

# S.A.T. Newsletter



## Come Join Us In Cowtown!

The Spring 2008 meeting of the Southwestern Association of Toxicologists will be held March 13-15 at the historic Fort Worth Hilton Hotel. The Hilton is located in downtown Fort Worth, TX and is only one block from the Sundance Square entertainment district.



Our featured speaker will be John Neuner, ASCLD/LAB International Program Director. Mr. Neuner will be updating us on the ASCLD/LAB International accreditation program. He promises updates on preparing your laboratory for ISO inspection - don't miss it!

The hotel is where John F Kennedy spent his last night before traveling to Dallas in November, 1963. In honor of that special history, we will have a Friday breakfast presentation by Mr. Ron Singer, Crime Laboratory Director, Tarrant County Medical Examiner. Mr. Singer will talk about "A Re-examination of the Forensics of the JFK Assassination."



In addition, Richard Alpert, Chief of the Misdemeanor Section of the Tarrant County District Attorney's Office, will speak on "Effective Witness Testimony for the Toxicologist."

We look forward to seeing you in Fort Worth!

Photos by Chris Chiles  
[the-spot.net](http://the-spot.net)

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### Points of Interest

- Laboratory Accreditation
- Expert Witness Testimony
- JFK Forensics
- Sundance Square
- Water Gardens

## FRIDAY NIGHT DRINKING STUDY By Vincent Papa

The drinking study held on Friday night at the 30th anniversary meeting of SAT which was held in Galveston, Texas. The evening was a great opportunity to reestablish old professional acquaintances, make new acquaintances, have a delicious Italian dinner and contribute to the advancement of science. All occupants of the suite had to sign a release form. We would like to thank Lisa Christiansen, Natalie Ludwig, Renee Hawkins, Kacey Cliburn, Gary Metcalfe, Jeff Watterscheid, Rachel Papa, Dana Paris, Sammy Williams, Heather Singletary, Dimika Cavalier, Terry Danielson, Sharla Reed, Elizabeth Lowman-Smith and Steve Stierman who participated in the study. A special thanks to Jim Burris and the Austin DPS staff for dosing and operation of the alcohol measuring devices. Others suite occupants enjoyed the dinner. All subjects were interviewed by Officer Scarafile and Anderson using the standard Deer Park Police DWI Investigation Field Notes. They were interviewed as to drinking habits, medical history, and their weight was determined. There were 5 males and 10 females participating. Five participants chose wine, one Jack Daniels and nine chose vodka. All participants were appropriately dosed to reach a pre-determined alcohol levels up to 0.15 g/dL. The dosing was stopped after peak alcohol levels were reached. All participants were subjected to Field Sobriety tests at standard times. The Deerfield Police Dept. presented a very interesting and complete presentation on the effects of alcohol on driving, Field Sobriety Tests, and the principles of DRE. The audience asked a number of interesting and salient questions. Volunteers provided urine samples which were subsequently transported to Bexar County Medical Examiners lab for urine alcohol analysis. Breath alcohol levels ranged from 0.013 – 0.150 g/dL BAC, and urine alcohol levels ranged from 0.000 – 0.218 g/dL.

*Controlled drinking  
study results*

Many thanks to the organizing committee and Dr.Mozayani's staff and especially to Amy Scarafile and the vendors without whom this study could not have been completed.



From the desk of Jim Burris...

## President's Message



Happy New Year Fellow SAT Members!

I would like to start my New Year's President's message by expressing my congratulations and thanks to Dr. Mozayani and her team for a fantastic job of hosting our Fall 2007 Anniversary Meeting in Galveston. Also, thank you Amy Scarafile for your efforts in planning and implementation of the drinking study and Terry Danielson for his hard work on the program. Lisa Fondren and I enjoyed helping with the whole process. We had an excellent turn out for the meeting as well as acceptance and approval of four meeting grants. Mr. Rod McCutcheon gave an excellent overview of our last 30 years. Many of our past presidents were in attendance and we had 16 new members voted into the association.

