

# ***THE 50<sup>TH</sup> ANNIVERSARY***



***2016 ANNUAL MEETING***

**AND**

**TRAINING SEMINARS**

***HYATT REGENCY SARASOTA***

***SARASOTA, FL***

***SEPTEMBER 26<sup>TH</sup> through 30<sup>th</sup>, 2016***

## ***THE 50<sup>TH</sup> ANNIVERSARY***

After gatherings in Baton Rouge, LA and Auburn, AL, a group of working forensic scientists put together a charter in Atlanta, GA and the Southern Association of Forensic Scientists (SAFS) was created. Here we are a half century later, continuing the tradition of bringing forensic scientists together to share acquired knowledge, experiences and fellowship. Coming together to better ourselves as professionals AND our profession.

For some of you, this may be your first SAFS meeting. We are a rather informal and a friendly group, as you will find out in our “Hospitality Suite.” You don’t leave a SAFS meeting without creating new friendships or renewing old ones. Some of these relationships will last your entire careers and some of these colleagues will become true friends for the rest of your days.

The Program Committee has worked very hard to put together a very educational program together for you. Please take advantage of it and make it interactive with the instructors and presenters. We are not as formal as AAFS, we were never meant to be. Ask questions and exchange ideas. That is the way we ALL learn.

We hope you enjoy our venue here in the Suncoast. Enjoy a stroll along Sarasota Bay. You are in walking distance to downtown Sarasota. The hotel shuttle can get you to St. Armand’s Key. The Ringling Museum is a short ride up US 41.

We are Glad you all are Here!!

Nancy Ludwigsen

Social Program Chair

Mike Healy

General Program Chair

## ***SAFS 2016 OFFICERS***

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### ***2016 Annual Meeting Section Chairs***

**Drug Chemistry**

**Desiree Reid**

**DNA/Biology**

**George Duncan**

**Trace/General**

**Larry Peterson**

## ***WORKSHOPS***

### **Multi-Day Workshop in Chemistry**

#### **#1 Advanced Clan Labs; Beyond the Basics**

#### **Monday-Wednesday: 3 Full Day Workshop (lunch included each day)**

This workshop is presented by Network Environmental Systems (NES) out of California. Move beyond the basics and learn about the manufacturing of over 12 clandestine drugs. In this intensive three day course you will learn about the history, production methods, effects, sampling, safety, and past, present and future trends of over 12 illicit drugs. This advanced course is for experienced clan lab investigators and site safety officers who want to expand their knowledge of drug manufacturing methods and to prepare themselves for new drugs and current trends affecting the United States

This course provides critical coverage of:

- Bath Salt and Other Designer Drugs
- Cocaine Conversion
- DMT and Tryptamines
- Ecstasy (MDMA)
- Euphoria
- Fentanyl
- GHB
- Heroin Conversion
- LSD
- Methcathinone
- Mushrooms
- The One-Pot Method
- PCP
- Synthetic Cannabinoids

# **WORKSHOPS CHEMISTRY**

**Monday, September 26, 2016 AM Session**

**8:00AM**

## **#1 Fieldable Mass Spec and other Interesting Issues**

**Presenter: Kenyon M. Evans-Nguyen, University of Tampa, Tampa, FL**

Several technologies for rapid and/or on-site mass spectrometry have migrated from prototype instruments in research laboratories to fully validated commercial systems. Issues such as unreliability of color tests for preliminary identification of emerging synthetic drugs have increased interest in adoption of this instrumentation in forensic science. Additionally, fieldable mass spectrometry has been used extensively in battlefield forensics to identify drugs and explosives on-site in conflict zones. Currently, fieldable mass spectrometers can be used for high confidence preliminary identification and it is likely in the near future that these instruments could be used for rapid definitive identification in the field. Coupling simplified sampling strategies such as ambient ionization, solid phase microextraction, and thermal desorption have been key to success using these instruments on-site. An overview of currently available fieldable instrumentation, primarily GC-MS and ion traps, and their implementation by forensic scientists will be presented as well as a limited discussion of emerging mass spectrometry methods for on-site analysis.

