

Scientific Analysis on DNA Analysis Methods (SWGDM) ***July 2016 Report***

July 12-14, 2016

Fredericksburg, Virginia

I. Agenda:

Please see Attachment 1.

II. Meeting Synopsis:

Tuesday, July 12, 2016

The SWGDAM Chair, Mr. Anthony Onorato, introduced the topic of Next Generation Sequencing for the Technical Session on Tuesday. He explained that Jodi Irwin from the Federal Bureau of Investigation (FBI) Laboratory would be presenting background on Next Generation Sequencing (NGS) and then vendors with sequencing instruments/kits (, Illumina, Promega and Thermo-Fisher Scientific) would have an opportunity to address topics provided by the SWGDAM NGS Committee. Finally, Ted Hunt with the Kansas City (MO) Prosecutor's Office would be wrapping up the NGS discussion. On Wednesday, July 13th, there will be breakout sessions all day for the Committees and Working Groups. On Thursday, July 14th, there will be the final reports from the Autosomal STR Committee, the Enhanced Detection Methods Interpretation (EDMI) Committee on the contamination document and the Sexual Assault Forensic Evidence Reporting (SAFER) Sexual Assault Kit (SAK) Processing Working Group as well as the regular updates.

Jodi Irwin (FBI Laboratory) presented Next Generation Sequencing 101. Ms. Irwin noted that NGS (also known as massively parallel sequencing) offers the potential to recover standard markers plus the entire mitochondrial genome. Ms. Irwin compared capillary electrophoresis with NGS technology and reviewed general workflows, including DNA library preparation. Ms. Irwin explained the bioinformatics tools available to the forensic DNA community. Ms. Irwin described the new capabilities for NGS: mixture deconvolution, phenotype/ancestry, and difficult samples.

Each of the following companies separately presented to the SWGDAM members and invited guests on their instrumentation/kits: Illumina, Promega and Thermo Fisher Scientific.

Ted Hunt presented on “Next Gen is Now: The Legal Path Forward.” Mr. Hunt reviewed the legal regulation of forensic DNA through legislation (Federal/State DNA database and postconviction laws), court challenges and admissibility laws. Mr. Hunt explained that the use of non-coding STRs are well-established, but the use of coding SNPs are in uncharted legal territory. Mr. Hunt distinguished the Fourth Amendment analyses used for investigative purposes compared to databasing reference sample DNA collections. Mr. Hunt also reviewed state statutes relating to phenotyping and medical/genetic conditions. Mr. Hunt suggested that the path forward include strategic planning with the following components: law, policy, society, science, resources and education.

Wednesday, July 13, 2016

The following Committees and Working Groups met Wednesday: Autosomal STR, CODIS, Enhanced Detection Methods Interpretation, Next Generation Sequencing (NGS), Quality Assurance, Rapid DNA, SAFER SAK Processing, Y-STR and Committee of Detail. The NGS Committee had separate presentations/discussions with representatives of Illumina, Promega and Thermo Fisher Scientific during their breakout meeting on Wednesday.

A round table discussion was held in the evening and the following topics were presented and/or discussed: probabilistic genotyping, familial mixtures, rape kit backlog processing, identification of service members, reporting on the presence of semen from DNA data, and the Lindbergh kidnapping.

Thursday, July 16, 2015

The Chair recognized Melissa Suddeth with the Florida Department of Law Enforcement who had received recognition, along with her team, for the Innovation of the Year for their development of a more efficient process for sexual assault kit evidence. Congratulations Melissa!

The Chair introduced Dr. Joel Sutton, Chair of the Autosomal STR Committee, to review his final report for the Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Typing Laboratories. Dr. Sutton explained that comments were received from over 20 individuals and each comment was reviewed. Dr. Sutton acknowledged the dedicated work of the Committee members in completing the document. Dr. Sutton noted that the

document is applicable to electrophoresis-based data. He reviewed the revisions to address comments received from SWGDAM attendees. The SWGDAM Executive Board unanimously approved the Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Typing Laboratories for posting for public comment.

Dixie Peters, Chair of the EDMI Committee, reviewed the revisions to the Contamination Prevention and Detection Guidelines for Forensic DNA Laboratories to address comments from the SWGDAM review. The SWGDAM Executive Board unanimously approved the Contamination Prevention and Detection Guidelines for posting for public comment.

Amber Carr, Chair of the SAFER SAK Processing Working Group reviewed the changes to the Guidelines for the Processing of Sexual Assault Evidence Kits in a Laboratory that were made in response to the comments received from the SWGDAM membership. The SWGDAM Executive Board unanimously approved the Guidelines for the Processing of Sexual Assault Evidence Kits for public comment.

Update Session

The following Committees/Working Groups provided an update on their activities and tasks: CODIS, Next Generation Sequencing, Rapid DNA, and Y-STR.