Our organization continues to grow with new members and continued support of our regular members. We had excellent presentations at this meeting and I would again like to encourage all to present at our Spring 2008 Meeting in Ft. Worth. Even though time is short, please prepare an abstract for your presentation and forward to Lisa as soon as you can. A short overview of projects you are working on or interesting cases you have encountered in the last few months are always interesting to our membership. Our technical exchange at our meetings and our Yahoo! Group is invaluable to the technical vitality of our organization. Thank you Mike Frontz for your efforts on our Yahoo! Group website.

Please encourage all of your new employees to apply for membership as well as other colleagues who are not currently members.

We had a "straw vote" at the Galveston meeting concerning reduction of our annual meetings from two to one. There was much discussion both pro and con concerning each. Our constitution states under Article IV that "Meetings shall be held at least once a year, and additional meetings may be held as provided in the Bylaws. The date, time and location of all meetings shall be determined by the Board of Directors." Rod McCutcheon has suggested even a shortened meeting for the second annual meeting. We will be interested to hear his thoughts in Ft. Worth.

A close vote indicated the membership is in favor of continuation of two meetings per year. We will have the Fall 2008 Meeting in Austin. The Travis County ME's Office will be the Guest Host along with my organization, The Texas Dept. of Public Safety Crime Laboratory, Toxicology Section.

Ms. Lisa Fondren, our meeting host for the Spring 2008 Meeting, has organized an excellent meeting with some very special guests and presenters, as well as an after hours dinner and entertainment for Friday night in downtown Ft. Worth. Please get your registration in. The deadlines are fast approaching. Meeting and hotel deadline is February 12<sup>th</sup>.

See you in Ft. Worth!

James M. (Jim) Burris

*"Our constitution states under Article IV that Meetings shall be held at least once a year..."*

## Fort Worth Hotel Information

[Click here for special group reservation page](#)

Hotel Reservation Deadline: Tuesday, February 12, 2008

**Hilton Fort Worth**  
815 Main Street  
Fort Worth, TX 76102



**Reservations:**  
(817) 870-2100  
or  
1-800-HILTONS

**Room Rates:** \$139/night

**Group Name:** Southwestern Association of Toxicologists

**Parking:** \$14/day for valet, includes overnight service  
A public parking lot at \$5/day (no overnight) is also located a block from the hotel on Commerce Ave, adjacent to the Convention Center

### **Transportation to/from DFW airport:**

Yellow Checker Shuttle

\$19/one way

travel time 30-45 minutes

\* **To Hotel:** call 817-267-5150 with baggage claim information upon landing, and shuttle will meet you at baggage claim—last run at 10:00 pm

\* **To Airport:** Shuttle leaves from the Hilton daily at 10 minutes and 40 minutes past each hour from 5:10 am until 7:40 pm \*\*\*No reservation required\*\*\*

*"Remember to use the group name of Southwestern Association of Toxicologists when making reservations"*

## Tentative Spring 2008 Meeting Schedule

### Thursday, March 13, 2008

1:00 pm – 3:00 pm	Board Meeting (lunch provided)
5:00 pm – 8:00 pm	Registration
6:00 pm – 8:00 pm	Welcoming Reception (Appetizers provided, cash bar)
6:00 pm – 11:00 pm	Vendor set up available
8:00 pm	Dinner and entertainment on your own

### Friday, March 14, 2008

7:30 am – 8:00 am	Registration and continental breakfast
8:00 am – 12:00 pm	Scientific Session I
8:00 am	Special breakfast presentation by Mr. Ron Singer Crime Laboratory Director, Tarrant County ME "Reexamination of the Forensics of the JFK Assassination"
9:00 am	Featured presentation by Mr. John Neuner, ASCLD/LAB International Program Director
12:00pm – 1:30 pm	Lunch provided
1:30 pm – 5:00 pm	Scientific Session II
1:30 pm	Special presentation by Richard Alpert Chief, Misdemeanor Division, Tarrant County District Attorney
6:00 pm – 9:00 pm	"Effective Witness Testimony for the Toxicologist" Reception and banquet at the Fort Worth City Club Dinner provided (cash bar)

