

FY 2013 Scientific Working Group Semi-Annual Report

SWG Name: Scientific Working Group on DNA Analysis Methods (SWGDM)

Meeting Date: January 15-17, 2013

Meeting Location: Federal Training Center in Dumfries, Virginia

I. Agenda:

Please see Attachment A.

II. Meeting Synopsis:

Tuesday, January 15, 2013

SWGDM Chairman, Anthony Onorato, welcomed the attendees who introduced themselves. The Chair acknowledged the passing of the first TWGDAM Chair, James Kearney and introduced Taylor Scott from the Illinois State Police. Mr. Scott shared his memories of Jim Kearney who worked for the Illinois State Police in Chicago upon his retirement from the FBI Laboratory. Mr. Kearney, former Chief of the Forensic Science Research and Training Center, set a collegial tone for collaboration and sharing of ideas at TWGDAM. Ken Konzak and Rich Guerrieri also shared their memories of Jim noting that he provided a forum for everyone to participate while still ensuring that the work was completed.

The Chair reviewed the agenda for the January 2013 meeting, including the documents that would be considered for approval (Training Guidelines, SWGDAM Executive Board Open Letter on the *Abernathy* case) and those that would be reviewed (mtDNA and Y-STR). Additionally, there would be a formal consideration of whether to archive the Health and Safety Guidance document.

The Chair advised the body that Phil Kinsey, the Vice-Chair was recently named the Laboratory Director for the Montana Laboratory and consequently would be stepping down from his role as SWGDAM Vice-Chair, leaving the Vice Chairmanship vacant.

In introducing the morning presentations, the Chair explained that the technical session would be devoted to a background on the quality assurance standards, validation requirements and validation guidelines. Additionally, there would be a presentation on the validation of new methods in the laboratory to provide specific examples of these standards and requirements. Following these foundational presentations, Dr. Callaghan

from the Rapid DNA Program Office will provide additional background and then the four entities that have developed Rapid DNA instruments would be given one hour to provide a description of their instruments and time permitting, respond to questions from the attendees.

Ms. Dawn Herkenham provided a historical background on the Quality Assurance Standards, beginning with the work by the Technical Working Group on DNA Analysis Methods (TWGDAM). Ms. Herkenham traced the use of the TWGDAM Guidelines for forensic DNA analysis through the enactment of the Federal DNA Identification Act (1994) and the establishment of the Federal DNA Advisory Board (1995). At the conclusion of the Board's tenure in 2000, it designated the Scientific Working Group on DNA Analysis Methods (SWGDM) with the responsibility for recommending revisions to the FBI Director of the quality assurance standards.

Dr. Douglas Hares followed with a presentation on the validation requirements of the quality assurance standards (QAS). Dr. Hares explained that for purposes of this discussion, "Rapid DNA describes the fully automated (hands-free) process of developing an STR profile from a reference sample buccal swab. The "swab in – profile out" process consists of automated extraction, amplification, separation, detection and allele calling without human intervention. No Rapid DNA instruments or kits have been approved by the FBI for submission of samples to NDIS/CODIS." Additionally, Dr. Hares noted that, while R-DNA is not currently addressed in the QAS, that in addition to QAS requirements relating to use of controls, the PCR amplification kit and Expert System would require approval for use at NDIS and he reviewed the process for seeking such approval.

Mr. Eugene Lien reviewed the Validation Guidelines recently approved by the SWGDAM membership and posted on the SWGDAM web site (www.swgdam.org). Mr. Lien explained that there were two forms of validation: development and internal. Developmental validation is the "acquisition of test data and determination of conditions and limitations of a new or novel DNA methodology for use on forensic, database, known or casework reference samples." Internal validation is the "accumulation of test data within the laboratory to demonstrate that established methods and procedures perform as expected in the laboratory." Mr. Lien reviewed the specific criteria associated with each type of validation.

