

CHIC—The Canine Health Information Center

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Abstract

The Canine Health Information Center (CHIC) is a centralized canine health database, jointly sponsored by the Orthopedic Foundation for Animals (OFA) and the AKC Canine Health Foundation (AKC CHF). The CHIC mission is to provide a source of health information for owners, breeders, and scientists that will assist in breeding healthier dogs. Dogs are issued CHIC numbers when there are tested in accordance with the health screening protocol established by their parent club. All CHIC results are available in an online publicly accessible database, so the results can be widely utilized in making more informed breeding decisions. CHIC also operates a DNA bank which stores canine DNA samples along with corresponding genealogic information and phenotypic health data. These samples are made available to the research community at large for canine health research purposes to facilitate the sample collection process and provide optimized family groups.

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1. Introduction

The Canine Health Information Center (CHIC) is a centralized canine health database, jointly sponsored by the Orthopedic Foundation for Animals (OFA) and the American Kennel Club (AKC) Canine Health Foundation (CHF). The program was originally implemented in the fall of 2001 with eight pilot breeds participating. Today, over one-half of the AKC Parent Clubs have joined the CHIC, and >30,000 dogs have met the individual breed health testing requirements and been assigned CHIC numbers.

2. Mission statement

The CHIC Mission Statement is quite simply “To provide a source of health information for owners,

breeders, and scientists that will assist in breeding healthy dogs.” The specific program goals are

- To work with parent clubs in the identification of health issues for which a central information system should be established.
- To establish and maintain a central health information system in a manner that will support research into canine disease and provide health information to owners and breeders.
- To establish scientifically valid diagnostic criteria for the acceptance of information into the database.
- To base the availability of information on individually identified dogs at the consent of the owner.

3. CHIC database

The CHIC database is a tool that collects health information on individual animals from multiple sources. As more phenotypic and genetic screening tests become available and breeders make greater use of

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these tests, it is important that a database exists to capture these data; the CHIC meets this need by functioning as a centralized pool of data. It is noteworthy that the CHIC encourages testing and health awareness and recording the results; it is not necessarily about ‘normalcy’ nor should it be misconstrued as an award program for normal dogs. Dogs with abnormal results are eligible for CHIC numbers, as long as their results are in the public domain so that the breeders can benefit from the information in making more informed breeding decisions.

Core to the CHIC philosophy is the realization that each breed has different health concerns. Not all diseases have known modes of inheritance, nor do all diseases have screening tests. Some screening tests are based on phenotypic evaluation, others on genetic testing. With all these variables, a key element of CHIC is to customize or tailor the CHIC requirements to the needs of each breed. These unique requirements are established through input from the parent club, prior to the breed’s entry into the CHIC program. Breed-specific requirements typically consist of the inherited diseases that are of the greatest concern and for which some screening test is available. Each parent club also drives specific screening protocols. As an example, one parent club may allow cardiac exams to be performed by a general practitioner, whereas another parent club may require the exam to be performed by a board-certified cardiologist. A club may also use the CHIC to maintain information on other health issues for anecdotal purposes. Later, as screening tests become available, the disease may be added to the breed-specific requirements.

Regardless of breed, each dog must be permanently identified in order to have test results included in the CHIC. Permanent identification may be in the form of a microchip or tattoo.

The CHIC operates an informed-consent database. All information regarding test results remains confidential, unless the owner specifically authorizes release of the information into the public domain. Owners are encouraged to release all test results, recognizing it is in the ultimate health interests of the breed; furthermore, the information greatly increases the depth and breadth of any resulting pedigree analysis. For those that are unwilling to accept open sharing of information, there is still value in submitting their results. All test information entered into the database is available in aggregate for research and statistical reporting purposes, but does not disclose identification of individual dogs. This results in better data regarding the prevalence of the disease, as well as data regarding progress in reducing the incidence of the disease.

A CHIC number is issued when test results are entered into the database satisfying each breed-specific requirement, and when the owner of the dog has opted to release the results into the public domain. The CHIC number by itself does not imply normal test results, nor should it be interpreted as a ‘stamp of approval’ for breeding. The CHIC number only indicates that all the required breed-specific tests were performed and that the results were made publicly available.

