

Scientific Working Group on DNA Analysis Methods (SWGDM) July 2019 Report

July 9-11, 2019

Woodbridge, Virginia

I. Agenda:

Please see Attachment 1.

II. Meeting Synopsis:

Tuesday, July 9, 2019

The SWGDAM Chair, Mr. Anthony Onorato, opened the meeting and acknowledged the passing of two distinguished colleagues – Dr. Ranajit Chakraborty and Dr. Artie Eisenberg – both of whom left legacies for their intellect and graciousness in sharing their knowledge with the forensic DNA community. Following the introduction of all participants, the Chair noted that since the last meeting, he had received requests for additional information on genetic genealogy and he requested that Dr. Thomas Callaghan provide an introduction for the technical session.

Technical Session: Forensic Genetic Genealogy

Dr. Callaghan explained the creation of the Committee of Correspondence on Forensic Genetic Genealogy, beginning with the numerous inquiries to the Federal Bureau of Investigation (FBI) following the identification of the Golden State Killer in April 2018. Dr. Callaghan reviewed data that is available through next generation sequencing, such as biogeographic ancestry and externally visible traits, with specific examples relating to phenotypes.

Blaine Bettinger, Esq., the Genetic Genealogist, presented an Introduction to Genetic Genealogy. Dr. Bettinger noted that there are a total of approximately 30 million DNA profiles in the various ancestry databases (MyHeritage, AncestryDNA, GEDmatch, Family Tree DNA and 23andMe). He reviewed the types of DNA tests, the tests performed by the various companies as well as the type of raw data returned to test-takers. Dr. Bettinger explained the process for submitting a sample to the direct-to-consumer testing companies, the searching, and results (centiMorgans). [A centiMorgan is the measurement of shared DNA (i.e., the higher the number is, the closer the

relationship)]. He described the methodology for using genealogy company test results to identify genetic relatives of a DNA sample as follows: identify matches; identify closest matches; review/build trees for closed matches; look for patterns/overlap; and build trees downward. Dr. Bettinger noted that the challenges in this process will be the lack of trees and misattributed parentage events.

Lori Napolitano, Chief of Genetic Genealogy at the Florida Department of Law Enforcement (FDLE), presented on Genetic Genealogy Investigations. Ms. Napolitano explained that FDLE began their program in the fall of 2018 with funding for cases that met their familial search program criteria and a Genetic Genealogy Investigations team with specialized skills. The program requires: a formal written request by law enforcement and the state attorney; a commitment to investigate and prosecute; that all leads must be exhausted; a probative sample evaluated by forensic and vendor laboratory; and Committee and Commissioner approvals. Additional requirements include: single source profile (potentially 2 person mixtures if elimination sample); 20 ng of DNA (minimum of 1 ng); crime laboratory extract to be sent to vendor laboratory (original evidence may be sent); and each case to be evaluated by crime laboratory biologist and vendor laboratory representative. Ms. Napolitano described the following elements of the process: selection of vendor; send DNA extract or evidence to vendor; the vendor sends to another laboratory for SNP testing; the DNA results are uploaded to ancestry DNA databases; the vendor rates the solvability of the case; and, the vendor may provide genetic genealogy analyses. The FDLE Genetic Genealogy Investigations Team consists of the following components: genealogy, analytical, forensic, investigative and legal. FDLE has resolved 5 cases using genetic genealogy.

Malia Fullerton, Professor at the University of Washington, School of Medicine, presented on the Forensic Applications of Genetic Genealogy: Ethical Considerations. Dr. Fullerton explained the traditional ethical concerns related to balancing privacy and public safety. Dr. Fullerton noted that there are new concerns raised by genetic genealogy such as the quantity and character of genetic data that is generated as well as the fact that there are more distant familial relationships at issue. Dr. Fullerton described the growing concern over private and public genetic data and outsourcing of genotyping and analysis. Among the potential implications: informed consent is not really an individual matter because of connections to relatives; shifting approaches by the companies to terms of service; and numerous methodological/governance questions.

Christi Guerrini, Esq. Assistant Professor at the Baylor College of Medicine's Center for Medical Ethics and Health Policy, presented on Public Opinion Relevant to Forensic Genealogy. Ms. Guerrini described why public opinion is important: for balancing benefits and burdens; understanding public concerns and correct misunderstandings; and in obtaining public support. Ms. Guerrini explained a Baylor College of Medicine survey,

its limitations and the characteristics of the 1,587 respondents relative to public opinion on law enforcement searching of genetic genealogy databases. In that survey, 91% of respondents agreed that law enforcement should be allowed to search genealogical websites that match DNA to relatives for violent crime and missing person cases. A smaller percentage – 46% - agreed that law enforcement should be allowed to search these websites for non-violent crime cases. Ms. Guerrini also reviewed a similar survey from 2018 by Dr. Gleeson (Surname DNA Projects) where 85% of the respondents were reasonably comfortable with law enforcement agencies using DNA data on GEDmatch to help identify serial rapists and serial killers. Ms. Guerrini mentioned a more limited DNA phenotyping survey (129 respondents) reporting 84% in support of the use of methods to reveal physical traits from DNA to fight crime, dependent on the severity of the crime (such as negligent homicide, aggravated assault, homicide and rape/sexual abuse). Ms. Guerrini also discussed surveys on universal databases.