### Saturday, March 15, 2008

7:30 am – 8:00 am	Continental Breakfast
8:00 am – 9:00 am	Business Meeting
9:00 am – 12:00 pm	Scientific Session III

### Call for Papers

We are currently accepting presentations intended for the Spring 2008 meeting of the Southwestern Association of Toxicologists. Please fax (817-540-4701) or email your title and abstract (200 words or less) to: [lisa@fondrenforensics.com](mailto:lisa@fondrenforensics.com) or call Lisa Fondren at (817-456-7369).

Please use Microsoft Word if possible. Include your name and any co-authors, organization name, email address, postal address and phone number. We have an LCD projector and laptop for your presentation. Please be prepared with a flash drive so we may pre-load your presentation. A CD is also fine. If you need to use your own laptop, please advise us in advance. Thank you!



Texas Hilton  
Nov. 22, 1963

# Southwestern Association of Toxicologists

2008 Spring Meeting  
 March 13-15, 2008  
 Fort Worth Hilton Hotel



## Registration Form

<b>Name (as it will appear on badge):</b>	
<b>Phone:</b>	(    )
<b>Fax:</b>	(    )
<b>E-mail:</b>	
<b>Title:</b>	
<b>Agency:</b>	
<b>Address:</b>	
SAT Member <input type="checkbox"/> Non-Member <input type="checkbox"/> Student <input type="checkbox"/>	

### Meeting Registration:

Please register for the meeting and make hotel reservations prior to February 12, 2008 to avoid late fees and higher room rates. Registration includes admission to the full day of scientific sessions on Friday, Saturday morning session, exhibits, a welcome reception, lunch on Friday, and a banquet Friday evening.

	Member	Non-Member	Student	Total
Prior to Feb. 12, 2008	\$80	\$90	\$55	_____
After Feb 12, 2008	\$85	\$100	\$65	_____
Extra Ticket for Friday Banquet: Number of guests _____ x \$35/ticket				_____

Please check if you would prefer a vegetarian meal at the banquet: \_\_\_\_\_

Please note: The City Club suggests business casual attire for the Friday evening banquet. No jeans, tennis shoes, or flip flops are allowed in the restaurant. Thanks!

Please make payment by check or money order, payable to SAT, and mail to:

Sue Howe  
 Tarrant County Medical Examiner  
 200 Feliks Gwozdz Place  
 Fort Worth, TX 76104

### SAT Business Meeting

**Call to Order** – Jim Burris 8:40 am  
Acknowledgement of meeting host committee

**Report of Membership committee** – Aria McCall  
16 applicants

- Linda Alvarado
- Ashlyn Beard
- Lisa Christensen
- Megan Gunter
- Renee Hawkins
- Patricia Pizzo
- Heather Singletary
- Sarah Skiles
- Patricia Small
- Charlotte Smith-Baker
- Steven Stierman
- Glenna Thomas
- Fu Tian
- Jeffrey Walterscheid
- Meagan Wilbur
- Shaohan Zhao

Board recommended approval of membership applicants  
Bob Schoenfeld- motion to accept; John Tarver – second; motion passed

#### **Officer Nominations**

Board Recommendations:  
Councilor – Justin Schwane, Amy Scarafile  
Treasurer – Kathy Erwin  
President-Elect – Paola Merritt  
Floor opened to further nominations – None made

#### **Status of Future Meetings**

Discussion to change meetings from twice a year to once a year  
Mike Frontz-results of Yahoo groups poll not decisive, very little participation  
Discussion by membership  
Issues include vendors, some locations more convenient than others, concerns with hosting, budgets for other meetings  
Suggestions made to extend term of board to 2 years if meet less frequently, meet once a year and have technical workshop replace second meeting  
Straw vote – keep at two meetings/year: 15; change to one meeting/year: 12