When a CHIC number is issued, a CHIC report is generated; this is a consolidated listing of the tests performed, the age of the dog when the tests were performed, and the corresponding test results. As new results are recorded, updated CHIC reports reflecting the additional information are generated. For example, if a breed requires annual CERF examinations, an updated CHIC report will be generated every time updated CERF results are entered.

Once included in the CHIC program, the breed-specific requirements are dynamic. As health priorities within a breed change, or as new screening tests become available, the breed-specific requirements can be modified to reflect the current environment.

Health testing by itself is only the first step in attempting to reduce the incidence of genetic disease in our companion animals. It is important to take the next step and record the results in genetic health registries so that the data are preserved and others may benefit from it.

4. Internet access

The CHIC and OFA websites brings things full circle by making the information easily accessible to the public via the Internet. The CHIC website (www.caninehealthinfo.org) contains basic information on CHIC, e.g. its mission and goals, and maintains a listing of the participating breeds and approved breed-specific test protocols. The CHIC website also provides a search engine to locate dogs that have been issued CHIC numbers, their test dates, and the results of their tests. The website has been designed to seamlessly integrate with the existing OFA website (www.offa.org).

The OFA and CHIC search engines allow queries to be very broad or very specific. Search criteria include registration numbers, registered names (including full name, first part of name, any part of name), breed, sex, birthdate (or range), specific disease registry, specific diagnostic rating, and report date (or range). Any combination of these search criteria can be specified resulting in a variety of potential matches.

Once an individual dog is selected through the search options, detailed information is displayed, including health screening done, age at the time of testing, and test results. In addition, wherever possible, the database does a pedigree query, and displays the dog's sire and dam, siblings (both full and half), offspring, as well as any of their recorded health test results. All displayed names are hotlinked, so the user can easily browse from dog to dog.

Another unique feature of the database is the vertical pedigree analysis, which encourages breeders to truly analyze the depth and breadth of a pedigree in a vertical fashion rather than the simple more traditional horizontal method.

5. DNA repository

The most recent initiative of the CHIC program has been the implementation of the CHIC DNA repository, which collects and stores canine DNA samples along with corresponding genealogic and phenotypic health data to facilitate canine health research. Samples are collected via whole blood or buccal swabs, and are processed and stored at either the University of California, Davis, or the University of Missouri (depending on sample type). The specific program objectives are

- Facilitate more rapid research progress by expediting the sample collection process.
- Provide researchers with optimized family groups needed for research.
- Allow breeders to take advantage of future DNA-based disease tests as they become available.
- Foster a team environment between breeders/owners and the research community, improving the likelihood of genetic discovery.

Sample requests are handled through a simple application process. Sample distribution is expedited for research projects with existing grant funding,

through either the AKC CHF or the Morris Animal Foundation.

6. Benefits

The CHIC program offers a variety of benefits to breeders, buyers, parent clubs, and researchers. For breeders, the CHIC provides a reliable source of information regarding dogs they may use in their breeding programs. In the future, breeders can begin to analyze the pedigrees of a proposed breeding for health strengths and weaknesses, as well the traditional analysis of conformation, type, and performance strengths and weaknesses. For buyers, the CHIC program provides accurate information regarding the results of a breeder's health testing. For diseases that are limited to phenotypic evaluations, there are no guarantees. However, the probability that an animal will develop an inherited disease is reduced when its ancestry has been tested normal. Further, as more DNA tests become available and the results are entered into CHIC, this database will help breeders predict whether progeny will be clear, carriers, or affected. For parent clubs considering establishment of health databases on their own, the CHIC provides the answer with no initial investment required by the club. The CHIC infrastructure is supplied and maintained by the OFA. The data is maintained in a secure environment by trained staff. The services are not subject to the time, technology, and resource constraints that parent clubs might face on their own, enabling the parent clubs to focus on the tasks of identifying health concerns, educating their membership, raising funds for research, and encouraging participation in the CHIC program. For researchers, the CHIC provides confidential and accurate aggregate data on multiple generations of dogs; these data will also be useful for epidemiological studies enhancing our knowledge of health issues affecting all breeds of dogs. In summary, for everyone interested in canine health, the CHIC is a valuable tool to assist in our efforts to reduce inherited disease and breed healthier dogs.