



FORENSICS @ NIST

#NISTForensics

Forensics@NIST 2020

5 November 2020

Virtual Meeting

Day 2 Wrap-Up

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NIST Fellow & Special Assistant to the Director for Forensic Science

National Institute of Standards and Technology

We Are At the End of Day 2...

Welcome to:
FORENSICS@NIST
November 6, 2020
Day 2 of 2
8 AM - 4:15 PM EDT

8:00 - 8:15

Welcome & Recap

8:15 - 10:15

Digital and Identification
Evidence

10:15 - 10:30

BREAK

10:30 - 12:30

Trace

12:30 - 1:30

LUNCH BREAK

1:30 - 3:30

Drugs & Toxins

3:30 - 4:00

Biometrics Human
Examiner Overview

4:00 - 4:15

Final Wrap-Up



This Presentation is Intended as an “Index” to this Meeting

- **At the end of the “book”**
- **Developed after** the “text” is available (on the fly throughout today)
- **Rarely “read”** unless you are looking for a specific topic
- Cannot provide all details – **go see the original material!**



Acknowledgments and NIST Disclaimer

NIST Special Programs Office: Corrine Lloyd, Robert Ramotowski, Shyam Sunder
NIST Conference Program and Audiovisual Services: *(many people behind the scenes – Crissy Robinson, Pauline Truong, Kevin Hill, Joseph Nastus)*

Points of view are mine and do not necessarily represent the official position or policies of the National Institute of Standards and Technology.

Certain commercial entities are identified in order to specify experimental procedures as completely as possible. In no case does such identification imply a recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that any of the entities identified are necessarily the best available for the purpose.

Forensics@NIST 2020 Day 2 “Index”



Welcome

Special Programs Office

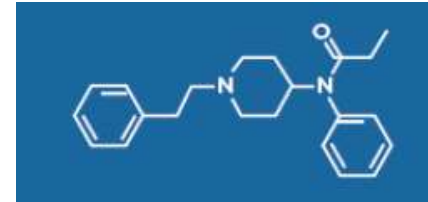
Digital Evidence

Software and Systems Division,
Information Tech. Laboratory



Trace Evidence

Material Measurement Laboratory
& Engineering Laboratory



Drugs & Toxins

Multiple Divisions,
Material Measurement Laboratory



Biometrics

Information Access Division,
Information Tech. Laboratory

Robert Ramotowski

Forensic Sci. Program Manager,
Special Programs Office

Barbara Guttman

Group Leader, ITL

**Jane Zhang &
Meghan Burke**

MML

Ruthie Corzo

MML

Matthew Staymates

MML

Jonathan Phillips

Facial Identification, ITL



Doug White

ITL

Megan Harries & Thomas Forbes

MML (Boulder)

MML

Ed Sisco

MML

Wrap-Up

Jim Lyle

ITL

Nick Sharp

MML

Nicholas Ritchie

MML

Arun Moorthy

MML

John Butler

Special Programs Office

Jenise Reyes Rodriguez

ITL

Stephanie Watson

EL

Aaron Urbas

MML

Rik Ayers & Mehdi Shahid

ITL

Melissa Phillips & Brent Wilson

MML



Welcome Remarks in Opening Day 2

FORENSICS@NIST2020 REGISTRANTS

1750+
registered
(as of 11/6/2020)

The number of registrants grew even after our meeting started



Robert Ramotowski

Forensic Sci. Program Manager,
Special Programs Office



Angola	Greece	Peru
Argentina	Hungary	Philippines
Australia	India	Poland
Austria	Italy	Portugal
Bahamas	Jamaica	Romania
Bangladesh	Japan	Serbia
Belize	Korea	Singapore
Brazil	Kosovo	South Africa
British Terr.	Kyrgyzstan	South Korea
British V.I	Maldives	Spain
Brunel	Mexico	Sweden
Canada	Monaco	Taiwan
Chile	Montenegro	Thailand
Colombia	Namibia	UAE
Costa Rica	Netherlands	Uganda
Denmark	New Zealand	Ukraine
Finland	Nigeria	United Kingdom
Germany	Norway	United States
Ghana	Pakistan	

DOC	DOI	EPA	NRC
DOD	DOJ	GAO	SEC
DOE	DOS	GSA	USAID
HHS	DOT	NASA	USPS
DHS		NRC	

Digital Evidence Focus Area



Barbara Guttman
Focus Area Lead, ITL

Digital Forensic Projects

- National Software Reference Library
- Computer Forensics Tool Testing
- Federated Testing
- Computer Forensics Reference Dataset
- Tool Catalog
- Black Box Study and Digital Forensics Scientific Foundation