*(Continued on page 8)*

*Straw poll of membership on the issue of changing to one meeting/year: 12 for, 15 against .*

(Continued from page 7)

**Meeting Grants - President Elect: Ashraf Mozayani**

4 applicants

- Greg Jellick
- Kacey Cliburn
- Veronica Hargrove
- Charlotte Smith-Baker

As one of the applicants, Greg Jellick abstained from board decision Board recommendation to approve all 4 applicants

**Drinking study / Alcohol workshop**

Thanks to Lisa Fondren and Jim Burris for their help

**30 year highlights – Rod McCutcheon**

**Future meeting**

Spring 2008 -Fort Worth  
Hosted by Lisa Fondren  
March 13-15, 2008  
Fort Worth Hilton Hotel

**Treasurer’s Report**

John Tarver for Kathy Erwin  
Bob Schoenfeld status of funds  
Mike Frontz volunteered to assist

**Communications committee**

Website to be updated  
Motion to add Garry Metcalfe to communications committee to assist with website design/maintenance-Paola Merritt; Second – Greg Jellick

**Meeting adjournment 9:45 am**



4 applications for meeting grant

## Abstracts from Fall 2008 Meeting, Galveston, November 8-10

### Dilute or Pollute: Potential passive diffusion of ethanol from vitreous humor in postmortem submersion cases

Greg Jellick, MSFS\* and J. Rod McCutcheon, BS, D-ABFT  
 Bexar County Medical Examiner's Office  
 Toxicology Laboratory  
 7337 Louis Pasteur  
 San Antonio, TX 78229  
[gjellick@sbcglobal.net](mailto:gjellick@sbcglobal.net)

Vitreous humor fluid is an ideal sample for the identification and quantitation of ethanol in postmortem specimens, especially where postmortem redistribution and production of ethanol is a concern. This is due to the eyes' isolation and near-sterile environment. Vitreous humor ethanol concentrations correlate well with peripheral blood values in cases where the presence of ethanol is due to consumption before death. Ethanol, upon reaching equilibrium in the body, will distribute to the vitreous fluid of the eye at a ratio of 1.19 to femoral blood. As such, it has been reported that positive blood values with negative vitreous humor results are indicative of postmortem production of ethanol. Here we present alternative explanations for blood/vitreous discrepancies in cases of submersion. Case studies and published research will be presented that suggest passive diffusion of ethanol across the membranes of the eye may occur. Interpretation of postmortem ethanol values and the associated problems will also be discussed.

### A comparison of drug concentrations in un-sequestered femoral blood, thigh muscle, sequestered femoral blood, heart blood, and subclavian blood specimens to evaluate the degree of postmortem redistribution

Veronica Hargrove  
 Bexar County Medical Examiner's Office  
 Toxicology Laboratory  
 7337 Louis Pasteur  
 San Antonio, TX 78229  
[vhargrove@bexar.org](mailto:vhargrove@bexar.org)

Postmortem drug concentrations may vary depending on the sampling site, volume of blood collected and method of sampling making it important to analyze specimens from different sites in the body to detect postmortem redistribution and avoid erroneous conclusions on cause of death. Using a blind stick method to draw large amounts of blood from the femoral vessel may increase the likelihood of drawing blood from more central sites such as the heart, which may contain higher drug concentrations than peripheral blood. Therefore, clamping the vessel before the blood is drawn may eliminate this possible contribution from other sites. Eight drugs from four different drug classes were evaluated to determine the extent of postmortem redistribution within five sampling sites. Clamping the femoral vessel did not appear to significantly affect drug concentrations and subclavian blood can be used, in many cases, as an alternative blood sample when femoral blood is not available.