Dr. Mike Coble and Dr. Katherine Gettings, with the National Institute of Standards and Technology (NIST) provided an update on NIST's Applied Genetics Group. SRM 2392 and 2392-I certificates will be updated with information from NGS. SRM 2372 is projected to be out of stock by June, 2017; NIST is testing candidate materials for SRM 2372a which will be certified using digital PCR and investigating including mtDNA information. Dr. Gettings reviewed NIST sequencing projects including their sampling of forensic NGS kits, sequencing of NIST population samples, data analysis, and publication of sequence variation. Dr. Coble reviewed recent NIST publications and upcoming talks/workshops, such as Forensics @ NIST 2016 to be held on November 8-9, 2016.

Dr. John Butler, of NIST, provided an update on the activities of Organization of Scientific Area Committees (OSAC), the National Commission on Forensic Science (NCFS) and recent NIST activities. Dr. Butler reviewed the current hierarchy of standards used by accrediting bodies (ILAC, ISO/IEC, FBI Quality Assurance Standards (QAS), SWGDAM Guidelines) and the goal of the OSAC registry to provide standards for accrediting bodies. Dr. Butler described the Standards Board (ASB) created by the American Academy of Forensic Sciences. Dr. Butler reviewed recent OSAC events,

including the SAC Biology activities, as well as the plan for sharing OSAC DNA documents with SWGDAM. Dr. Butler also provided an update on the National Commission, including the NCFS subcommittees, meeting dates, and work products.

Ms. Minh Nguyen from the National Institute of Justice (NIJ) presented an update on NIJ Forensic Science R&D Investments in DNA/RNA Sequence Analysis. Ms. Nguyen reviewed the \$19 million in Federal funding invested in sequence analysis for fiscal years 2012 through 2015 and how they relate to the Technical Working Group (TWG) need for an “alternate instrumental platform that can perform genetic typing.” She reviewed several of the projects to evaluate sequencing systems and develop population databases. Ms. Nguyen also announced the National Microbiome Initiative and related research projects on microbial evidence.

Alexander Kneppers, with the Netherlands Forensic Institute and Chair of the European Network of Forensic Science Institutes (ENFSI) DNA Working Group provided an update. Mr. Kneppers described the Institute as having 520 staff covering 40 forensic disciplines and responsible for the forensic examination of criminal cases, research and development, and the centre of knowledge and experts. Mr. Kneppers provided an update on the annual meeting of the DNA Working Group held last April in Warsaw that included: draft of the DNA contamination guidelines; evaluation of proficiency tests; updates on evaluation of evidence, Empop and mixture interpretation; DNA database issues (ENFSI SMartRank project); automation and expert systems; and forensic biology. Mr. Kneppers explained the DNASEQEX project for the global exchange of MPS-STR data and provided a timeline for eDNA – an expert software system for comparison/evaluation of DNA casework profiles. He updated attendees on the ENSFI International Commission of Missing Persons (ICMP) hosted DNA Exclusion Database which is now online at www.icmp.int. The Exclusion Database contains unsourced contaminant profiles and they are awaiting participation by the manufacturers of the DNA consumables.

Dr. Walther Parson of the Institute of Legal Medicine in Innsbruck, Austria provided an update on the International Society for Forensic Genetics which has 1225 members from 84 countries. Dr. Parson reviewed how to become a member and the impact factors of the ISFG’s journals. Dr. Parson explained the structure and work of past/pending expert commissions of the ISFG. Dr. Parson also provided an update on STRidER (STR for Identity ENFSI Reference database) and DNA SeqEx (STR Sequencing and Exchange).

Jocelyn Carlson, Chair of the SWGDAM QA Committee, provided an update on the Committee's work in revising the Quality Assurance Standards. The current plan is to provide a preliminary draft of revisions for the January 2017 SWGDAM meeting. Ms. Carlson presented a proposed new format for the documents where the Audit checklist and discussion section will be separate documents with the idea that the discussion could, if needed, be revised on an annual basis. Ms. Carlson reviewed specific standards for input from the attendees, including a new Standard 16 (replacing safety) on Professional Development, Standard 15 on audits, Standard 13 on Proficiency testing, and Standard 5 on personnel.

The Chair updated attendees that the next meeting will be held on January 10-12, 2017. There will be three SWGDAM documents posted for public comment (Autosomal STR, Contamination and Sexual Assault Evidence Kits). The Executive Board is also expected to receive two documents for their review before the next meeting. In conclusion, the Chair and SWGDAM participants recognized Gary Sims with the California Department of Justice, for his service and countless contributions to SWGDAM, both as a member and currently Executive Board member, as he will be retiring this year. Thank you Gary and congratulations on your approaching retirement!

III. Attendees:

Please see Attachment 2.

IV. Next Meeting:

The next meeting will be held January 10-12, 2017.