**Monday, September 26, 2016 PM Session**

**1:00PM**

## **#3 Applications of GC/FTIR in Forensic Drug Analysis**

**Presenters: Lewis Smith and Randall Clark**

This workshop will concentrate on the importance of GC/FTIR as a complementary technique used in conjunction with other data to resolve issues of specific identification in new novel designer drugs such as synthetic cannabinoids, cathinone derivatives, N-BOMe drugs and others. Discussions will compare GC-MS and GC-IR results for a number of unique drug examples.

The continuing increase in the number of available novel psychoactive substances of forensic importance points to the need for additional conformation level methods of identification. The most widely used confirmatory method of choice for most forensic labs is mass spectrometry (EI-MS). However, there are many compounds encountered in drug analysis which yield poor fragmentation patterns upon electron-impact MS. In addition, positional and optical isomers cannot be unequivocally identified from their mass spectra alone. The commercial availability of a wide variety of synthetic precursor materials makes the issues of positional isomerism (regioisomers) a significant issue. When the regioisomerism occurs within the portion of the molecule yielding the major EI-MS fragments, equivalent spectral features are produced. Background discussions of IR methods, isomerism in organic molecules as well as comparisons between GC-MS and GC-IR data will be the focus of this program.

Since the advent of commercial Fourier Transform Infrared Spectrometry in the late 1960's, much progress has been made in both instrument sensitivity and data retrieval. The multiplex nature of interferometry combined with MCT cryogenic detectors has vastly improved the signal-to-noise ratio of many older microscopic and reflective (ATR) sampling techniques. Modern fast scanning FTIR spectrometers have also made hyphenated techniques such as GC/IR/MS possible. However, gas chromatography also eliminates the identity of many inorganics and salt forms of various basic drugs.

A discussion will be given on how infrared analysis can be used to identify certain problem compounds in the area of amphetamines, designer drugs, steroids, and prescription drugs. Transmittance techniques from benchtop FTIR will be covered to include films, melts, KBr wafers, and gas analysis. Reflectance techniques such as ATR, Diffuse Reflectance and FTIR Microscopy will be given using examples that best apply to each.

Comparisons will be made between solid phase (condensed) and vapor phase IR spectra illustrating the importance of the physical state and molecular association. The availability of reference data and commercial search libraries will be given at the conclusion.

# **WORKSHOPS DNA/BIOLOGY**

**Monday, September 26, 2016 AM Session                      8:00AM**

## **#2 Massively Parallel Sequencing of Forensic Loci Demystified: An Explanation of the Data Produced**

**Presenter: Brian Young, Ph.D., NicheVision Forensics**

Massively parallel sequencing (MPS) has the potential to revolutionize forensic DNA analysis in the same way that it is now altering the trajectory of medical diagnoses. MPS technology enables the analysis of a wide range of new and informative forensic markers that can be analyzed in parallel to traditional STR markers. Markers such as SNPs and microhaps can be used to predict phenotypes such as hair and eye color, or to assign bio-geographic ancestry. That is, they can provide investigative clues when STR profiles do not match anyone in databases. MPS will also change how STR markers are analyzed by reporting both their lengths and their nucleotide sequences. Sequence-based STRs will have more informative RMPs and can be used to improve mixture analysis.

This workshop will describe the fundamentals of MPS data analysis and interpretation. The primary focus will be on demystifying what at first appears to be overwhelmingly complex and voluminous data. MPS data analysis will be explained in simple terms, and the audience is invited to bring laptop computers and (optionally) participate in hands-on exercises using only a text editor (such as Microsoft Notepad or Mac TextEdit) and a web browser (such as Microsoft Explorer or Mac Safari). All necessary data files will be provided, but audience members can also simply watch the exercises. Using a free text editor with better search capability such as Notepad++ (Microsoft) is encouraged. Optional audience-participation exercises will include exploring FASTQ data files, understanding forensic STR and SNP marker data, predicting hair and eye color using the HirisPlex website, and exploring the on-line information available on the NIST and NCBI websites.