### Ethanol Elimination Rates of Impaired Drivers from Time-Distinct Blood Draws

Robert Lockwood\*<sup>1</sup>, Michael Frontz<sup>2</sup>, and Rod McCutcheon<sup>2</sup>  
<sup>1</sup>Southwestern University, Georgetown, TX  
 SU Box 7177  
 1001 E. University Avenue  
 Georgetown, TX 78626  
[lockwoor@southwestern.edu](mailto:lockwoor@southwestern.edu)

<sup>2</sup>Bexar County Medical Examiner's Office  
 Toxicology Laboratory  
 7337 Louis Pasteur  
 San Antonio, TX 78229

We reviewed 173 cases from 2003-2007 where blood specimens from male suspected impaired drivers were submitted to our laboratory. Since 2002, the Bexar County District Attorney's Office has requested that two blood specimens be obtained for a suspected impaired driver with an intended elapsed time interval of two hours between the blood draws. The actual average elapsed time was 104 minutes for the cases studied. The blood samples were analyzed for ethanol concentrations using a direct-injection gas chromatography (GC) method. The method parameters consisted of an isothermal analysis at 40°C for 3 minutes on a Hewlett Packard 6890 GC. Ethanol elimination rates were calculated as follows:

"Eight drugs from four different drug classes were evaluated to determine the extent of postmortem redistribution within five sampling sites."

$$\frac{[BAC]_1 - [BAC]_2}{\Delta T}$$

where  $[BAC]$  represents the reported ethanol concentrations in g/dL and  $T$  equals the elapsed time between the two draws in hours.

The range of calculated ethanol elimination rates was 0.0005 to 0.0682 g/dL/hr. The mean, median, and mode ethanol elimination rates were 0.0198, 0.0175, and 0.0175 g/dL/hr, respectively. Initial blood alcohol concentrations reported in the study ranged from 0.018 to 0.397 g/dL. A correlation was not observed between a person's age and their elimination rate, however an increase in the rate of ethanol elimination was observed with increasing initial blood alcohol concentrations.

### **SALVIA DIVINORUM – Possible reason for Negative Drug Tests?**

Vincent M. Papa  
San Antonio, Texas 78232-4019

Drug testing has been available since the late 80's and early 90's. Occasionally, it is discovered that smoking certain plants will allow the user to obtain a euphoric/hallucinogenic effect without resulting in a positive test. *Salvia Divinorum* is a rare plant being found in a few ravine locations in the Sierra Mazateca Mountains in Mexico. The objective of this presentation is to review the plant and its history, chemistry and pharmacology, dosage, administration, effects and receptor activity. Some drug case studies will be discussed.

### **Determination of Sildenafil (Viagra™) in Post-mortem Tissues by Liquid Chromatography Tandem Mass Spectrometry**

John Nguyen B.S.\*, Terry Danielson Ph.D., A. Mozayani Ph.D. and Luis A. Sanchez M.D.  
Harris County Medical Examiner  
1885 Old Spanish Trail  
Houston TX. 77054

Objective: The objective of this presentation is to describe a LC/MS/MS determination of sildenafil and its post-mortem distribution.

Sildenafil is prescribed for treating erectile dysfunction or pulmonary hypertension; however, it has recently become a recreational drug. Sildenafil was detected in a basic extract of blood by GC/MS as a late eluting peak.

For quantitation, femoral blood, stomach contents, liver and brain were extracted with 1-chlorobutane in the presence of ammonium hydroxide. The organic layers were collected, dried under nitrogen, reconstituted with mobile phase, and analyzed by tandem mass spectrometry (LC/MS/MS). Sildenafil was measured using three transitions from the protonated molecular ion ( $m/z = 475.3$ ), (quantitation ion at  $m/z$  100, two qualifiers at  $m/z$  283 and 240). Sildenafil concentrations were: liver – 2.7 mg/kg, brain – 0.5 mg/kg, blood – 1.0 mg/L and stomach contents – greater than 50 mg/L.

In this case GC/MS analysis on femoral blood indicated the following additional drugs: ethanol – 0.1 g/dL, alprazolam - 0.01 mg/L, sertraline – 0.14 mg/L, hydrocodone – 0.23 mg/L, cocaine – less than 0.15 mg/L, cocaethylene – present and benzoylecgonine – 2.0 mg/L.

