

## **SAMPLE HANDLING**

### **For Canine DNA research & testing at the University of Missouri**

**Blood Sample** - The ideal sample for DNA extraction is 3 to 7cc's of whole blood, in **purple-topped (EDTA)** tubes (one or several, depending on tube size). For very small dogs, 1 to 2 ccs should be sufficient. Please do not send less than 1 cc. The blood sample needs only to be put in the tubes and rocked gently a few times to distribute the anticoagulant - do **not** spin, extract serum, or do anything further. Refrigerate if the sample is being held for any time before shipping, but do not hold the sample longer than 1 week before shipping or it may become unusable.

**Frozen Semen** - Frozen semen stored from deceased sires or affected dogs can be a source of DNA for testing. Please send about 1 breeding unit. The straws or pellets do not need to be shipped frozen, but do pack them in a crush-proof & leak-proof container. Special handling fee is \$40 for this sample, in addition to the regular testing fee.

**Tissue Sample** - DNA can be extracted from any cell-rich tissue. If a dog is to be tested post-mortem, a 1" cube (or equivalent) of tongue, other major muscle, spleen, kidney, or liver will provide a large amount of DNA (one tissue is sufficient – do not send multiple tissues). Tissue samples should be placed in a clearly labeled freezer bag or other sterile container and frozen. **DO NOT place in formalin!** Place the bagged tissue inside another bag, freeze, and ship with a frozen cool pack (do not use dry ice, or ice cubes placed in a ziplock bag). If this is the only sample (no blood sample available), add special handling fee of \$40 to testing fee.

**Label sample** with the following:  
call name - owner's last name

The ***Individual Dog Information Form & Survey*** that follow this instruction sheet should be completed, and a ***pedigree copy***, if available, should be included with the sample.

**Include TESTING FEE of \$65** for all samples. Breeds with confirmed NCL mutations include American Bulldogs, American Staffordshire Terriers, Australian Cattle Dog, Australian Shepherd, Border Collie, Cane Corso, Chihuahua, Chinese Crested, Dachshunds, German Shorthaired Pointer, Golden Retriever, English Setters, Pit Bull Terriers & Pit Bull mixes, Staffordshire Bull Terriers, & Tibetan Terriers. Other breeds or mixes will be tested for the most appropriate mutations, based on clinical information you provide on survey pages. Fee payable via check to "University of Missouri", or major credit cards (Visa, MC, AmEx, Discover) via our online payment portal.

**Shipping** - Ideally the sample should be shipped immediately. If samples are held for a day or over a weekend, blood must be refrigerated, and tissue samples must be kept frozen. Ship via overnight delivery (US Mail, UPS, FedEx, or others). **Do not send on a Friday** - there will not be anyone to accept the delivery on a weekend, and the sample could be unusable by Monday. Pack in a small insulated container (Styrofoam box, small cooler or insulated lunch bag), with one or more cool packs - it is important that samples be kept cool.

**The delivery address is:** Canine Genetics Lab - NCL Testing/Research  
320 Connaway Hall / 1500 Bouchelle Ave  
University of Missouri  
Columbia, MO 65211

### **DIAGNOSTIC and RESEARCH SAMPLING:**

For definitive diagnosis and confirmation of NCL and for research analyses, dog owners or their veterinarians should contact Dr Martin Katz for instructions and a collection and shipping kit. Samples desired include whole blood, skin biopsies, and tissues obtained at the time of euthanasia. Kits need to be available to the veterinarian at the time of sample collection, so please request a kit as far in advance of when the samples will be collected as possible. Dr Katz can be reached by email at [KatzM@health.missouri.edu](mailto:KatzM@health.missouri.edu), or by phone at 573-882-8480.

**If you need clarification**, or have any questions about any of these procedures, please contact us via email ([MUCVMk9genetics@missouri.edu](mailto:MUCVMk9genetics@missouri.edu)) , or by calling 573-884-3712

# **CANINE NCL- DNA TESTING/RESEARCH**

## **Individual Dog Information**

Blood – Tissue – other \_\_\_\_\_

Breed \_\_\_\_\_

ID code (lab assigned): \_\_\_\_\_

Registered Name \_\_\_\_\_ Call name \_\_\_\_\_

Reg# \_\_\_\_\_ Birth Date \_\_\_\_\_ Sex? M – F Intact - Altered

Sample Submission Date: \_\_\_\_\_ Color \_\_\_\_\_

Test/research requested: **Neuronal Ceroid Lipofuscinosis**

Owner: name \_\_\_\_\_ Veterinarian \_\_\_\_\_

address \_\_\_\_\_ address \_\_\_\_\_

city-st-zip \_\_\_\_\_ city-st-zip \_\_\_\_\_

phone (day) \_\_\_\_\_ phone \_\_\_\_\_

phone (eve) \_\_\_\_\_

cell \_\_\_\_\_

**EMAIL** \_\_\_\_\_ **EMAIL** \_\_\_\_\_

**\*\*\*\*Results are reported via email – please provide complete, legible email address!!\*\*\*\***

Report test results to (please circle): Owner Veterinarian Both

**Does this dog exhibit any of the following conditions? (Please attach history for any Yes answer)**

Y - N Allergies

Y - N Digestive difficulties

Y - N Arthritis

Y - N Heart Problems

Y - N Autoimmune Disorders

Y - N Hernia (where? \_\_\_\_\_ )

Y - N Bite or Tooth Abnormalities

Y - N Reproductive Problems

Y - N Cancer / Tumors

Y - N Seizures

Y - N Cataracts / Vision Problems

Y - N Skin / Coat Problems

Y - N Deafness / Hearing Impaired

Y - N Skeletal Abnormalities (Hip Dysplasia, etc.)

other (please list on back):

Y - N Temperament Problems (shy, aggressive, etc.)

