-PRA test in addition to an eye screen performed by a board certified veterinary ophthalmologist.

The OptiGen *prcd*-PRA test is done on a small sample of blood, or from a cheek swab. The test analyzes the specific DNA mutation causing *prcd*-PRA, the most common form of PRA. The OptiGen test detects the mutant gene copy and the normal gene copy. The result of the test is a genotype and allows separation of dogs into three groups: normal/clear (homozygous normal), carrier (heterozygous) and affected (homozygous mutant). Affected or carrier status must be bred only with normal/clear to produce non-affected offspring. For more information, go to OptiGen's website at [http://www.optigen.com/opt9\\_test\\_prcdprabs.html](http://www.optigen.com/opt9_test_prcdprabs.html). Although the predominant form of PRA in miniature poodles is *prcd*-PRA, another form of PRA occurs at much lower frequencies. Since there is no DNA test for this form of PRA it can only be detected through regular eye exams.

The CERF or OFA eye exam is performed after drops are placed in the eyes to dilate the pupils. The exam is not comprehensive, but rather intended to detect a number of eye defects presumed to be hereditary. If a serious ocular health problem such as glaucoma is suspected, the examiner will recommend a more comprehensive examination. The diagnoses obtained during the exam refer only to the observable phenotype (clinical appearance) of an animal. Thus it is possible for a clinically normal animal (normal phenotype) to have a genetic abnormality (abnormal genotype) that may result in a clinically detectable eye disorder later in life. For this reason it is important to repeat CERF or OFA exams on a regular schedule (yearly is recommended) for breeding animals, even after they are no longer being bred.

**When:** At about eight weeks of age, the OptiGen DNA tests can be done. The CERF or OFA eye screen may also be done at eight weeks and is performed by a board certified veterinary ophthalmologist and is repeated annually.

**Where:** The CERF or OFA eye screen is done by a Board Certified ophthalmologist at his office or at an eye clinic held in your area sponsored by a breed club.

The PRA blood collection or swab collection information for your vet and forms for OptiGen are available from OptiGen's web site. Check the OptiGen website for discounts and 20/20 clinics. This is a **genotype** exam.

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## OTHER AVAILABLE TESTS NOT REQUIRED FOR CHIC CERTIFICATION

### OSTEOCHONDRODYSPLASIA (DWARFISM)

**Disorder:** A disorder of the cartilage and bone characterized by stunted growth and abnormal movement. Most affected puppies are so severely disabled that they must be euthanized. The disorder first becomes apparent at 3 weeks of age when affected puppies show signs of stunted growth and abnormal movement. Affected puppies go on to develop enlarged and stiffened joints, abducted hind limbs, dorsoventral flattening of the rib cage, shortened and bent long bones, undershot jaws, and elongated and misshapen paws that resemble clubfoot. Some affected puppies do survive and stiffness diminishes with age, but mobility remains restricted and arthritis often develops. This is caused by an autosomal recessive mutation in the *SLC13A1* Sulfate Transporter gene. Individuals who carry two mutant copies of the *SLC13A1* gene are affected. Individuals who carry one mutant and one normal copy of the gene or who carry two normal copies of the gene are unaffected. Sire and dam must each carry at least one mutant copy of the gene to have affected offspring.

**Test:** A DNA test for the mutation causing Osteochondrodysplasia.. The test detects the mutant gene copy and the normal gene copy. The result of the test is a genotype and allows separation of dogs into three groups: normal, or clear (homozygous normal), carrier (heterozygous) and affected (homozygous mutant). DNA for the test is obtained from a cheek swab.

**When:** Miniature Poodles should be tested for the *SLC13A1* Osteochondrodysplasia mutation before breeding. Every breeding should include at least one parent that is normal/clear by DNA testing for Osteochondrodysplasia. Any other combination has an unacceptably high risk of producing affected puppies.

**Where:** The non-profit organization projectDog is currently offering DNA testing for the Osteochondrodysplasia mutation. For more information on testing see: <https://projectdog.org/>

### Orthopedic - Elbow Dysplasia

**Disorder:** Elbow dysplasia is a general term used to identify an inherited polygenic disease in the elbows of dogs. Young dogs, four to ten months of age, may begin to show lameness. The elbows may seem swollen and are held outward from the chest. For more information see: <http://www.offa.org/elbowgeninfo.html>.

**Test:** X-ray.

**When:** At 24+ months for OFA certification.

**Where:** Many veterinarians are experienced in x-raying dogs' elbows. These films are sent to the OFA registry for a reading.

## **Orthopedic - Legg-Calve-Perthes Disease (LCP)**

**Disorder:** Legg-Calve-Perthes disease (LCP) is a disorder of hip joint conformation. It is most often seen in the miniature and toy breeds between the ages of four months to a year. OFA evaluates x-rays and certifies whether a dog is clear of LCP. If a dog's hips are evaluated as normal for hip dysplasia, the dog is also considered normal for LCP and the LCP number is issued free upon making application. For more information, see: <http://www.offa.org/leggperthinfo.html>.

**Test:** X-ray.

**When:** 12+ months for OFA certification.

**Where:** Many veterinarians are experienced in x-raying dogs' hips. These films are sent to the OFA registry for a reading.