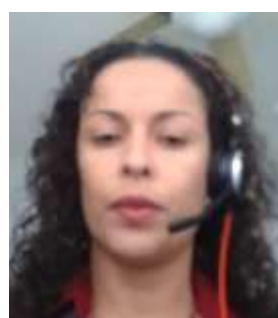
Digital Evidence Research Projects Discussed Today



Doug White



Jim Lyle



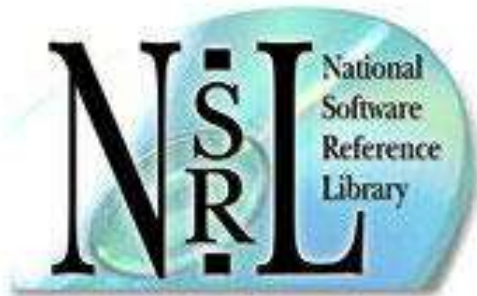
Jenise Reyes Rodriguez

Not pictured

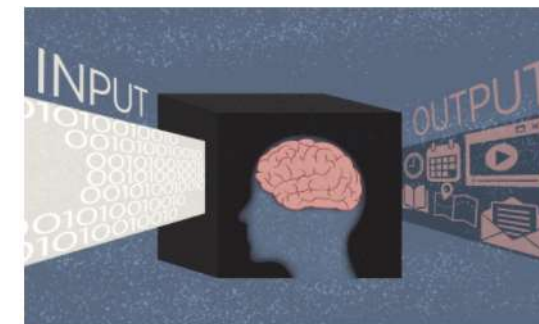
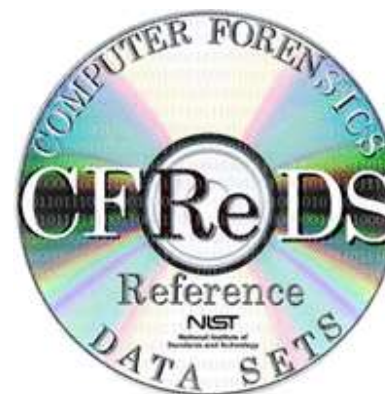
Rick Ayers & Mehdi Shahid



Barbara Guttman



Federated Testing



Black Box Study Underway



Trace Evidence Focus Area

TRACE EVIDENCE AGENDA



Marcela Najarro

Focus Area Lead, MML

10:30 - 10:45 AM	Development of a more comprehensive and extensible hair peptide spectral library	Zheng "Jane" Zhang
10:45 - 11:00 AM	Advances in Dynamic Vapor Sampling Towards Reliable Field Deployment	Megan Harries
11:00 - 11:15 AM	Bulk and Micro-Scale Trace Element Analysis of Glass SRMs Using Modern Nuclear Analytical Methods and LA-ICP-MS	Nick Sharp
11:15 - 11:30 AM	An Interlaboratory Study Evaluating the Interpretation of Forensic Glass Evidence Using Refractive Index Measurements and Elemental Composition	Ruthie Corzo
11:30 - 11:45 AM	A Standard Methodology for the Analysis of Paint by FTIR	Stephanie Watson
11:45 - 12:00 PM	Hybrid Thermal Desorption-Ambient MS developments for the trace detection of explosives	Thomas Forbes
12:00 - 12:15 PM	An objective, quantitative, statistically defensible scheme based on fitted intensity ratios for GSR analysis	Nicholas Ritchie



Trace Evidence Research Projects Discussed Today



**Zheng "Jane"
Zhang** MML

*Not
pictured*

Meghan Burke
MML



Ruthie Corzo
MML



Thomas Forbes
MML



Megan Harries
MML (Boulder)



Nick Sharp
MML



Nicholas Ritchie
MML



Stephanie Watson
EL

Types of Trace Evidence

- Hair
- Vapor sampling
- Glass analysis
- Paint
- Explosives, trace-levels
- GSR (inorganic gunshot residue)

Instrumentation

- Mass spectrometry
- Neutron Activation Analysis
- LA-ICP-MS
- FTIR
- Thermal desorption-ambient MS
- Electron microscopy