**Monday, September 26, 2016 PM Session                      1:00PM**

## **#4 eDNA Topics- Brutus and PG**

**Presenter: Kent Hartman, Genetic Technologies, Inc, eDNA**

Brutus a free Kinship / Missing Person Calculation Tool! The eDNA Consortium has provided a free online pedigree builder and calculation tool that is used worldwide for solving complex, extended pedigree reconstruction and missing person identification using distant familial comparisons. This presentation will introduce Brutus, provide a high level user tutorial, and example cases in the news that were solved using Brutus.

DNA in Transition: From CPI to PG Faster than a Speeding "Bullet" First hand perspective of organizational hurdles in the selection and implementation of the Probabilistic Genotyping method and a quick introduction to Bullet, a continuous PG Model based on the Exact method.

Probabilistic Genotyping: Demystified The fundamental theory of PG and the "exact method" algorithm described. The objective is to provide a comfortable understanding of how uncertainty is incorporated into a likelihood, resulting in the ability to use all of the information in a Crime Scene Profile without "dropping loci" or otherwise classifying the profile as "uninterpretable".

*Note: If there is a way to **solicit any current candidate scenarios** for either Kinship and/or Probabilistic Genotyping from any agency I would be happy to run them live during the presentation and discuss the results. If any agency wants to reach out to me before the conference I can work with them to transfer the anonymized data.*

## **WORKSHOPS CHEMISTRY**

**Monday, September 26, 2016 PM Session 1:00PM**

### **#5 GC/MS Troubleshooting and Maintenance**

**Presenter: Kirk Lokits**

*This half day workshop will combine best practices and troubleshooting basics involved in maintaining your GC and GCMS systems from inlet maintenance to source cleaning. The workshop will discuss the basics of GC Column Science and what factors go into determining which column is best for your specific application. We will address commonly found issues in chromatography and sensitivity of GC and MS systems. The hands-on section of the workshop will allow the student to assemble and dis-assemble split/splitless inlets, FID assemblies, and EI MS sources. The degree of hands on experience will depend on the number of students enrolled.*

**Monday, September 26, 2016 offered at 5:30PM**

*Complimentary, offered at 5:30PM*

### **#6 Zumba with Desiree**

**Presenter: Desiree Reid**

Zumba involves [dance](#) and [aerobic](#) movements performed to energetic music. The choreography incorporates [hip-hop](#), [soca](#), [samba](#), [salsa](#), [merengue](#) and [mambo](#). [Squats](#) and [lunges](#). The exercises include music with fast and slow rhythms, as well as resistance training.<sup>[9]</sup> The music comes from the following dance styles: [cumbia](#), [salsa](#), [merengue](#), [mambo](#), [flamenco](#), [chachacha](#), [reggaeton](#), [soca](#), [samba](#), [hip hop music](#), [axé music](#) and [tango](#). Come join Desiree and work off your stress and extra calories!!

## **WORKSHOPS CHEMISTRY**

**Tuesday, September 27, 2016**

### **#1 Structural Elucidation - What is Identification?**

**Presenter: Robert Ollis, F-ABC**

**8:00AM**

Previous workshops on structure elucidation have focused on the spectral interpretation of GC/MS, LC/MS, IR, and Raman systems, and interpretation of spectra for new and novel compounds. This workshop will include the platforms of X-Ray Fluorescence and X-Ray Diffraction. Rather than approach these techniques from solely a drug identification perspective, the use of these tools from the perspective of different disciplines in forensic science will ultimately stimulate the discussion of the entire concept of identification. Do we have "class" and "individual" characteristics in chemistry? How do we "identify" such complex materials as polymers, distillate fractions, and food? Application to the fields of drug identification, explosives and other trace evidence disciplines are explored.