**See following pages for NCL-specific questions – please complete for ALL sampled dogs.**

Please circle your response to the following;

- I am / am not willing to provide additional blood samples if needed for research.

- I will / will not consider donation of a tissue sample upon the death of this dog, and will discuss this decision with my veterinarian so that a notation is placed in my file.

I submit this sample and pedigree for the purpose of DNA research; I understand that the identity of dogs and owners participating in the research will not be revealed; and I have supplied complete and accurate information, to the best of my knowledge.

Signed: \_\_\_\_\_ date \_\_\_\_\_

**Test fee \$65 for all dogs**

**PAYMENT INFORMATION:** ☐ Check payable to "University of Missouri" enclosed

OR ☐ Charge to VISA-MC-AmEx-Discover

Send payment portal instructions and code to this email: \_\_\_\_\_

## Canine NCL-specific Questionnaire

Has this dog been diagnosed as likely to be affected with NCL?    Yes    No    Suspected

Have any relatives of this dog been diagnosed with NCL? Yes    No    Don't Know

If yes, which relatives?    Sire    Dam    Sibling    Offspring    Other \_\_\_\_\_

Paternal Grandsire    Paternal Grand-dam    Maternal Grandsire    Maternal Grand-dam

When is the best time to reach you by phone? \_\_\_\_\_

### **Veterinary Contact Information**

#### *Primary Care*

Vet Name \_\_\_\_\_

Clinic Name \_\_\_\_\_

Address \_\_\_\_\_

City,St,Zip \_\_\_\_\_

Phone # \_\_\_\_\_

Email \_\_\_\_\_

#### *Ophthalmologist*

Name \_\_\_\_\_

Clinic Name \_\_\_\_\_

Address \_\_\_\_\_

City,St,Zip \_\_\_\_\_

Phone # \_\_\_\_\_

Email \_\_\_\_\_

#### *Neurologist*

Vet Name \_\_\_\_\_

Clinic Name \_\_\_\_\_

Address \_\_\_\_\_

City,St,Zip \_\_\_\_\_

Phone # \_\_\_\_\_

Email \_\_\_\_\_

#### *Other Specialist*

Name \_\_\_\_\_

Clinic Name \_\_\_\_\_

Address \_\_\_\_\_

City,St,Zip \_\_\_\_\_

Phone # \_\_\_\_\_

Email \_\_\_\_\_

May we have your permission to contact your veterinarians to request records and discuss your dog's health history, diagnostic testing, and possible treatment options?    Yes    No

Signed: \_\_\_\_\_ date: \_\_\_\_\_

***Behavior and Activity survey follows – please complete for all sampled dogs***

## CHANGES IN *BEHAVIOR*

Compare this dog's current behavior to its earlier behavior. Please circle the correct answer.

If you need additional space to describe changes, please use back of form or attach additional pages.

	Normal - or - Degree of Change				Describe Changes & Age of Onset
1. Housetraining	normal	mild	moderate	severe	_____
2. Interest in food (eating habits)	normal	mild	moderate	severe	_____
3. Appears nervous	normal	mild	moderate	severe	_____
4. Interaction/socialization with other dogs	normal	mild	moderate	severe	_____
5. Aggressiveness to other dogs	normal	mild	moderate	severe	_____
6. Aggressiveness to people	normal	mild	moderate	severe	_____
7. Tolerance to grooming or bathing	normal	mild	moderate	severe	_____
8. Tolerance to being alone	normal	mild	moderate	severe	_____
9. Ability to recognize/respond to commands	normal	mild	moderate	severe	_____
10. Ability to recognize or respond to name	normal	mild	moderate	severe	_____
11. Recognizes you or other familiar people	normal	mild	moderate	severe	_____
13. Responses to noise/loud sounds	normal	mild	moderate	severe	_____
14. Development of compulsive behavior	normal	mild	moderate	severe	_____
15. Circling	normal	mild	moderate	severe	_____
16. Wakes you more at night	normal	mild	moderate	severe	_____
17. Inappropriate or persistent vocalization	normal	mild	moderate	severe	_____

**CHANGES IN *PHYSICAL ACTIVITY***

Compare this dog’s current physical activity to its earlier activity and ability. Please circle the correct answer. If you need additional space to describe changes, please use back of form or attach additional pages.

	Normal - or - Degree of Change				Describe Changes & Age of Onset
18. Climbing up or down stairs	normal	mild	moderate	severe	_____
19. Tremors or shaking	normal	mild	moderate	severe	_____
20. Seizures	normal	mild	moderate	severe	_____
21. Increased stiffness or weakness	normal	mild	moderate	severe	_____
22. Difficulty in movement or coordination	normal	mild	moderate	severe	_____
23. Changes in posture (“roached” back)	normal	mild	moderate	severe	_____
24. Tail carriage when alert & interested	normal	mild	moderate	severe	_____
25. Ability to see during the day	normal	mild	moderate	severe	_____
26. Ability to see at night in dim light	normal	mild	moderate	severe	_____
27. Head movements	normal	mild	moderate	severe	_____
28. Trance-like behavior	normal	mild	moderate	severe	_____
29. Bumps into objects, clumsy	normal	mild	moderate	severe	_____

Please describe any other health problems or behavioral abnormalities:

\_\_\_\_\_

\_\_\_\_\_