Dr. Callaghan provided a brief update on the Use of Genetic Genealogy in Criminal Investigations – a European perspective, on behalf of Peter Schneider and Walther Parson. Dr. Callaghan also described how he became familiar with the direct to consumer testing companies and shared an example of using the ancestry genetic databases to locate a relative.

Mr. Ted Hunt, Esq., Senior Advisor on Forensic Science at the U.S. Department of Justice, presented on Forensic Genealogy. Mr. Hunt described considerations for forensic genealogy that include: regulatory approaches, public safety and privacy rights; data differences (STRs/SNPs); database differences, investigative collaboration and accountability; sample conservation, confidentiality of genetic data; education and training; collection/analysis of metrics; and public confidence.

Following the presentations, there was a panel discussion with questions posed by the SWGDAM attendees.

Quality Assurance Standards (QAS) Guidance Document Session

Jocelyn Carlson, Chair of the SWGDAM Quality Assurance Committee, provided an update on the status of the QAS Guidance Document, noting that over 300 comments were received from the SWGDAM membership and invited guests. She explained that the Guidance Document was intended to provide examples and information rather than additional requirements. Since the Document was distributed for the technical review, additional guidance has been included with respect to software (analytical and statistics) and next generation sequencing. Ms. Carlson also discussed outstanding issues relating to reagent blanks and proficiency testing.

Wednesday, July 10, 2019

Dr. Jonathan McGrath, Senior Policy Analyst at the National Institute of Justice (NIJ) provided an update on Forensic Biology/DNA Programs. Dr. McGrath reviewed the DOJ needs assessment of forensic laboratories required by federal law and the Forensic Laboratory Needs Technical Working Group (FLN-TWG) (including how it differs from the NIJ Forensic R&D TWG). Dr. McGrath provided updates on the following National Best Practices Working Groups: DNA Laboratory Efficiency Improvement and Implementing and Sustaining a Cold Case Investigation Unit. Dr. McGrath reviewed the Research and Development Solicitation for FY 2019 as well as the FY 2018 funded forensic biology applications. The DNA Capacity Enhancement and Backlog Reduction Program, a formula program, made \$82 million available for FY 2019. Dr. McGrath also described activities of the Forensic Technology Center of Excellence.

The Chair provided an update on SWGDAM activities since the last meeting, including that the Next Generation Sequencing group has been given Committee status and creation of a Committee of Correspondence on Forensic Genealogy. The Chair announced that the FBI Director-approved Quality Assurance Standards will take effect July 1, 2020 but will be available before that at the SWGDAM web site to assist laboratories in preparing for the new requirements. At the conclusion of the Chair's presentation, the Vice Chair recognized the Chair for all of his efforts during his tenure and SWGDAM members and invited guests presented the Chair with pins/tokens from their agencies/organizations.

Committee meetings were then held for the remainder of the morning and the afternoon session.

Wednesday Evening Round Table

A round table discussion was held in the evening and the following topics were presented and/or discussed: CODIS update; Legislative update; National Institute of Standards and Technology (NIST) Applied Genetics update; a DNA Casework Quantitation Panel which included extract to DNA and SWGDAM survey results presentations; Next Generation Sequencing; DNASTable™; and a laboratory perspective of the Texas Forensic Science Commission.

Thursday, July 12, 2018

Working Session

The Chair introduced Ms. Melissa Taylor from NIST who has been facilitating the process mapping with the Joint OSAC and SWGDAM Process Mapping Working Group.

This Working Group is developing a process map for the specific steps involved in casework DNA analysis. Ms. Taylor explained that process mapping assists with the standards development process. The Working Group will have one more additional session to complete the process map and then they will be looking to SWGDAM for approval of the final work product. For the morning session, Ms. Taylor described the symbols used and took the SWGDAM participants through the steps of the process for casework DNA analysis.

Afternoon Session

Dr. Michael Coble presented on a new publication WIREs Forensic Science, the purpose of which is education and training. Dr. Coble is the Forensic Biology Co-Editor. They will publish the following types of articles: opinion, primer, overview, advanced review, focus article and software focus.

Final Report Review

Jocelyn Carson, Chair of the Quality Assurance Committee, presented the final draft of the QAS Guidance Document. Ms. Carlson reviewed revisions that were made to address additional comments. There was a motion to approve the QAS Guidance Document as revised and it was unanimously approved by the SWGDAM membership in attendance.

