



Priority Action Report

Biological Methods

Biology/DNA

Kimberly Murga

February 13, 2017



Subcommittee Leadership

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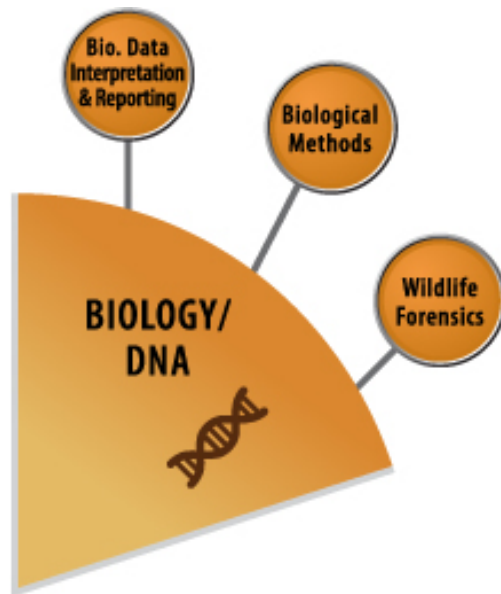
Affiliates



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Discipline Description



Biological Methods

The Biological Methods Subcommittee will focus on establishing standards and guidelines that support molecular and biochemical methods used to analyze evidence and reference items.

- This encompasses everything from serology through loading samples on a Genetic Analyzer. This subcommittee does not cover anything related to interpretation (serology interpretation or DNA interpretation)

Summary of Priority Projects

Priority	OSAC Process	Working Title of Document
1	SDO	Standards for Internal Validation of DNA Analysis Methods
2	SDO	Standard for Forensic DNA Analysis Training Programs
3	SDO	Standard for Training of Forensic DNA Isolation and Purification Methods
4	SDO	Best Practices for Assessing Educational Requirements for Forensic DNA Analysts
5	SDO	Training Standard for Forensic Human mtDNA Analysis and Interpretation
6	SDO	Standards for the Validation of Serological Methods



Standards/Guidelines Development Priority Document #1

Document Title: Standards for Internal Validation of DNA Analysis Methods

- **Scope:** This document details general requirements for performing an internal validation of all forensic DNA analysis methods within a forensic DNA laboratory.
- **Objective/rationale:** Internal validation is an integral step in the development and implementation of DNA methodologies for use in forensic testing. Internal validation provides the opportunity to characterize the strengths and limitations of a methodology prior to laboratory implementation, preventing unnecessary loss of valuable evidence. The purpose of this document is to provide general standards for the internal validation of all forensic DNA analysis methods.

Task Group Name: Validation and Method Development

Task Group Chair Name: Steven Weitz

Task Group Chair Contact Information:

steven.weitz@atf.gov

Date of Last Task Group Meeting: Jan. 2017

Standards/Guidelines Development Priority Document #1

Key Components of Standard:

- Validation Study Requirements
 - Specific studies
 - Multi-laboratory study requirements
- Quality Assurance Parameters
- Conformance/documentation requirements

Topic 2: Validation and Method Development

Committee Action Plan

Priority	Planned Actions	Approx. Deadline	Assignee
1	Finalize document with OSAC for submission to the Academy Standards Board (ASB)	March 2017	Validation Task Group
2	Develop standards related to internal and developmental validations associated with: <ul style="list-style-type: none"> 1) DNA Extraction 2) Quantitation 3) STRs with Capillary Electrophoresis 4) High Throughput Sequencing (NGS) 	May 2017	Validation Task Group
3	Present guidelines and standards to Subcommittee for review/comments	August 2017	Validation Task Group
4	Present guidelines and standards to Biology/DNA SAC for review/comments	October 2017	Validation Task Group



Standards/Guidelines Development Priority Document #2

- **Document Title:** Standard for Forensic DNA Analysis Training Programs
- **Scope:** This standard provides the general requirements for a forensic DNA laboratory's training program in DNA analysis and data interpretation.
- **Objective/rationale:** This standard is intended to be a foundational training standard upon which a more specific standards can be created. It identifies the key elements of an effective training program that should promote highly qualified DNA analysts.

Task Group Name: Education, Training, Competency and Certification

Task Group Chair Name: Kristine Kadash

Task Group Chair Contact Information:

kkadash@co.Jefferson.co.us

Date of Last Task Group Meeting: Jan. 2017

Standards/Guidelines Development Priority Document #2

Key Components of Standard:

- Personnel
- Competency Testing
- New DNA processing, data interpretation, and statistical analysis methods
- Re-training
- Training Program Content
- Documentation of required portions of the training program
- Administration of the training program
- Competency Test Assessment
- Conformance



Standards/Guidelines Development Priority Document #3

- **Document Title:** Standard for Training of Forensic DNA Isolation and Purification Methods
- **Scope:** This document provides requirements to ensure proper training in the approved methods of DNA isolation and purification used within the trainee's forensic DNA laboratory.
- **Objective/rationale:** This document identifies the key components of an effective DNA isolation and purification training program for Forensic Laboratories.

