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# SER019-17 Supplemental Report

**File #:** SER019-17 Supplemental

**Date:** 24 April 2017

**Report of Expert**

Expert's Name: Stephen Fratpietro, M.Sc., B.Ed.
Title: Technical Manager, Paleo-DNA Laboratory

I, the undersigned, as requested by Chase Kloetzke, The Field Reports & Technology Group, submit my professional opinion in reference to the following matter: This examination of exhibits is connected to an ancient DNA analysis.

**ITEMS EXAMINED:**
The following items (see Table 1) were submitted for genetic analysis by Chase Kloetzke, The Field Reports & Technology Group. This sample was designated the following case and sample number by the Paleo-DNA Laboratory (PDL):

| PDL Case Designation | PDL Sample Designation | Sample Type | Comments |
|---|---|---|---|
| SER019-17 | 1 | Tooth | 1 part Maxilla with an exposed tooth |

**Table1**. Samples submitted to the Paleo-DNA Laboratory.

**EXAMINATION REQUESTED:** Sex Identification and if male, Y-chromosome analysis.

**REQUIREMENTS REQUESTED:** Determine if any genetic information could be extracted from the sample. Unless otherwise discussed, the industry standard extraction, purification and amplification protocols were to be used and attempted in this case.

The Paleo-DNA Laboratory agreed to work on the project in accordance with high scientific and professional standards, but as we had not been involved with the collection and storage of the sample, nor have we inspected the sample, nor have we assessed the condition of the sample, the Paleo-DNA Laboratory did not promise success in achieving any desired result. The Paleo-DNA Laboratory undertook this project giving no warranty of fitness for a particular purpose, or any other warranty, expressed or implied, on the results of your project or the tests carried out pursuant to your project. This includes no guarantee or warranty that the recommended protocol will achieve your desired results.



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## SEX DETERMINATION METHODOLOGY:

The amelogenin (sexing) region is amplified in 25uL reactions using Quanta Biosciences™ AccuStart™ II PCR Supermix (2X) with 12.5uL of AccuStart II PCR Supermix (2X), 0.25uL of 10uM each primer, 3uL template. Cycling parameters: hot start of 94° for 2 min, and 40 cycles of 94°C for 30s, 60°C for 1 min., 72°C for 2 min, and a final 72°C for 80 min. This PCR reaction batch includes a male positive, female positive and negative PCR control. Each locus is amplified at least twice for replication.

Primer Information: Sullivan et al. 1993. Biotechniques. 15(4): 636-641

| | |
|---|---|
| Amel 1 F | 5'-(6FAM) CCC TGG GCT CTG TAA AGA ATA GTG-3' |
| Amel 1 R | 5'-ATC AGA GCT TAA ACT GGG AAG CTG-3' |

**RESULTS**: The results below relate only to the items tested.

The results of the sex identification test indicate the sample as a **MALE** individual.



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## Y-CHROMOSOME METHODOLOGY

Y-Chromosome DNA is amplified in 10uL reactions using the Promega PowerPlex® Y23 System using manufacturer's cycling parameters. This PCR reaction batch includes a positive and negative PCR control. Each locus is amplified at least twice for replication.

Y-Chromosome DNA is also amplified in 10uL reactions using Life Technologies AmpF*l*STR© Y-Filer™ PCR Amplification Kit using manufacturer's cycling parameters. This PCR reaction batch includes a positive and negative PCR control. Some of the loci in this kit appear at smaller sizes then the Y23 kit.

**RESULTS**: The results below relate only to the items tested.

A 22 marker Y-chromosome profile was produced for the sample.

**Y-chromosome DNA Markers Tested**

| DYS576 | DYS389 I | DYS448 | DYS389 II | DYS19 / 394 | DYS391 | DYS481 | DYS549 | DYS533 | DYS438 | DYS437 | DYS570 | DYS635 / Y-GATA-C4 | DYS390 | DYS439 | DYS392 | DYS643 | DYS393 | DYS458 | DYS385 a/b | DYS456 | Y-GATA-H4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | 13 | 20 | 30 | 13 | 11 | 26 | 12 | 12 | 11 | 15 | 17 | 22 | 24 | 12 | 17 | NR | 13 | 17 | 12,17 | 16 | 11 |

'NR' means no results obtained.

This Y-chromosome profile is indicative of Y-chromosome haplogroup 'Q'.

Y haplogroup Q arose around 15,000 to 20,000 years ago with a man born in Siberia. His ancestors would have been the first explorers of the New World by crossing over the Bering Land Bridge. This haplogroup is one of two branches of haplogroup P and contains many diverse haplotypes despite its low frequency among most populations outside of the Americas. Haplogroup Q has been found in approximately 94% of Indigenous peoples of South America and detected in Na-Dené speakers at a rate of 25-50%, and North American Eskimo Aleut populations at about 46%. It can also be found in varying frequencies amongst people of East Asia, West Asia, South Asia, and Europe.

The combination of replication, procedures in place for laboratory sterilization and elimination of Paleo-DNA Laboratory DNA profiles suggest the results are authentic and not contamination. However, no modern comparison samples

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were submitted with this batch from the archaeologists or any other individual who may have handled the sample and potentially contaminated it. Therefore, we cannot guarantee that these profiles are authentic and not a previous handler.

**NOTES:**
Controls were run at every step of the analysis and gave expected results. The above profiles do not match any staff member or laboratory user at the Paleo-DNA Laboratory, past or present. This analysis complies with the requirements requested by the client. Details of the experimental procedures and analysis of this case are found in the case file of the Paleo-DNA laboratory, case number SER019-17 Supplemental. Your feedback is important to us! Please fill out our customer survey at http://lucas.lakeheadu.ca/customer-survey.

Technical Manager: Stephen Fratpietro

Date: 02 May 2017



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