**Tuesday, September 27, 2016 5:30 PM session**

*Complimentary, offered at 5:30PM*

**#12 Zumba with Desiree, Again**

**Wednesday, September 28, 2016**

**8:00AM**

### **#3 Drug Chemistry Topics**

**Moderator: Desiree Reid**

Various topics of concern to drug analysts will be presented to include;

uncertainty issues associated with drug cases,

nomenclature concerns with synthetic Cannabis samples,

fentanyl cases including the emergence of carfentanyl.

Field Forensics; actual chemical-identification problems using currently available field deployable analytical methods. With miniaturization of computational circuits and lasers and the application of smart and other engineered materials, analyses that previously could only be performed in the lab can now be performed in the field. The presentation will focus on the identification of narcotics and explosives using Raman spectroscopy, thin layer chromatography and colorimetric tests but the identification-logic used in the presentation can be applied universally.



## ***WORKSHOPS DNA/BIOLOGY***

**Tuesday, September 27, 2016 AM session      8:00AM**

### **#8 Hair Analysis for DNA Examiners**

**Presenter: Larry Peterson, retired trace evidence examiner, Georgia Bureau of Investigation**

Increasingly, laboratories are eliminating microscopic hair comparisons and are implementing screening techniques by DNA analysts or perhaps by trace examiners who never performed traditional microscopic comparisons. There are varying degrees of this screening being performed. This workshop is designed to provide introductory information on hair evidence and the protocols for classifying hairs into human vs. animal, racial, and somatic groupings. Specific characteristics will also be discussed which have proven valuable in hair characterization. Collaborative issues with traditional trace evidence examinations will also be included.

**Tuesday, September 27, 2016 PM session      1:00PM**

### **#10 Introducing Next Generation Sequencing to the Crime Lab**

**Presenter: Brian King and Jill Muehling, Field Application Specialists, Thermo Fisher Scientific**

Are you new to Next Generation Sequencing? This workshop will provide an overview of Next Generation Sequencing and introduce the technology involved. We will introduce the Precision ID NGS System in this workshop and you will learn how this system can take you from genomic DNA to sequence data analysis in as little as 45 minutes of hands-on time.

This workshop will cover:

- An overview of Next Generation Sequencing and introduction to Ion Torrent Technology
- Library Preparation and Templating on the Ion Chef
- Sequencing on the S5 or S5xl Systems
- The HID Panels that are offered as part of the Precision ID NGS System

**Tuesday, September 27, 2016 5:30 PM session**

*Complimentary, offered at 5:30PM*

### **#12 Zumba with Desiree, Again**

## **WORKSHOPS DNA/BIOLOGY**

**Wednesday, September 28, 2016 AM Session**

**8:00AM**

### **# 4 Biology/DNA Topics**

**Moderator: George Duncan**

**Presenters; Dr. Kevin McElfresh and Dr. Bruce McCord, Florida International University, Miami, Florida**

#### **STR's - How we got here and where are we going.**

Short Tandem Repeats have been the backbone of forensic DNA typing since the mid-1990s. The purpose of this workshop is to guide the participant thru the processes that have evolved from the first implementation of STRs to the present day with special focus on the current challenges in interpretation. The workshop will conclude with a discussion of high density SNP arrays and massively parallel sequencing technology for STR analysis and the use of genome analysis to supplement the current STR methods as well as new pathways being investigated by Universities and Research Institutions right now.