Dr. Tamyra Moretti presented on the validation of new methods in the laboratory that included a variety of validations performed by the FBI's Nuclear DNA Analysis Unit when they were addressing a casework backlog. Dr. Moretti shared the results of their studies relating to sensitivity monitoring, threshold control, and consumables

contamination. Dr. Moretti concluded that the QAS, Validation Guidelines and research principles guided these validation efforts. Also important to the success of the validation efforts: assign the right people to these projects; invest in an implementation team; invest in properly managing the validation efforts through routine meetings and updates, invest in documentation; and training. As a result of the efficiencies achieved through these process improvements, within a two year period, the average turnaround time in their Unit has been reduced to less than 30 days.

Dr. Thomas Callaghan provided an update from the FBI's R-DNA Program Office including their goals and objectives. The FBI has received two of the R-DNA instruments and is in the process of evaluating those instruments.

Representatives from the following organizations provided an update on their efforts in developing R-DNA instruments: IntegenX, Lockheed/Zy-GEM-Microlab, Net Bio, and the University of Arizona's Center for NanoBioscience and Medicine.

The SWGDAM Executive Board Meeting for Tuesday evening was rescheduled to Thursday morning.

Wednesday, January 16, 2013

The following Committee meetings were held during the day:

CODIS Committee

Enhanced Detection Methods and Interpretation Committee

Missing Person and Mass Disaster Committee

MtDNA Committee

Mixture Committee

Quality Assurance Committee

Rapid DNA Committee

Y-STR Committee

The Rapid DNA Committee scheduled the morning of Wednesday's Committee meeting time to meet with each of the three entities having R-DNA instruments (for one hour each; the University of Arizona representative was unable to remain for this meeting). The MtDNA Committee met with the MP and QA Committees to discuss the revised draft of the mtDNA guidelines.

A round table discussion was held in the evening that included several presentations from Invited Guests. Ms. Deedra Hughes updated the group on her laboratory's outsourcing

efforts. Mr. Ray Wickenheiser updated the group on his laboratory's touch DNA policy. Dr. Theresa Caragine provided an update on the validation of OCME's forensic statistical tool. Ms. Dixie Peters provided an update on the challenges of a missing persons' laboratory. Dr. Jack Ballantyne provided an update on the US Y-STR database maintained by the National Center for Forensic Science, including that federal funding had been received to support the database. Following the presentations, there was a discussion of technical issues raised by the attendees.

Thursday, January 17, 2013

The Chair opened the Thursday session with the recommendation from the QA Committee for archival of the "Guidance Document for Implementing Health and Safety Programs in DNA Laboratories." The Chair stated that, while the attendees at the last meeting had been supportive of this recommendation, no formal action had been taken. A motion was made to archive the "Guidance Document" which was passed unanimously by the membership.

The Chair introduced the QA Committee Chair for a presentation on the Training Guidelines. Ms. Dahl noted that the Guidelines had been distributed to the membership and Invited Guests for comment in advance of the January meeting. Ms. Dahl explained that they would be referring to SWGDAM documents/guidance as the most recent version available at www.swgdam.org so that the Guidelines would not need to be updated each time a referenced SWGDAM document is revised. A motion was made to approve the Training Guidelines which was passed unanimously by the membership. Ms. Dahl provided an update for the QA Committee.

The Chair introduced Dr. Peg Schwartz to provide an update on the *State v. Abernathy* case and the Executive Board's Open Letter. Dr. Schwartz noted that in the course of a criminal court case in Vermont challenging the constitutionality of their law authorizing DNA sample collection at arraignment, a defense expert testified concerning "associations" between CODIS core loci and medical conditions/diseases. Dr. Schwartz reviewed several of the studies cited by the defense expert. The *Abernathy* case is on appeal to the Vermont Supreme Court and oral argument is scheduled for March, 2013. Ms. Herkenham then reviewed the Executive Board's Open Letter on considerations relating to the *Abernathy* case that were posted on the SWGDAM web site; including the goal of presenting the Letter to the membership for their consideration. The Open Letter was distributed to the membership and Invited Guests for review and comment. In the

interim, it was noted that the Letter has been referenced by several of the *amicus curiae* briefs submitted in *Maryland v. King*. Ms. Herkenham reviewed the comments and noted that several of the citations in the Letter should be revised because the articles/notes have been published. A motion was made to approve the Letter and revise the citations and it was approved unanimously.