Sildenafil is supplied in 25, 50 and 100 mg dosages and plasma concentrations near to 0.44 mg/L have been reported after a 100 mg oral dose. The amount of sildenafil in blood from this case appears to be in excess of the amount anticipated after a 100 mg dosage. A literature report suggested that a fatal level of sildenafil may be nearer to 6 mg/L.

### **Oxymorphone: The Old and the New Exploration of the Drug in Cases at Oklahoma**

Kacey Cliburn\*, Phil Kemp  
Office of the Chief Medical Examiner  
901 N. Stonewall, Oklahoma City, OK 73117  
Oklahoma City, Oklahoma  
[k\\_cliburn@ocmeokc.state.ok.us](mailto:k_cliburn@ocmeokc.state.ok.us)  
[p\\_kemp@ocmeokc.state.ok.us](mailto:p_kemp@ocmeokc.state.ok.us)

Objective: To inform the forensic community about oxymorphone and the increased detection of the drug. To stimulate discussion about the concerns of the drug.

In 2006, the FDA approved the use of Opana (oxymorphone hydrochloride) and Opana ER. Opana is prescribed for relief of moderate to severe pain and is about 6 times more potent than morphine. Opana is available in 5 and 10 mg tablets and the extended release form is available in tablets of 5, 10, 20, and 40

*“Salvia Divinorum is a rare plant being found in a few ravine locations in the Sierra Mazateca Mountains in Mexico.”*

mg. This office reported 2 cases as oxycodone intoxication in the last year with results of 16 and 20 ng/mL. Furthermore, oxycodone is commonly detected in cases at the Medical Examiner's office in Oklahoma. Oxycodone is known to metabolize by N- and O-demethylation to form oxymorphone. In the past year, oxymorphone has been detected more frequently with the oxycodone cases at this office. This presentation will highlight some of the cases where oxycodone and oxymorphone are present.

### Development and Implementation of Tandem MS and QTrap Applications using Cliquid Drug Screen and Quant Software

*Greg Eppink*  
Applied Biosystems  
Manager: Applied Markets, Mass Spectrometry, North America  
[eppinkgd@appliedbiosystems.com](mailto:eppinkgd@appliedbiosystems.com)

The use of HPLC with Tandem Mass Spectrometry (LC-MS/MS) is quickly gaining acceptance in Toxicology for many analyses. The unique combination of selectivity and sensitivity offered by LC-MS/MS permits laboratories to not only see drugs at lower levels; it also enables reduced sample preparation which can simplify the analytical workflow, resulting in savings of time and materials. However, LC-MS/MS is often perceived as a technique reserved for advanced users.

Recently a walk up software interface for LC-MS/MS was created that enables new users to quickly develop and implement LC-MS/MS testing methods and train even the most novice of users in its operations. The software contains "canned" methods with sample preparation, chromatographic and MS conditions, a "MRM Catalog" and a full spectrum library of over 1200 drugs. These are assimilated into an intuitive interface for instrument operation, data processing and reporting. This short talk will provide a brief overview of the software and the canned methods that are included in it.

### Utilizing Direct Analysis in Real Time - Time of Flight Mass Spectrometer (DART-TOF) to Detect the Presence of Alprazolam in Prescription Tablet Matrices

*Stephen Houck, B.S. Chem\*;* *Y Julia Jiang, M.S. Chem.;* *Mark D. Dixon, B.S. Chem, S-ABC;* *Ashraf Mozayani, PharmD., PhD.;* *Luis A. Sanchez, M.D.*  
Harris County Medical Examiner's Office  
1885 Old Spanish Trail  
Houston, TX 77054

Objective: An introduction to DART-TOF mass spectroscopy and its utilization in the Controlled Substance Laboratory to detect the presence of alprazolam in prescription tablets.