Most Active Q&A Session: Trace Evidence



Stephanie
Watson



Drugs & Toxins Focus Area



Ed Sisco

Moderator, MML

Drugs & Toxins Session

1:30 - 1:50 PM	Using Visualization Tools to Understand Drug Evidence Handling Processes	Matthew Staymates
1:50 - 2:15 PM	Development of Novel Workflows for Drug Chemistry	Edward Sisco
2:15 - 2:35 PM	Software Tools for DART-MS and GC-MS Data	Arun Moorthy
2:35 - 2:55 PM	Benchtop NMR for Forensic Drug Analysis	Aaron Urbas
2:55 - 3:15 PM	An Overview of the Hemp Measurement Service Program	Melissa Phillips & Brent Wilson
3:15 - 3:30 PM	Live Q&A Drugs & Toxins	



Drugs & Toxins Research Projects Discussed Today



Matt Staymates



Ed Sisco



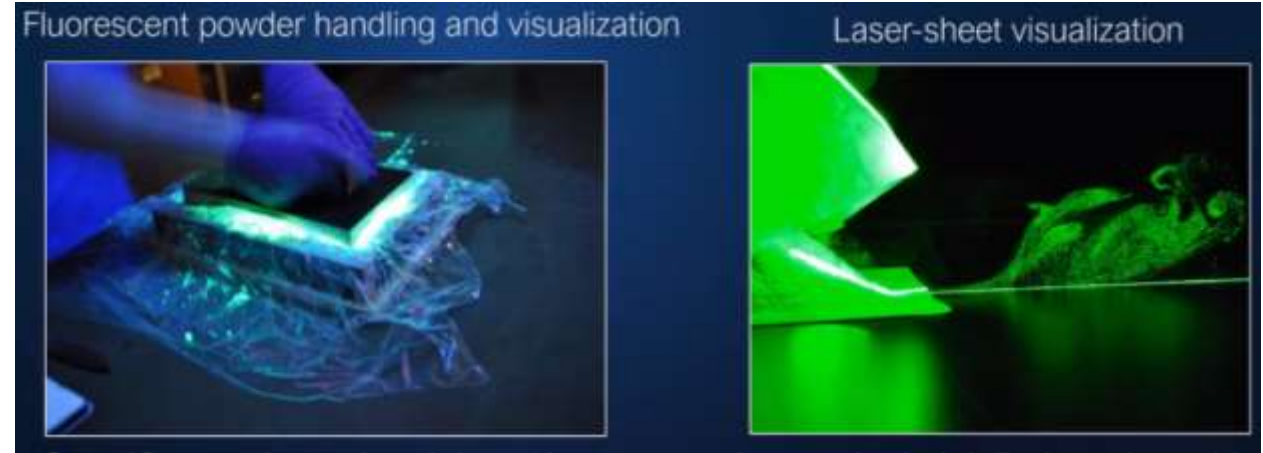
Brent Wilson



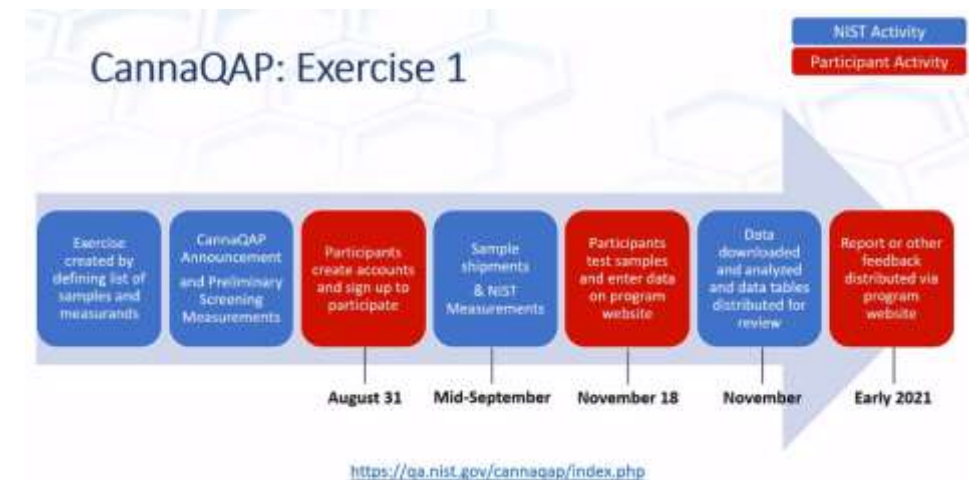
Arun Moorthy



Aaron Urbas



DART-MS
NMR
GC-MS
LC-MS





New contamination visualization laboratory

New facility that improves visualization and imaging techniques

Current efforts are focused on:

- Particulate transport in the third dimension?
- Expanding studies to other workplace processes
- Visualize process modifications that minimize exposure risks