Task Group Name: Education, Training, Competency and Certification

Task Group Chair Name: Kristine Kadash

Task Group Chair Contact Information:

kkadash@co.Jefferson.co.us

Date of Last Task Group Meeting: Jan. 2017

Standards/Guidelines Development Priority Document #3

Key Components of Standard:

- Personnel
- Training Program
- Knowledge based components
 - Cell Structure, cell lysis, extraction methods, extraction efficiency
- Technical Components
 - Review of protocols, instruction, observation, demonstration, practical exercises
- Competency Testing
- Conformance



Standards/Guidelines Development Priority Document #4

- **Document Title:** Best Practices for Assessing Educational Requirements for Forensic DNA Analysts
- **Scope:** This document contains the key elements that should comprise a course intended to satisfy the biochemistry, molecular biology, genetics, and statistics or population genetics coursework.
- **Objective/rationale:** Based on information provided by quality audits of forensic DNA laboratories, this document will serve as a tool to assist DNA technical leaders in determining whether a university course with an alternative title satisfies the education requirements for Biochemistry, Genetics, Molecular Biology, Statistics or Population Genetics coursework.

Task Group Name: Education, Training, Competency and Certification

Task Group Chair Name: Kristine Kadash

Task Group Chair Contact Information:

kkadash@co.Jefferson.co.us

Date of Last Task Group Meeting: Jan. 2017

Standards/Guidelines Development Priority Document #4

Key Components of Standard:

- Definitions of Specific Classes
- Topic Recommendations/Content Requirements for Specific Classes

Standards/Guidelines Development Priority Document #5

- **Document Title:** Training Standard for Forensic Human mtDNA Analysis and Interpretation
- **Scope:** This document provides requirements to ensure proper training in the approved methods of mitochondrial DNA sequencing analysis used within the trainee's forensic DNA laboratory.
- **Objective/rationale:** This document identifies the key elements of an effective mitochondrial DNA sequencing analysis training program that should promote highly qualified DNA analysts.

Task Group Name: Education, Training, Competency and Certification

Task Group Chair Name: Kristine Kadash

Task Group Chair Contact Information:

kkadash@co.Jefferson.co.us

Date of Last Task Group Meeting: Jan. 2017

Standards/Guidelines Development Priority Document #5

Key Components of Standard:

- Introduction and Foundational Review
- General Biology, Protocols, Sequence Analysis, Heteroplasmy, Inheritance, Interpretation, Population Databases
- Instruction of Methods
- Practical Exercises
- Competency Testing
- Conformance

Topic 3: Education/Training/ Competency/Certification (ETCC)



Priority	Planned Actions	Approx. Deadline	Assignee
1	Finalize 4 documents with OSAC for submission to the Academy Standards Board (ASB)	March 2017	Education Task Group
2	Continue work on the following documents in progress: <ol style="list-style-type: none"> 1) Standard for Training of Forensic DNA Quantification Methods using Real-time PCR 2) Standard for Training of Forensic STR Typing using Capillary Electrophoresis 	May 2017	Education Task Group
3	Present guidelines and standards to Subcommittee for review/comments	August 2017	Education Task Group
4	Present guidelines and standards to Biology/DNA SAC for review/comments	October 2017	Education Task Group



Standards/Guidelines Development Priority Document #6

- **Document Title:** Standards for the Validation of Serological Methods
- **Scope:** This standard provides general requirements for completing developmental and internal validations for forensic serological methods.
- **Objective/rationale:** This standard originated due to the need for forensic serology specific validation standards. While there are many documents on how to perform a validation, prior to this document there was not a standards document specific to the validation of forensic serological methods.

Task Group Name: Serological Examination of Biological Evidence

Task Group Chair Name: Caroline Zervos

Task Group Chair Contact Information:

caroline.zervos@ic.fbi.gov

Date of Last Task Group Meeting: Jan. 2017

Standards/Guidelines Development Priority Document #6

Key Components of Standard:

- Developmental Validation Components
- Internal Validation Components
- Validation Documentation Requirements



Topic 4: Standards for the Collection and Serological Examination of Biological Evidence

Committee Action Plan

Priority	Planned Actions	Approx. Deadline	Assignee
1	Finalize document with OSAC for submission to the Academy Standards Board (ASB)	March 2017	Serology Task Group
2	Develop additional standards and guidelines related to serology, body fluid ID, sample identification and collection, and sexual assault kits	May 2017	Serology Task Group
3	Present guidelines and standards to Subcommittee for review/comments	August 2017	Serology Task Group
4	Present guidelines and standards to Biology/DNA SAC for review/comments	October 2017	Serology Task Group



New Task Group: Contamination

Priority Level: High

Description: To develop standards and guidelines associated with minimizing and identifying contamination in forensic DNA

Draft Documents Created: First document is in progress

Task Group Chair Name: Margaret Sanger

Task Group Chair Contact Information: Margaret.Sanger@ky.gov



Task Group Action Plan

Priority	Planned Actions	Approx. Deadline	Assignee
1	Evaluate literature on contamination prevention and identification	March, 2017	Contamination Task Group
2	Complete draft for subcommittee evaluation and feedback	April, 2017	Contamination Task Group
3	Incorporate feedback and modify document as appropriate	June, 2017	Contamination Task Group
4	Present document to OSAC for feedback	July, 2017	Contamination Task Group



Thank You!

