

# CANADIAN DEXTER CATTLE ASSOCIATION

## PARENTAGE AND GENETIC TESTING

The purpose of this document is to explain the various tests, both required and voluntary, that are available to breeders of Dexter cattle.

The laboratory for all tests that will be explained is Neogen Canada, 7323 Roper Rd. NW, Edmonton AB T6E 0W4 [www.neogen.com](http://www.neogen.com)

### **REQUIRED TESTS:**

Required tests must be ordered through Canadian Livestock Records Corporation (CLRC) with payment of the required fees as indicated in the fee schedule for Dexters. Instructions on how to proceed with this are included in the document “Procedures for Genetic Testing” appended to this document.

Please note that these tests that are outlined as required for certain animals can also be ordered for any other animals, even though they are not required.

#### **1. DNA and/or SNP:**

DNA microsatellite testing is the former technology that was used for profiling and parentage qualification. Although still available in certain circumstances, it has now been replaced by Single Nucleotide Polymorphism, or SNP, testing.

Pursuant to the by-laws of the Canadian Dexter Cattle Association (CDCA), it is required that all bull calves born on or after January 1, 2000 have a DNA or SNP profile on file in order to be registered. DNA and SNP are the tests that allow for parentage of animals to be checked. This requirement has been in effect long enough that almost all animals tested are automatically checked by the lab to see if their sire, and dam if she has been tested, qualify. DNA and SNP tests are not interchangeable. This means that if a parent of an animal only has a DNA test on file, then a breeder has a choice to make. If the parent animal is still alive so that a hair sample can be obtained, or the sample used for DNA testing is in storage at the lab, then a SNP test can be done on that animal as well as the calf. If, however, it is not possible to do a SNP test for the parent, then a combination test of DNA and SNP must be done for the calf, the DNA test to qualify its parentage and the SNP test to qualify it as the parent of its offspring in the future.

Parentage qualification (both parents) by DNA or SNP is required for any calves born as the result of embryo transplant to be registered.

A DNA or SNP profile is also required for Canadian registration of any imported Dexters. The test results from the exporting country are usually acceptable so long as a copy of the test results, including all markers, is available. These results must be forwarded to CLRC with the application to register the animal in Canada, and CLRC will in turn forward the results to Neogen Canada.

It is also the prerogative of CLRC to ask for full parentage testing of any animal of either sex if for any reason the parentage may be in doubt, such as in the case of the dam having been exposed to two bulls at the same time or to a second bull within 21 days of exposure to the first bull having ended.

## **2. PHA (Pulmonary Hypoplasia with Anasarca):**

This is a test for a genetic defect affecting the lungs that does appear in Dexter cattle. A PHA test is required in order to register any bull calves born on or after January 1, 2011, unless both parents have already been tested. If both parents have tested PHA free, then the calf will be PHA free by parentage. If one parent happens to be PHA positive, then the calf would have to itself be tested to determine its status.

A PHA test is also required for any bulls born and/or registered before January 1, 2011 in order to register any of their offspring born on or after January 1, 2014. If that bull is not available for testing, then the calf must be tested, and if it tests PHA free, it can be registered. If it tests positive, then its dam must also be tested before it is registered.

## **3. Chondrodysplasia:**

This is a test for another genetic defect that can occur in Dexters, causing short legged calves, and in extreme cases, bulldog calves that do not survive. As with PHA, if both parents have been tested and are negative, then the offspring will also be negative.

A test for Chondrodysplasia is required for any bull used for artificial insemination.

## **4. Colour Test:**

Any animal to be registered as a red Dexter must be tested and proven to be red unless it has at least one ancestor on **each** side of its pedigree that has been verified as red, in which case no test is required.

## **VOLUNTARY TESTS:**

These tests, while not required for registration, are available at Neogen Canada for those wishing to determine this information about their animals. The A1/A2 Milk Test can be ordered either through CLRC or by contacting Neogen directly. The Horned/Polled test must be ordered from Neogen directly.

### **1. Horned/Polled Test:**

This is a test that can be performed to determine if an animal is genetically polled, either heterozygous or homozygous.

### **2. A1/A2 Milk Test:**

This is a test for beta casein, kappa casein and beta lactoglobulin in the milk, which can be used to select animals with higher quality milk and milk that is superior for cheese making.