**Christina Lindquist**

**Director of Forensics, Quality Manager**

**University of California at Davis**

**Veterinary Genetics Laboratory- Forensic Unit [cdlindquist@ucdavis.edu](mailto:cdlindquist@ucdavis.edu)**

***Furensics: Animal DNA in Criminal Investigations*** While committing a sexual assault in a residential backyard, Rufus Sisto Nanez III rolled in some canine feces which later helped link him back to the victim's home resulting in his conviction. The Veterinary Genetics Laboratory Forensic Unit at the UC Davis School of Veterinary Medicine played a key role in the trial and conviction of this serial rapist. As the only crime laboratory in the country accredited for analysis of DNA from domestic animals, VGL-Forensics has been serving federal, state, and local law enforcement agencies as well as the general public for over a decade. The laboratory receives a wide variety of cases from all over the world, with sample types and species unlike those encountered by its human counterparts. Cases range from human-on-human crimes where dog or cat biological evidence links a suspect to the crime, to large-scale dog fighting, species identification, and animal cruelty cases. Recently, the laboratory worked with investigators in the United Kingdom on the first use of cat DNA in murder case in that country. Case examples from the southern region of the United States, as well as other high-profile cases and cold cases will be presented.

## ***WORKSHOPS DNA/BIOLOGY***

**Wednesday, September 28, 2016 PM Session      1:00PM**

### **Biology/DNA Topics**

**Moderator: George Duncan**

#### **#15 Evaluation of Testimony Topics of 2016- Probabilistic Genotyping, Amended FBI Allele Frequencies, Secondary Transfer and the Confrontation Clause      Presenter: DNA International**

An evaluation of common deoxyribonucleic acid (DNA) testimony topics encountered in 2016 trials by DNA Labs International (DLI) analysts. Major topics discussed will include; probabilistic genotyping (STRmix™ software), response to the amended FBI allele frequencies comprising of cases with statistics calculated before and after the Erratum, secondary transfer (including the most recent publications on transfer) and the continued response to the confrontation clause. The DLI panel will discuss specific questions from prosecution and defense attorneys and possible responses in expert witness testimony. The workshop will conclude with an open forum discussion where attendees can bring forward additional testimony topics.

## ***WORKSHOPS    LEGAL***

**Tuesday, September 27, 2016 AM session                      8:00AM**

**#7 Interpreting Laboratory Reports for Attorneys and Lay People  
Speakers: Reta Newman and Janel Borries, Pinellas County Medical  
Examiner's Office, Largo, FL**

This workshop is presented by The Pinellas Medical Examiner's Office. Crime Laboratory Director Reta Newman will address Drug and Toxicology report interpretation and Janel Borries will address DNA report interpretation. Question and Answer session to follow.

**Wednesday, September 28, 2016 AM Session                      8:00AM**

**#14 Understanding a Practical Approach to Laboratory Statistics and  
Qualitative/Quantitative Measurement Uncertainty  
Presenters: Robert Ollis and Diana Williams**

"There are lies, damn lies, and statistics." This workshop provides a practical platform for the understanding of principles of statistics common in the modern courtroom. Measurement uncertainty in application to cases such as drug identification and blood alcohol analysis is explained. Concepts such as standard deviation and confidence intervals are presented such that the participant leaves with a practical understanding of these principles and the application to regulatory or statutory limits. Finally, the use of Bayesian statistics to the association of genetic profiles is explored.

# ***WORKSHOPS for LAW ENFORCEMENT***

**Tuesday, September 27, 2016 PM session**

**1:00PM**

## **#11 Narcotic Trends and the Safe Handling of Substances While Field Testing**

**Presenter: Jack Thorndike**

Jack Thorndike: Conducted field test training for 37 years including DEA 2-week schools, Instructor training for State narcotic conferences, major departments as well as municipal and county law enforcement throughout the United States. He will cover the timely Law Enforcement topics including:

1. Fentanyl and related opiates: recommended safe handling techniques
2. THC Concentrates: what do they look like, how to field test them and how can we charge them
3. Using Field Tests to "confirm probable cause" to bind through preliminary hearings
4. Narcotic trends throughout the country

This course is primarily geared toward Law Enforcement however valuable information for analysts will also be presented.

Same presentation will be made at each offering.