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

SWGDM REGULAR MEETING

July 12 - 14, 2016

AGENDA

Tuesday, July 12, 2016

8:00 AM Welcome – SWGDAM Chair

VENDOR SESSION: Next Generation Sequencing:

8:30 AM Next Generation Sequencing: NGS 101 – Jodi Irwin

NGS Vendors will be Dismissed and then Invited to Return Individually

9:00 AM Next Generation Sequencing Briefing and Q & A

Vendor #1

10:30 AM BREAK

10:45 PM Next Generation Sequencing Briefing and Q & A

Vendor #2

12:15 PM LUNCH

1:30 PM Next Generation Sequencing Briefing and Q & A

Vendor #3

3:00 PM BREAK

3:15 PM "The Next Generation is Now" (Q & A to follow) – Ted Hunt

COMMITTEE PLANNING SESSION

4:45 PM Committees and Working Groups

Autosomal STR – Joel Sutton



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

CODIS – Darrell Oubre

Enhanced Detection Methods – Dixie Peters

Next Generation Sequencing Working Group – Jenifer Smith

Quality Assurance – Jocelyn Carlson

Rapid DNA – TBD

SAFER SAK Processing Working Group – Amber Carr

Y-STR – Tamyra Moretti

5:00 PM ADJOURNMENT

6:30 PM Executive Board Meeting

Wednesday, July 13, 2016

COMMITTEE OF THE WHOLE SESSION (If needed)

8:30 AM QAS Discussion Session (will be given priority), or Committee of the Whole Reviews or Committee Final Reports and Final Approval Votes

COMMITTEE BREAKOUT SESSIONS (Start time may be delayed by the COTW Session)

8:30 AM Committee Work
NGS Working Group to meet individually with vendors during breakout

12:00 PM LUNCH

1:00 PM Committee Work

5:00 PM ADJOURNMENT

ROUND TABLE SESSION

Moderator: Russell Vossbrink, SWGDAM Vice Chair

6:00 PM TBD



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

Thursday, July 14, 2016

COMMITTEE OF THE WHOLE SESSION

8:30 AM Committee Final Reports from the following Committees/Working Groups:
Autosomal STR, Enhanced Detection Methods and SAFER SAK Processing
Working Group

COMMITTEE UPDATE SESSION

10:30 AM Committees and Working Groups
CODIS – Darrell Oubre
Next Generation Sequencing Working Group – Jenifer Smith
Rapid DNA – Richard Wilson
Y-STR – John Buckleton

UPDATE SESSION

11:00 AM NIST Update – Mike Coble
11:45 AM Biology/DNA Scientific Area Committee – John Butler
12:15 PM National Commission on Forensic Science Update – John Butler
12:30 PM LUNCH
1:30 PM NIJ Update - Minh Nguyen
2:00 PM ENFSI Update – Sander Kneppers
3:15 PM ISFG Update – Walther Parsons
3:45 QA Committee Update – Jocelyn Carlson

BUSINESS SESSION

4:15 PM Chair Report – Tony Onorato
5:00 PM ADJOURNMENT

SWGDM July 2016 Meeting
July 12-14, 2016
Attendees

SWGDM Chair
Anthony Onorato

SWGDM Executive Board
Brian Hoey
Amy McGuckian
Steven Myers
Gary Sims
Russell Vossbrink
Dawn Herkenham (IG)

SWGDM Attendees
Jack Ballantyne (IG)
Suzanne Barritt-Ross (IG)
Jo Bright (IG)
John Buckleton (IG)
John Butler (IG)
Thomas Callaghan
Jocelyn Carlson (IG)
Chris Carney
Amber Carr (IG)
Michael Coble (IG)
Jerrilyn Conway (IG)
Jennifer Coursey (IG)
Seth Faith (IG)
Russell Gettig (IG)
Katherine Butler Gettings (IG)
Ann Marie Gross
Douglas Hares (IG)
Brian Harmon (IG)
Bruce Heidebrecht
Bill Hudlow (IG)
Deedra Hughes
Ted Hunt (IG)
Jodi Irwin (IG)
Clark Jaw (IG)
Elizabeth Johnson

Janice Joslin (IG)
Kristy Kadash (IG)
Susannah Kehl
Sharia Khan (IG)
Alexander Kneppers (ENFSI Rep)
Jason Kokoszka (IG)
Ken Konzak (IG)
Heather LaSalle (IG)
George Li
Eugene Lien
Beth Ann Marne
Charla Marshall (IG)
Scott McWilliams
Jeff Modler (IG)
Gary J. Molina
Shawn Montpetit
Tamyra Moretti
Elizabeth Morris (IG)
Minh Nguyen (IG)
Mary Lou Nicholson (IG)
Darrel Oubre (IG)
Walther Parson (IG)
Dixie Peters
Juliet Rolando
Lisa Schiermeier-Wood (IG)
Peg Schwartz (IG)
Christie Smith (IG)
Jenifer Smith (IG)
Melissa Suddeth (IG)
Joel Sutton
John Tonkyn
Peter Vallone (IG)
Jodie Ward (IG)
Bruce Weir (IG)
Ray Wickenheiser (IG)
Richard Wilson (IG)
Tim Zolandz (IG)