The Chair introduced Ms. Cathy Knutson, Chair of the MtDNA Committee, for an update on the guidelines. Ms. Knutson explained that during the comment period, she received a comment that led to a substantial revision of the guidelines. Additionally, the MtDNA Committee had an opportunity at this meeting to meet with the QA and Missing Persons Committees to discuss the guidelines. After discussions with the QA Committee, it was decided to have the information on contamination merged into one contamination document that will be developed by the QA Committee. It is expected that a revised draft will be ready for SWGDAM Executive Board review by the end of January.

Dr. Tamyra Moretti provided an update on the Y-STR Committee and Guidelines. The Y-STR Ad Hoc Working Group is now a Committee. The Committee has been working on interpretation guidelines for Y-STRs, specifically with respect to the statistical issues. Dr. Moretti explained that the general format of the draft guidelines would be to refer to the *SWGDM Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Testing Laboratories* when those provisions are applicable and when they are not, to specify the recommendations for Y-STRs. Dr. Moretti reviewed the recommendations for the statistical analysis, such as the use of the counting method and the application of the Clopper-Pearson formula for calculation of an upper confidence limit.

Dr. Douglas Hares, Chair of the CODIS Committee provided an update on that Committee as well as the progress of the CODIS Core Loci Working Group. Dr. Hares explained that the CODIS Core Loci Working Group has been working on the validation plan and participants. Dr. Hares noted that 12 participating laboratories have been selected and databasing kits were delivered in late December. Those laboratories performing database analysis have begun testing the databasing kits under Component 1 of the validation plan. Testing of the casework kits will begin once both casework kits are available. The goal will be to share and discuss the data from the database and casework kit validations with SWGDAM at the July meeting.

The Chair introduced the Committee updates and each Committee provided an update of its progress toward the tasks and objectives.

Following the Committee updates, the Chair introduced Mr. Michael Coble to provide an update on the National Institute of Standards and Technology (NIST). Mr. Coble updated attendees on the following activities since the last SWGDAM meeting: participation in an international effort on cell line authentication; publication of the work on Insertion/Deletion (InDel) Markers; report of their Performance Assessment of PlexID; new DNA mixture training materials available on STRbase; evaluation of TrueAllele Mixture Software continues; STR kit concordance comparisons and new STR loci studies; Y-STR loci studies; and Rapid DNA efforts.

Ms. Dawn Herkenham provided a Legislative Update. Ms. Herkenham described state and Federal legislative activities: while several states amended their existing arrestee collection laws (Ohio and Tennessee) with no new arrestee laws enacted in 2012, there are a total of 28 states, the Federal government and the Department of Defense authorized to collect from persons arrested or arraigned for specific felony offenses. Congress passed the Katie Sepich Enhanced DNA Collection Act of 2012 which provides federal grant funding to states collecting DNA samples from persons arrested for specific felony offenses; the Act was signed into law by the President on January 10, 2013. Ms. Herkenham explained that the constitutionality of the Maryland arrestee collection law was being considered by the U. S. Supreme Court and the oral argument was scheduled for February 26, 2013. Ms. Herkenham advised that the Equal Employment Opportunity Commission had taken no position on the question posed by SWGDAM on the availability of the law enforcement exemption to manufacturers of the consumables used by the law enforcement laboratories but did reinforce that the Genetic Information Nondiscrimination Act was applicable to forensic DNA analysis.

In closing, the Chair announced that he had asked Russell Vossbrink (Scottsdale Police Department) to serve as Vice-Chair for the remainder of Phil Kinsey's term and that Mr. Vossbrink had accepted.

III. Attendees:

Please see Attachment B.

IV. Status Update on Progress toward Goals and Objectives:

The Committees continue work on their tasks for the next meeting in July, 2013 with some Committees planning to hold teleconferences, as needed, in the intervening months.

