AMSC CHIC DNA Repository Project

The AMSC Health Committee and Board of Directors is strongly recommending that all AKC, CKC and UKC registered Miniature Schnauzers have DNA samples stored in the CHIC (Canine Health Information Center) DNA Repository for the purposes of scientific research. DNA obtained from a blood sample can be processed and stored indefinitely to be used by scientists to help understand genetic diseases. Identifying and cataloging genetic diseases are critical steps needed to improve the health of the breed by giving breeders the information they need to make educated decisions when selecting breeding stock. Discovering and tracing the origins of genetic diseases in canines may also benefit humans in that canines are models for many human diseases[1].

The CHIC was created by the OFA (Orthopedic Foundation for Animals) by partnering with participating parent clubs to maintain information on the health issues prevalent in specific breeds. Breed-specific health screening recommendations have been established by AMSC by which dogs can be tested and certified with a CHIC number. A dog is issued a CHIC number when test results are entered into the database satisfying each breed-specific requirement. CHIC requires that each dog have a permanent identification (microchip or tattoo) and that the owner agrees to release the information in the database to the public domain. Owners are encouraged to release all test results realizing that it is in the ultimate health interests of the breed and that the information greatly increases the depth and breadth of any resulting pedigree analysis. Here is more information about the CHIC Certification program.

The current requirements for CHIC certification set forth by AMSC are as follows:

Screening	**Testing options**
ACVO Eye Exam	ACVO Eye Examination. (Results registered with OFA)
Cardiac Evaluation	One of the following:
	Congenital Cardiac Exam by Cardiologist
	Advanced Cardiac Exam
	Basic Cardiac Exam by Cardiologist
Myotonia Congenita	(Optional but recommended)
	DNA-Based MC test from an approved laboratory. (Results registered with OFA)
Mycobacterium Avian Complex	(Optional but recommended) MYCOBACTERIUM AVIAN COMPLEX
PRA Type B HIVEP3 DNA Test	(Optional but recommended) DNA-Based PRA Type B test from an approved laboratory. (Results registered with OFA)

These recommendations may change as more is learned about Miniature Schnauzer-specific diseases. Here is the link to applications and forms for the above tests.

DNA research has resulted in reducing or eliminating diseases in other breeds. One of the most studied inherited canine diseases is cardiomyopathy seen in multiple breeds: Dobermann Pinscher, Boxer, Cocker Spaniel, Standard Schnauzer, Irish Wolfhound, Welsh Springer Spaniel).[1] In the Standard Schnauzer, dilated cardiomyopathy (DCM) has been virtually eliminated by genetic testing and selective breeding[2]. Another useful test is the MDR1 (multidrug resistance 1 gene) common in herding breeds, especially Australian Shepherds and Collies. A mutation at the MDR1 gene makes affected dogs more sensitive to the negative effects of certain drugs[3]. There are a whole host of genetic diseases for which DNA testing is available through universities and commercial enterprises. Indeed, one can test a dog for ALL known genetic diseases for any breed or in a mixed breed dog[4]. While the AMSC does not encourage "shotgun testing" and the accuracy and value of such testing is controversial, this is a rapidly evolving field that holds promise for the future.

DNA from any given dog can be stored in multiple locations. Storage at a university for a specific investigation does not preclude submission to the CHIC repository. The CHIC DNA repository serves as a "central location" for distribution of the samples on an as-needed basis as new research projects are proposed. This allows the greatest opportunity to use the DNA in many potential future research projects.

Collecting samples for the CHIC DNA Repository is relatively easy. Blood samples provide superior DNA samples (compared with cheek swabs) and are highly recommended. After completion of the DNA Repository Application Form, a sample collection kit will be mailed to the applicant. Samples can be collected by the owners' veterinarian at the time of their wellness examination or during a separate appointment. The blood is to be collected and mailed to the Repository following the detailed instructions. The cost for blood submission to the Repository is $20.

Alternatively, blood can be collected and submitted at any number of dog shows or specialty events where AMSC personnel and the sampling kit are present. We will continue the campaign this year at Montgomery weekend in October. Samples will be collected on Friday (October 4th) at the Hatboro Dog Club shows. We will set up near the ring and will collect samples immediately after judging is complete. It will be on a first-come-first serve basis. It will be helpful (and faster) if the application form is completed and printed ahead of time, but this is not essential. We will have forms available.

Important things to know for sample collection at an event:

- Registration information is required including sire and dam registration numbers
- All dogs must be permanently identified by either a microchip or tattoo
- DO NOT send money or the application form to AKC/CHIC in advance

Samples collected at these events will have the application fee ***waived***. The forms and samples will be sent to the Repository by us in bulk.

Having a DNA database as a reservoir for future scientific research is critically important to the improvement of the Miniature Schnauzer breed and for all purebred dogs. Clearly, the more dogs that participate, the better. Please join our campaign to collect DNA samples from as many dogs as possible. Feel free to email me with any questions: kshoffmann@gmail.com.

Karen S. Hoffmann, D.V.M.
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Citations:

1. Gaar-Humphreys KR, Spanjersberg TCF, Santarelli G, Grinwis GCM, Szatmári V, Roelen BAJ, Vink A, van Tintelen JP, Asselbergs FW, Fieten H, Harakalova M, van Steenbeek FG. Genetic Basis of Dilated Cardiomyopathy in Dogs and Its Potential as a Bidirectional Model. *Animals* (Basel). 2022 Jun 29;**12**(13):1679. doi: 10.3390/ani12131679. PMID: 35804579; PMCID: PMC9265105.
2. Harmon MW, Leach SB, Lamb KE. Dilated Cardiomyopathy in Standard Schnauzers: Retrospective Study of 15 Cases. *J Am Anim Hosp Assoc*. 2017 Jan/Feb;**53**(1):38-44. doi: 10.5326/JAAHA-MS-6506. Epub 2016 Nov 14. PMID: 27841675.
3. Lerdkrai C, Phungphosop N. Prevalence of the MDR1 gene mutation in herding dog breeds and Thai Ridgebacks in Thailand. *Vet World* 2021 Nov;**14**(11):3015-3020. doi: 10.14202/vetworld.2021.3015-3020. Epub 2021 Nov 27. PMID: 35017851; PMCID: PMC8743763.
4. Embark Dog DNA test