Direct Analysis in Real Time - Time of Flight Mass Spectrometry (DART-TOF) is a novel technique that allows for the quick identification of target analytes. Rapid sample introduction can be achieved through the open air sampling interface employed by the DART. This enables the TOF-MS to provide real time mass spectrometry data, with little or no sample preparation. The selectivity of the instrument is based upon the high degree of mass accuracy and the fragmentation observed at elevated voltages. Alprazolam (Xanax) is a prescription drug commonly seen in the HCME Controlled Substance Laboratory. According to the National Forensic Laboratory Information System (NFLIS), alprazolam is seen in Harris County, Texas at a rate greater than five times the national average.

The most commonly used methods of analysis utilize sample destructive methods such as FT-IR or GC/MS. The analysis of Alprazolam using DART-TOF requires no sample preparation and is non-destructive. Alprazolam was confirmed by the presence of the molecular ion and two fragmented ions. The validation of alprazolam case samples involved analysis by both DART-TOF and previous validated methods. In all cases the presence of Alprazolam was confirmed by DART-TOF and either FTIR or GC/MS. Other drugs analyzed in the Controlled Substances Laboratory are currently being evaluated through processes similar to those used for Alprazolam. Having the ability to detect Alprazolam and other drugs using the DART-TOF is a significant step toward full implementation of this advanced mass spectrometer to the HCME Controlled Substances Laboratory.

### Blood Alcohol Analysis Utilizing Headspace Autosampling and Dual Column Gas Chromatograph Confirmation

*Leeman Bennington*  
PerkinElmer  
136 Strawberry Dr., Lake Jackson, TX, 77566  
[leeman.bennington@perkinelmer.com](mailto:leeman.bennington@perkinelmer.com)

Headspace autosampling and gas chromatography (GC) have been coupled as an accepted technique to determine blood alcohol concentrations for some time. While this approach has proven to minimize sample handling and eliminate GC contamination from direct injection, further improvement has been achieved by shortening the analysis time to improve sample throughput and generating a higher level of defensibility in

*"...enables the TOF-MS to provide real time mass spectrometry data, with little or no sample preparation"*

data via dual column confirmation.

In this paper, a brief overview of gas chromatography theory and fundamental headspace principles will be presented. In addition, PerkinElmer's patented approach to pressure-balanced headspace sampling will be shown. Finally, objectives, methodology, and instrument setup to achieve dual column confirmation of blood alcohol concentrations will be discussed.

Examples will be presented demonstrating that blood alcohol analyses with internal standard can be achieved in less than 3 minutes of GC run time with the dual column approach. To validate the robustness of the method, associated quality control data (linearity, limit of detection, limit of quantitation, precision, etc.) will also be offered.

### Validation of the Perkin Elmer Clarus 500 GC with TurboMatrix 40 Autosampler for Blood Alcohol Analysis

*James M. (Jim) Burriss, Forensic Scientist IV  
Toxicology Section  
Texas DPS Crime Laboratory, Headquarters  
Austin, Texas*

Objective: Validation plan for Clarus 500 Headspace GC with TurboMatrix 40 Autosampler for analysis of body fluids for alcohol content and inhalants.

This presentation will include an overview of the validation plan for the Headspace GC Instrument as well as a discussion of the operating conditions for the GC, TurboMatrix Autosampler and use of the TotalChrom v.6.3 Operating Software. A status update will be presented with specifics on the "Carryover" Experiment as well as the success of the LOD and LOQ Experiments. This validation is on-going. Case work still continues on the Perkin-Elmer HS-40 XL until this validation is complete.

Upon completion of this presentation, it is expected that analysts involved in analysis of body fluids for alcohol content will understand what is involved in the validation. An open discussion is welcomed as time permits.

### Appearance of TFMPP "Molly" in Harris County, Texas

*Donna E. Williams, Mark D. Dixon, and Ashraf Mozayani, PharmD, Ph.D., D-ABFT  
Harris County Medical Examiner's Office  
1885 Old Spanish Trail  
Houston, TX 77054*

Objective: To inform attendees of the increase in use of a federally non-controlled substance that is being abused as a "party drug" in Harris County, Texas.