**Tuesday, September 27, 2016**

**5:30 PM**

***Complimentary, #12 Zumba with Desiree, again !***

**Wednesday, September 28, 2016 AM Session**

**8:00AM**

## **#13 Narcotic Trends and the Safe Handling of Substances While Field Testing**

**Presenter: Jack Thorndike**

**(Repeat of earlier workshop)**

Jack Thorndike: Conducted field test training for 37 years including DEA 2-week schools, Instructor training for State narcotic conferences, major departments as well as municipal and county law enforcement throughout the United States. He will cover the timely Law Enforcement topics including:

1. Fentanyl and related opiates: recommended safe handling techniques
2. THC Concentrates: what do they look like, how to field test them and how can we charge them
3. Using Field Tests to "confirm probable cause" to bind through preliminary hearings
4. Narcotic trends throughout the country

This course is primarily geared toward Law Enforcement however valuable information for analysts will also be presented.

Same presentation will be made at each offering.

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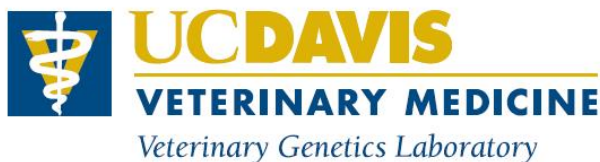


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**GENERAL PROGRAM  
WEDNESDAY, SEPTEMBER 28, 2016  
EVENING**

**Taco Bar and Cocktails with Exhibitors  
6 PM EXHIBIT HALL**

Join us in the Exhibit Hall for a relaxed visit  
with the Exhibitors and Sponsors  
who we work with every day in our profession  
and help sponsor these training conferences.

***EXHIBITORS and SPONSORS***

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**THANK YOU ALL FOR YOUR SUPPORT OF SAFS**

**GENERAL PROGRAM**  
**THURSDAY, SEPTEMBER 29, 2016**  
**MORNING**  
**8:30 AM Start**

Continental Breakfast

7-830 AM

Greetings

Tiffany Warren, President of SAFS

Host Agency Greetings

Hon. Sheriff Thomas M. Knight  
Sheriff, Sarasota County Florida

Logistics

Mike Healy, General Program Chair

Case Presentation

“The Kathleen Leonard Homicide; The First Successful  
Use of Mitochondrial DNA Evidence in a Murder Case  
In Florida.”

Det. Kevin Pingel

Sarasota Sheriff's Office

Hon. Charles E. Roberts

Twelfth Judicial Circuit Court

Thermo Scientific

**BBQ LUNCH**

**Noon**

**GENERAL PROGRAM**  
**THURSDAY, SEPTEMBER 29, 2016**  
**AFTERNOON**  
**1:30 PM Start**

ANAB's acquisition of ASCLD/LAB; What's Going On?

Terry Mills

Accreditation Manager  
ANAB

ABC Update and Future Projects.

Desiree Reid

SAFS Representative  
ABC Board of Directors

Travis Owens, Secretary-Treasurer Emeritus

Kevin Ardoin

Lab Director  
Acadiana Crime Lab

SAFS, A Charter Member's Perspective

Dale Nute

Professor  
Florida State University

**AFTERNOON SNACK BREAK**

SAFS Business Meeting

3:30 PM

**EVENING EVENT**

Pre Banquet Reception

6 PM

SAFS 50<sup>th</sup> Anniversary Gala Banquet

7 PM

**SECTION PROGRAMS**  
**FRIDAY, SEPTEMBER 30, 2016**  
**9 AM Start**

***Continental Breakfast 830-9 AM***

**TRACE EVIDENCE**

Larry Peterson, Chair

“Elemental Profiling and Characterization of Electrical Tapes by LA-ICP-MS”

“Discrimination of Pencil Marks on Paper”.

Round Table with Group discussion on report writing.

**DRUG CHEMISTRY**

Desiree Reid, Chair

“Evaluation of the Effect of Drug Surrogate Material on Weight Fluctuations and Uncertainty of Measurement Values in Weighing Process.”

Marcus Warner, Palm Beach Sheriff’s Office, West Palm Beach, FL

Round Table discussion on items of interest.

**DNA / BIOLOGY**

George Duncan, Chair

Round Table discussion on items of interest