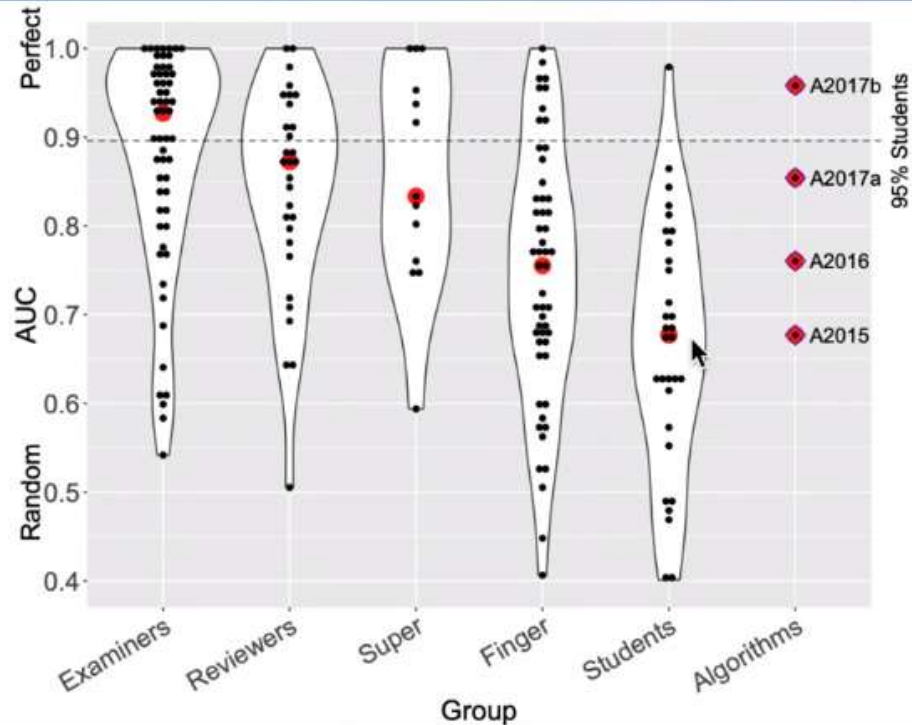
Matt Staymates (MML)

Biometrics Research Focus Area

What is a facial examiner?

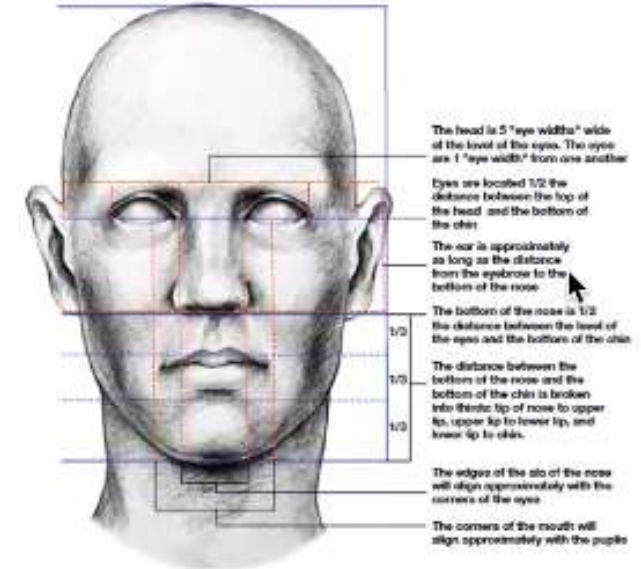
NIST

Comparison across groups



3.1 Proportions/Position of Features on Face

This illustration shows an approximation of the ideal distribution of facial features. Not all faces will conform to this formula.



Jonathan Phillips
Facial Recognition



Thank you for coming to Forensics@NIST 2020!

- **Thanks again to Corrine Lloyd, NIST A/V Team, and Conference Services!**
- >1700 registrants from all 50 U.S. states and >50 countries
- **40 different speakers and moderators across 2 days**
 - We have heard from the current seven forensic science focus areas funded by the NIST Special Programs Office (with additional support from NIJ, FBI, and other funding sources)
- **Hundreds of slides** providing information on cutting edge research at NIST and CSAFE (the NIST Center of Excellence in Forensic Statistics)
 - Presentation videos and slides will be made available on the NIST website within the next few weeks – **we invite you to go back and watch or re-watch talks...**
 - Workshops next Monday and Tuesday
- **We invite you to reach out for potential collaborations!**