V. Current and Planned Standards/Best Practices/Guidelines Development Activities:

The CODIS Committee continues to work on its tasks that do not, at this time, include standards or guidelines.

The Enhanced Detection Methods Interpretation Committee has completed its work revising the SWGDAM Validation Guidelines and is now focusing on the development of guidelines for the use of enhanced detection methods.

The Missing Persons and Mass Disaster and Mixture Committees continue to work on training/reporting documents for the DNA community.

The MtDNA Committee is completing its work on MtDNA Interpretation Guidelines and plans to forward the final draft to the SWGDAM Executive Board within the next month.

The Rapid DNA Committee will continue its work on identifying QAS issues relating to the implementation of R-DNA instruments in a laboratory setting.

The QA Committee's Training Guidelines have been approved and they will begin work on a contamination guidance document.

The Y-STR Committee will continue its work on the development of Y-STR Interpretation Guidelines.

VI. Next Meeting:

The next meeting will be held July 9-11, 2013.

VII. Additional Information:

None at this time.



SWGDM REGULAR MEETING

January 15 - 17, 2013

AGENDA

Tuesday, January 15, 2013

- 7:00 AM Chair and Vice Chair Meeting
8:00 AM Welcome and Business Matters

TECHNICAL SESSION: THE ANATOMY OF FORENSIC VALIDATION

All R-DNA Vendors Welcome to Attend

- 8:30 AM History of SWGDAM and the FBI's Quality Assurance Standards – Dawn Herkenham
9:00 AM Review of Standard 8: Validation and CODIS/NDIS Requirements – Douglas Hares
9:30 AM BREAK
10:00 AM Review of the SWGDAM Validation Guidelines for DNA Analysis Methods – Eugene Lien
10:30 PM Validation of New Methods in a Forensic Laboratory – Tamyra Moretti
11:00 AM Q & A Session – Dawn Herkenham, Douglas Hares, Eugene Lien, and Tamyra Moretti
11:30 PM LUNCH

VENDOR SESSION: RAPID DNA TECHNOLOGY

R-DNA Vendors Dismissed then to Return Individually

- 12:30 PM History of Rapid DNA Analysis – Thomas F. Callaghan
1:00 PM Rapid DNA Technology Developer Briefing
Company #1



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

- 2:00 PM Rapid DNA Technology Developer Briefing
Company #2
- 3:00 PM BREAK
- 3:30 PM Rapid DNA Technology Developer Briefing
Company #3
- 4:30 PM Rapid DNA Technology Developer Briefing
Company #4

OPENING BUSINESS SESSION

- 5:30 PM Committee *ad hoc* Planning Sessions
- CODIS – Doug Hares
 - Enhanced Detection Methods – Eugene Lien
 - Mass Spectrometry/mtDNAU – Cathy Knutson
 - Missing Persons/Mass Disaster – John Tonkyn
 - Mixture – John Butler
 - QA – Jodi Dahl
 - Rapid DNA – Pete Vallone
 - Y-STR – Tamyra Moretti
- 6:00 PM ADJOURNMENT
- 7:00 PM Executive Board Meeting



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

Wednesday, January 16, 2013

8:00 AM Committee Final Reports and/or Final Approval Votes or
Committee Break-Out Sessions

12:00 PM LUNCH

1:00 PM Committee Break-Out Sessions (con't)

ROUND TABLE SESSION

6:00 PM Invited Guest Presentations (15-20 minutes) - Moderator: Phil Kinsey

Outsourcing and current challenges faced by the lab – Deedra Hughes

Policy modifications implemented to stem the tide of casework, stick to probative results and avoid heinous mixtures using top cases worked in the lab – Ray Wickenheiser

Forensic Statistical Tool (FST): Reporting likelihood ratios that incorporate drop-in and drop-out – Theresa Caragine

Challenges facing a missing persons lab – Dixie Peters



Thursday, January 17, 2013

GROUP DISCUSSION SESSION

8:30 AM Committee Breakout Sessions (con't) *or*

Committee Public Review Session(s)

