Y-Chromosome and Mitochondrial DNA Analysis

Introductions

NEAFS 2006 Workshop
Rye Brook, NY
November 1, 2006

Dr. John M. Butler
Dr. Michael D. Coble

NEAFS Y-mtDNA Workshop (Butler and Coble) November 1, 2006

http://www.cstl.nist.gov/biotech/strbase/training.htm

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Introductions

Dr. John M. Butler

http://www.cstl.nist.gov/biotech/strbase/butler.htm

Experience

• University of Virginia/FBI Laboratory (1992-1995)
  – Work performed in Bruce McCord's lab
• NIST NRC Postdoc (1995-1997)
• NIST Human Identity Project Leader (1999-present)
• Forensic DNA Typing textbook (now in its 2nd Edition)
• STRBase website: http://www.cstl.nist.gov/biotech/strbase/
• Family: wife Terilynne and 6 children
• Hobbies: reading and writing

Contact Information

john.butler@nist.gov
301-975-4049

Dr. Michael D. Coble

http://www.cstl.nist.gov/biotech/strbase/Coble.htm

Experience

• Armed Forces DNA Identification Lab/GWU
  (1996-2003) - mtDNA
  – Work performed with Tom Parsons (AFDIL)
• NIST NRC Postdoc (2003-2005) - miniSTRs
• AFDIL, Research Section Chief (2006-present)
• Family: wife Karen and 3 children
• Hobbies: reading and UNC basketball

Contact Information

Michael.Coble@afip.osd.mil
301-319-0268

http://www.cstl.nist.gov/biotech/strbase/training.htm
Understanding the Audience Here

- Where is everyone from?
  - Which states?
  - State lab?
  - Local lab?
  - Private lab?

- Experience level?
  - Less than 1 year?
  - 1-3 years?
  - >3 years?

- STR kits in use?
  - Profiler Plus/COifiler
  - Identifiler
  - PowerPlex 16

- Instrumentation is use?
  - ABI 310
  - ABI 3100/3130xl

- Software in use?
  - GeneScan/Genotyper
  - GeneMapperID

Background of Participants...

Name
Laboratory
Experience (years) with DNA typing
Something memorable about yourself
What you hope to learn from this workshop

Primary Sources for Material Covered in this Workshop


- NIST STRBase website: http://www.cstl.nist.gov/biotech/strbase/

These workshop materials will be made available at http://www.cstl.nist.gov/biotech/strbase/training.htm
The Y Chromosome:
A Final Frontier in Human Identity Testing

Alan Redd
University of Arizona

John Butler
National Institute of Standards and Technology

Promega Meeting mtDNA/Y Chromosome Workshop
October 9, 2002

Speakers for the mtDNA section were Walther Parson, Mike Coble, and Tom Parsons

Outline for Workshop

Introductions
Lineage Markers vs. Standard STR Testing
• Y-Chromosome (John)
LUNCH
• Mitochondrial DNA (Mike)
Review & Answer Questions

Y-Chromosome and mtDNA Analysis
Wednesday, November 1, 2006 9:00am-5:00pm

- The use of short tandem repeat (STR) markers is now widespread in forensic DNA typing laboratories. However, interest is rapidly growing in Y-chromosome and mitochondrial DNA (mtDNA) polymorphisms because of certain advantages that these DNA markers bring to the field of human identification. Y-STR markers can enable recovery of the male perpetrator’s profile from a mixture of excess female DNA in situations where differential extraction is not possible. MtDNA testing results are more likely to be successful than regular nuclear DNA markers in cases involving highly degraded DNA samples because of the higher copy number of mtDNA in human cells. Mitochondrial DNA is maternally inherited while Y-chromosome DNA is passed on directly from father to son (paternally inherited). The direct inheritance of these lineage markers makes them useful in missing persons investigations where reference samples may be obtained from closely related individuals. This workshop will cover the structure, function, genetic tool, available assays, and statistical issues associated with Y-chromosome and mtDNA analysis.