

Mountain and Moorland Pony Genetic Analysis Project

Native Ponies of the British Isles and Newfoundland

Project Information – February 11, 2009

DNA Study Summary

Project:

Genetic characterization of the Mountain and Moorland Pony breeds and their phylogenetic relationship within and among pony breeds with special emphasis on the Newfoundland Pony. This is an international effort and the data will be the broadest spectrum ever collected and will provide a single main scientific paper focusing on the Mountain and Moorland Pony breeds. The work will provide the basis for preparing individual reports for specific breeds. From a conservation standpoint, the work will determine current genetic diversity and provide groundwork information for further study of many breeds at risk. The study results will be presented at international genetic conferences and lead to a graduate paper published in an international journal.

Team:

Dr. Gus Cothran (Texas A&M, molecular genetics)
Dr. Yves Plante (AAFC-CAGR, molecular genetics)
Jaclyn Prystupa (MSc candidate, molecular genetics)

Liz MacKenzie (DNA sample coordinator and liaison with breeders)
Pat Morris (DNA sample coordinator and liaison with breeders)

Objective:

Describe levels of genetic diversity in pony breeds, understand genetic structure and phylogenetic relationship within and among pony breeds with special emphasis on the Newfoundland Pony. The work will make use of currently available microsatellite genotypes (from Dr. Gus Cothran), new microsatellite genotypes (Dr. Gus Cothran, Dr. Yves Plante and Jaclyn Prystupa) and possibly mitochondrial DNA sequence data (Dr. Yves Plante and Jaclyn Prystupa).

Project Milestones:

June 2009 All requested samples to be received by Dr. Gus Cothran and Dr. Yves Plante.
July 2010 Microsatellite genotyping complete, poster presented at ISAG, Edinburgh and preliminary report to breed associations and owners.
August 2011 Study paper complete and submitted for publication. Final reports to the breed associations and owners.

Breeds Selected for Inclusion: (related, possibly related and others for comparison purposes)

- **Canadian Horse** (At Risk – RBC CA; Threatened – ALBC USA, EST USA)
- **Cleveland Bay Horse** (Critical – RBST UK, RBC CA, ALBC USA, EST USA)
- **Clydesdale Horse** (Vulnerable – RBST UK; At Risk – RBC CA, EST USA; Watch – ALBC USA)
- **Connemara Pony**
- **Dales Pony** (Endangered – RBST UK; Critical – RBC CA, EST USA; Study – ALBC USA)
- **Dartmoor Pony** (Vulnerable – RBST UK, EST USA; Critical – RBC CA; Threatened – ALBC USA)
- **Eriskay Pony** (Critical – RBST UK)
- **Exmoor Pony** (Endangered – RBST UK; Critical – RBC CA, ALBC USA, EST USA)
- **Fell Pony** (At Risk – RBST UK; Critical – RBC CA; Threatened – ALBC USA; Vulnerable – EST USA)
- **Fjord Pony**
- **Gotland Pony** (At Risk – EST USA; Watch – ALBC USA)
- **Hackney Pony** (Endangered – RBST UK, RBC CA)
- **Highland Pony** (At Risk – RBST UK; Vulnerable – EST USA)
- **Icelandic Horse**
- **Kerry Bog Pony** (Not Categorized – Rare)
- **Konik Horse**
- **Lac La Croix Pony** (Critical – RBC CA)
- **Morgan Horse** (At Risk – RBC CA)
- **New Forest Pony**
- **Newfoundland Pony** (Critical – RBC CA, EST USA)
- **Paso Fino**
- **Przewalski Horse**
- **Sable Island Horse** (Critical – RBC CA)
- **St Pierre & Miquelon Islands Equine**
- **Shetland Pony – British** (Critical – RBC CA)
- **Shire Horse** (At Risk – RBST UK; Endangered – RBC CA; Vulnerable – EST USA; Watch – ALBC USA)
- **Standardbred Horse**
- **Suffolk Horse** (Critical – RBST UK, ALBC USA, EST USA; Endangered – RBC CA)
- **Turks & Caicos Island Pony**
- **Welsh Mountain Pony - Section A** (Semi Feral - Vulnerable - RBST UK)
- **Welsh Pony - Section B** (Vulnerable – RBC CA)
- **Welsh Pony of Cob Type - Section C**
- **Welsh Cob - Section D** (Vulnerable – RBC CA)
- **Donkey**

The risk categories of breeds reflected on the conservation watch lists of organization located in the Canada, the UK, and the USA have been provided above in parenthesis. Since the criterion differs to some extent, more detailed information can be obtained from their respective websites:

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| • Rare Breeds Canada (RBC) | www.rarebreedscanada.ca |
| • Rare Breed Survival Trust (RBST) | www.rbst.org.uk |
| • American Livestock Breed Conservancy (ALBC) | www.albc-usa.org |
| • Equus Survival Trust (EST) | www.Equus-Survival-Trust.org |

DNA data is already available for many of the breeds identified above. However, a significant number of the listed breeds are not on file or their data is limited. These will require hair sample donations and some will require blood sample donations.