12:00 PM LUNCH

1:00 PM Committee Session Updates

CODIS – Douglas Hares

Enhanced Detection Methods – Eugene Lien

Mass Spectrometry/mtDNAU – Cathy Knutson

Missing Person/Mass Disaster – John Tonkyn

Mixture – John Butler

Quality Assurance – Jodi Dahl

Rapid DNA – Pete Vallone

Y-STR – Tamyra Moretti

UPDATE SESSION

1:30 PM Legislative Update – Dawn Herkenham

2:00 PM *State of Vermont vs Abernathy* – Peg Schwarz/Dawn Herkenham

2:30 PM CODIS Core Loci Expansion Update – Douglas Hares

3:00 PM BREAK

3:15 PM NIST Update – John Butler

CLOSING BUSINESS SESSION

4:00 PM Chair Report – Tony Onorato

5:00 PM ADJOURNMENT

**SWGDM January 2013 Meeting
Members and Invited Guests
Attendance**

SWGDM Chair

Anthony Onorato
FBI Laboratory

SWGDM Executive Board

Angelo Della Manna
Alabama Department of Forensic Sciences

Eric Pokorak
FBI Laboratory

Margaret (Peg) Schwartz
Vermont Forensic Laboratory

Taylor Scott
Illinois State Police

Gary Sims
California Department of Justice

Dawn Herkenham (IG)
SAIC

SWGDM Members & Invited Guests

Jack Ballantyne (IG)
University of Central Florida

Todd Bille (IG)
Bureau of Alcohol, Tobacco and Firearms

John Butler (IG)
National Institute of Standards and
Technology

Thomas Callaghan (IG)
FBI Laboratory

Theresa Caragine (IG)
NYC Office of the Chief Medical Examiner

Amber Carr (IG)
FBI Laboratory

Chris Carney (IG)
FDLE – DNA Database

Michael Coble (IG)
National Institute of Standards and
Technology

James Corcoran (IG)
FBI Laboratory

Rhonda Craig (IG)
FBI Laboratory

Jodi Dahl (IG)
FBI Laboratory

Tina Delgado (IG)
FBI Laboratory

Neil Fernandopulle (IG)
Centre of Forensic Sciences

Connie Fisher (IG)
FBI Laboratory

Russell Gettig (IG)
NY State Police Forensic Investigation
Center

Ann Marie Gross
MN Bureau of Criminal Apprehension

Richard Guerrieri
FBI Laboratory

Douglas Hares (IG)
FBI Laboratory

Bruce Heidebrecht
Maryland State Police

Brian Hoey
Missouri State Highway Patrol

Deedra Hughes (IG)
Mississippi Crime Laboratory

Clark Jaw (IG)
FBI Laboratory

Elizabeth Johnson (IG)
U.S. Army Crime Lab

Catherine Knutson (IG)
MN Bureau of Criminal Apprehension

Ken Konzak
California Department of Justice

Sylvain Lalonde (IG)
Royal Canadian Mounted Police

George Li
Virginia Department of Forensic Science

Eugene Lien
NYC Office of the Chief Medical Examiner

Beth Ann Marne
Pennsylvania State Police

Cathy McCord
Texas Department of Public Safety

Amy McGuckian
Palm Beach County Sheriff's Office

Jeff Modler (IG)
RCMP Forensic Science & Identification
Services

Tamyra Moretti (IG)
FBI Laboratory

Steven Myers
California Department of Justice

Nicole Nicklow (IG)
FBI Laboratory

Jeffrey Nye (IG)
Michigan State Police

Dixie Peters (IG)
University of North Texas Health Science
Center

John Planz
University of North Texas Health Science
Center

Joel Sutton (IG)
USA CIL

John Tonkyn
California Department of Justice

Peter Vallone (IG)
National Institute of Standards and
Technology

Russell Vossbrink
Scottsdale Police Department

Bruce Weir (IG)
University of Washington

Jennifer Wendel
FBI Laboratory

Ray Wickenheiser (IG)
Montgomery County Police Crime
Laboratory

Tim Zolandz (IG)
FBI Laboratory