Update Session

The SWGDAM Committees and Working Groups provided an update on their activities.

The Chair commended the participants for all the teleconferences/meetings that occurred despite the cancellation of the January 2019 meeting as a result of the Federal government shutdown.

III. Attendees:

Please see Attachment 2.

IV. Next Meeting:

The next meeting will be held January 7 - 9, 2020.



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

SWGDM REGULAR MEETING

July 9 - 11, 2019

AGENDA

Monday, July 8, 2019

SPECIAL COMMITTEE SESSIONS

9:00 AM – 5:00 PM Casework Expert System Working Group
Committee of Correspondence on Forensic Genealogy

Tuesday, July 9, 2019

8:30 AM Welcome – SWGDAM Chair

TECHNICAL SESSION: FORENSIC GENEALOGY

9:00 AM Committee of Correspondence on Forensic Genealogy –
Presentations – Thomas Callaghan, Blaine Bettinger and Lori
Napolitano

12:00 PM LUNCH

1:30 PM Committee of Correspondence on Forensic Genealogy Presentations
– Malia Fullerton, Christi Guerrini, Thomas Callaghan and Ted Hunt

3:45 Panel Discussion

COMMITTEE OF THE WHOLE REVIEW: QAS REVIEW

4:20 PM Review of the QAS Guidance Document – Jocelyn Carlson

5:00 PM ADJOURNMENT

6:00 PM SWGDAM Executive Board Meeting



SCIENTIFIC WORKING GROUP

DNA ANALYSIS METHODS

Wednesday, July 10, 2019

8:30 AM National Institute of Justice Update – Jonathan McGrath

9:00 AM SWGDAM Chair Report – Anthony Onorato

COMMITTEE BREAKOUT SESSIONS

9:30 AM Committee Break-Out Sessions

12:00 PM LUNCH

1:30 PM Committee Break-Out Sessions

5:00 PM ADJOURNMENT

ROUND TABLE SESSION

6:00 – 9:00 PM Moderator: Russell Vossbrink, SWGDAM Vice Chair

Thursday, July 11, 2019

COMMITTEE OF THE WHOLE SESSION: DNA PROCESS MAP

8:30 AM OSAC/SWGDM DNA Process Map Review – Melissa Taylor

12:00 PM LUNCH

COMMITTEE OF THE WHOLE SESSION: QAS AUDIT GUIDE REVIEW

1:30 PM Final report on the QAS Guidance Document – Jocelyn Carlson

2:00 PM SWGDAM Committee/Working Group Updates – Chairs

3:15 PM Closing Remarks – SWGDAM Chair

3:30 PM ADJOURNMENT

Attachment 2 - Attendees

**SWGDM July 2019 Meeting
July 9 - 11, 2019
Attendees**

SWGDM Chair
Anthony Onorato

SWGDM Executive Board

Chris Carney
Eugene Lien
Amy McGuckian
Shawn Montpetit
John Tonkyn
Russell Vossbrink
Dawn Herkenham

SWGDM Attendees

Meg Aceves
Chris Askew
Todd Bille
Andrea Borchardt
Jennifer Breaux
Thomas Callaghan
Jocelyn Carlson
Amber Carr
Dorothy Catella
Michael Coble
Jerrilyn Conway
James Corcoran
Tina Delgado
Angelo Della Manna
Seth Faith
Connie Fisher
Russell Gettig
Katherine Butler Gettings
Ann Marie Gross
Lisa Grossweiler
Jessica Hanna
Douglas Hares
Brian Harmon
Bruce Heidebrecht
Bill Hudlow

Deedra Hughes
Ted Hunt
Jodi Irwin
Jessica James
Clark Jaw
Kristy Kadash
Marla Kaplan
Susannah Kehl
Sander Kneppers
Jason Kokoszka
Brandon Letts
George Li
Beth Ann Marne
Charla Marshall
Justin Maxwell
Barbara McCarty
Ruth Montgomery
Lilly Moreno
Tamyra Moretti
Steven Myers
Vanessa Nelson
Jeff Nye
Darrel Oubre
Walther Parson
Dixie Peters
Christopher Piwonka
John Planz
Evelyn Ridgley
Juliet Rolando
Kristin Sasinouski
Lisa Schiermeier-Wood
Taylor Scott
Christie Smith
Melissa Suddeth
Joel Sutton
Peter Vallone
Jeanette Wallin
Susan Welti
Ray Wickenheiser
Sascha Willuweit
Richard Wilson
Tim Zolandz

Presenters

Blaine Bettinger

Malia Fullerton

Christi Guerrini

Jonathan McGrath

Lori Napolitano

Melissa Taylor