## **Blood - For Thyroid Malfunction**

**Disorder:** The most common cause of primary hypothyroidism (underactive thyroid) in dogs is autoimmune thyroiditis. Autoimmune thyroiditis is an inheritable disease that is seen in all three varieties of Poodles, but is more common in Standard Poodles. This disorder may affect a dog at any age, but clinical signs are often seen in dogs between two to five years of age. Hypothyroidism is not generally a life-threatening disease, but it is a permanent condition. When diagnosed, the traditional, effective treatment is a daily, or twice daily, dose of a thyroid hormone replacement (synthetic L-thyroxine). Dogs with this condition should not be bred. Breeding animals should be tested yearly for the first four years and, after that, every other year.

**Test:** Blood sample.

**When:** Subsequent to sexual maturity in males, and between heat cycles (twelve to sixteen weeks following onset of heat) in females.

**Where:** Thyroid testing is difficult to do correctly so only a few laboratories are recognized by the OFA. For a list of those laboratories, go to the OFA web site at: <http://www.offa.org/thyinfo.html>.

## **Blood - For von Willebrand's Disease (vWD)**

**Disorder:** Von Willebrand's disease is an inherited bleeding disorder. In vWD, bleeding is caused by the absence of the von Willebrand's factor which is needed in the early stages of clotting. Most Miniature breeders do not perform the von Willebrand's disease testing. However, with continued combination breeding of Miniatures and Standards, the introduction of some Miniature problems into Standard lines and Standard problems into Miniature lines makes this test worth mentioning. Though rare, instances of this disease appearing in Miniatures have been reported. For more information see: <http://www.vetgen.com/canine-vwd1.html>.

**Test:** DNA test using a cheek swab.

**When:** Anytime after birth. If both parents are certified clear, and if the parents are certified by the lab as being the parents of the litter, then a "certificate by pedigree" may be issued to the offspring.

**Where:** Test kits are available from VetGen. See the contact information for VetGen in the address section.

## **ADDRESSES**

### **Canine Eye Registry Foundation (CERF)**

The Veterinary Medical DataBases-VMDB/CERF  
1717 Philo Rd.  
P O Box 3007  
Urbana, Illinois 61803-3007

**Phone:** 217-693-4800  
**Fax:** 217-693-4801  
**E-mail:** [CERF@vmdb.org](mailto:CERF@vmdb.org)  
**Web site:** <http://www.vmdb.org/cerf.html>

### **Canine Health Information Center (CHIC)**

Eddie Dziuk or Dr. Greg Keller  
Orthopedic Foundation for Animals, Inc.  
2300 East Nifong Blvd.  
Columbia, Missouri 65201

**Phone:** 800-442-0418  
**Email:** [chic@offa.org](mailto:chic@offa.org)  
**Web site:** <http://www.offa.org>

## **OptiGen®, LLC**

Cornell Business & Technology Park  
767 Warren Road, Suite 300  
Ithaca, New York 14850

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Web site: <http://www.OptiGen.com>

If they have not answered your email in two-three days, please resend your e-mail to [OptiGen@clarityconnect.com](mailto:OptiGen@clarityconnect.com). Some email servers are not accepted by their server, "OptiGen.com." You can also fill out a form directly on the web site for e-mail.

## **Orthopedic Foundation for Animals (OFA)**

2300 East Nifong Boulevard  
Columbia, Missouri 65201-3806

Phone: 573-442-0418  
Fax: 573-875-5073  
E-mail: [ofa@offa.org](mailto:ofa@offa.org)  
Web site: <http://www.offa.org>

## **projectDog**

636 San Pablo Avenue  
Albany, CA 94706

Phone: 510-900-3899  
E-mail: [info@projectdog.org](mailto:info@projectdog.org)  
Web site: <https://projectdog.org/>

**PennHIP** (University of Pennsylvania Hip Improvement Program)

PennHIP Analysis Center  
20 Valley Stream Parkway Suite 267  
Malvern, Pennsylvania 19355

Web site: <http://www.pennhip.org>  
Phone: 610-640-1244  
Toll free 800-248-8099  
Fax: 610-640-5754

Send all CDs of digital images to the following address as they cannot accept digital submissions through the web site:

PennHIP Administrative Center  
MJR-VHUP  
Attn: Tom Gregor  
3900 Delancey St.  
Philadelphia, Pennsylvania 19104-6010

**Thyroid**

Endocrine Diagnostic Section  
Diagnostic Center for Population & Animal Health  
4125 Beaumont Road, Room 122  
Lansing, Michigan 48910-8104

Phone: 517-353-0621

Or any of the other labs listed at: <http://www.caninehealthinfo.org/thylabs.html>.

**VetGen**

3728 Plaza Drive, Suite 1  
Ann Arbor, Michigan 48108

Phone: 734-669-8440  
Toll Free: 800-483-8436 (US & Canada)  
Fax: 734-669-8441  
Web site: <http://www.vetgen.com/>

For e-mail, fill out a form directly on the web site: <http://www.vetgen.com/>.



*The information contained in this document is current at the time of this writing and is accurate to the best of VIP's knowledge.*

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