Required DNA Samples

Donations of hair and blood samples are necessary if this project is to go forward and meet the objectives. Samples from 50 animals of each breed below would be ideal. Since this may be difficult to achieve, the minimum target is 25-30 animals per group. The animals do not have to be genetically unrelated but 1st and 2nd degree relationships should be avoided. The purpose is to provide samples for a fair cross section of the breed and incorporate as many different lines as possible. For the majority of breeds, hair samples will be adequate for the purposes of this study. However, in some cases, especially the little known or difficult to come by breeds, blood samples will be desirable for analysis and further study and they will be requested separately and on an individual basis.

Required Breeds:

- **Canadian Horse**
- **Clydesdale Horse**
- **Connemara Pony**
- **Eriskay Pony**
- **Exmoor Pony**
- **Fjord Pony**
- **Highland Pony** (would like at least 10 more hair samples)
- **Icelandic Horse**
- **Kerry Bog Pony** (since breed is very limited, would like minimum of 10 hair samples)
- **Morgan Horse**
- **New Forest Pony**
- **Newfoundland Pony**
- **Paso Fino**
- **St. Pierre & Miquelon Equine**
- **Shetland Pony - British**
- **Standardbred Horse**
- **Turks & Caicos Pony**
- **Welsh Mountain Pony (Section A)**
- **Welsh Pony (Section B)**
- **Welsh Pony of Cob Type (Section C)**
- **Welsh Cob (Section D)**

Hair Sample Donations

Due Date: June 30, 2009 (earlier receipt would be appreciated)

Shipment Method: Regular Post is Satisfactory

Individual Sample Size: 25-50 Mane Hairs with Good Follicles (root bulbs)

How to Proceed:

- 1) Evaluate your stock re lineage and choose the most appropriate animals. If you have pedigree charts, please include a copy with your input. An example "Pedigree Chart" has been attached for your convenience (See Attachment #4). If you do not have a pedigree charts but know the lineage of your animals, a blank form has been provided for your convenience (See Attachment #5).
- 2) Hair samples are to be submitted via a form titled "DNA Hair Sample Kit". This form and the associated instructions have been included (See Attachments #1). Please read the documentation carefully, complete the requested information to the extent possible, and follow the instructions for properly pulling mane samples and affixing them to the DNA Kit form. An example of a complete form has also been attached for your convenience. Please note that one form is required for each individual animal sampled.
- 3) Hair samples from within the USA should be mailed directly to Dr. Gus Cothran:

Dr. Gus Cothran
Department of veterinary Integrative Biosciences
College of Veterinary Medicine and Biomedical Sciences
Texas A & M University
College Station, TX
USA 77843-4458
Phone: (979) 845-0229
Fax: (979) 458-2778
Email: gcothran@cvm.tamu.edu
RE: DNA Samples Mountain and Moorland Pony Study

- 4) Hair samples from international points (Canada, UK, etc.) will also be sent directly to Dr. Gus Cothran at the address provided above but will require additional documentation to meet USA customs requirements.
 1. A copy of Dr. Cothran's import permit titled "United States Veterinary Permit for Importation and Transport of Controlled Materials and Organisms and Vectors" has been included with this package and will need to accompany your shipment (See Attachment #2).
 2. The form titled "USA Customs Certification Document" must be completed and signed. This form and the associated instructions have been included (See Attachments #3). Please read the documentation carefully and complete the required information. An example of a completed form has also been provided for your convenience. The use of a commercial shipper rather than regular post will necessitate the inclusion of a commercial invoice with the shipment.
 3. When mailing the sample package, ask the post office official for a declaration form (CN22) and complete as necessary. This form will be placed on the outside of the envelope.

Blood Sample Donations

- Due Date:** June 30, 2009 (earlier receipt would be appreciated)
- Shipment Method:** Regular Post is Satisfactory if Delivery Expected Within 14 Days; Otherwise Commercial Shipper
- Individual Sample Size:** 2 5ml EDTA Vacutainer Vials per Animal (vials/needles will be provided).

Process:

The earlier 2008 Newfoundland Pony study was based on blood sample data from 150 presumed and registered Newfoundland Ponies. These samples were donated on an individual basis and for the most part little effort was made to direct the collection of specific influential animals or necessary lines. The population will be reviewed to satisfy these requirements and the need for additional blood samples is anticipated. Newfoundland Pony owners will be contacted on an individual basis as soon as the requirements have been determined. It is hoped to make these requests prior to the onset of spring vaccines (e.g. West Nile Virus) to save costs re veterinary visits.

Blood samples for other breeds will also be requested on an individual basis. Special instructions will apply and these will be provided on contact. Shipments from outside Canada will require Canadian customs documentation.

The samples will be sent directly to Dr. Yves Plante.

Dr. Yves Plante, Research Scientist/Chercheur
Agriculture and Agri-Food Canada/Agriculture et Agroalimentaire Canada
Dept. Animal & Poultry Science
University of Saskatchewan
6D62 - 51 Campus Drive
Saskatoon, SK, Canada S7N 5A8
Phone/Téléphone: (306) 956-7209
Fax:/Télécopieur: (306) 966-4151
Email: plantey@agr.gc.ca
RE: DNA Samples Mountain and Moorland Pony Study

Questions

If you have any questions about this project, the associated forms, customs requirements and/or sample gathering, please contact:

Patricia Morris
DNA Sample Input Coordinator
Phone: (905) 563-0330
Email: mtcs@sympatico.ca