The HCME Controlled Substance Laboratory has received three submissions in the last couple of months that were suspected to be MDMA, but GC-MS analysis confirmed the presence of 1-(3-Trifluoromethylphenyl) piperazine (TFMPP) mixed with a structural isomer of chlorophenylpiperazine. TFMPP is often combined with benzylpiperazine (BZP) to produce MDMA-like effects. TFMPP is not a scheduled drug in the U.S. and is promoted as a legal alternative to get high; however, it is listed in Penalty Group 2 of the Texas Controlled Substance Act. Chemists should be aware of the possibility of the presence of this drug should initial tests for MDMA prove to be negative.

### Analysis of Pesticides in Hair by Comprehensive Two-Dimensional Gas Chromatography

*C. Smith-Baker<sup>1</sup>, Mahmoud Saleh<sup>1</sup>, and J.-M. D. Dimandja<sup>2</sup>  
<sup>1</sup>Texas Southern University, Department of Chemistry, Houston, TX 77004  
[smithbakerca@tsu.edu](mailto:smithbakerca@tsu.edu)  
[saleh\\_ma@tsu.edu](mailto:saleh_ma@tsu.edu)  
<sup>2</sup>Spelman College, Department of Chemistry, Atlanta, GA 30314  
[jdimandja@spelman.edu](mailto:jdimandja@spelman.edu)*

Objective: The objective of this talk is to describe a new non-invasive method for the analysis of pesticides by comprehensive two-dimensional gas chromatography (GCxGC).

This talk describes the development of a new non-invasive method for the analysis of toxicological biomarkers for exposure to pesticides. The method is based on comprehensive two-dimensional gas chromatography (GCxGC), which subjects the analytes to two separation columns through the use of an on-column injector called a modulator. The primary advantage of GCxGC over conventional one-dimensional GC techniques in this particular application is a simplification in the sample preparation procedure, which results a substantial improvement in analytical throughput. The presentation will focus on the development of the GCxGC method and an evaluation of the qualitative and quantitative figures of merit of the technique.

"...TFMPP is often combined with benzylpiperazine (BZP) to produce MDMA-like effects..."

This work was funded by RCMI Grant #R003045-17 and NASA/TSU-URC Grant #NCC165-9.

### **Post-mortem Hair Testing: Our Approach using Liquid Chromatography Tandem Mass Spectrometry**

*Jeffrey P. Walterscheid\*, Shaohan Zhao, Terry J. Danielson, Ashraf Mozayani and Luis A. Sanchez M.D.  
Harris County Medical Examiner  
Joseph A. Jachimczyk Forensic Center  
1885 Old Spanish Trail  
Houston, TX 77054*

Objective: Hair analyses are useful in post-mortem cases, where severe decomposition limits the availability of "normal" forensic specimens. This presentation describes our efforts to develop and validate an LC-MS/MS method for post-mortem hair testing in our laboratory.

We selected cocaine as our model, since it is a fragile molecule, yet highly amenable to LC-MS/MS analysis. Hair specimens were obtained from cases that were proven to be positive or negative for cocaine by blood analysis. The hair was weighed and distributed without chopping or grinding, washed with an SDS/Triton X-100 detergent solution, and disintegrated by proteinase K digestion for 2 hours under ambient conditions. Samples were centrifuged, filtered, and then analyzed by reverse-phase LC-MS/MS in comparison to deuterated internal standards.

Cocaine and benzoylecgonine concentrations were similar in any given case tested. Positive hair samples ranged in concentrations from 1000 pg/mg to over 22,000 pg/mg of cocaine/hair. Meanwhile, hair controls and negative samples contained no detectable amounts or carryover from positive samples.

This protocol yields a fast and easy method for determining cocaine use in forensic hair samples. Because of the mild conditions and robust sensitivity, this method could be applied to the analysis of other hair-bound drug analytes as well.

### **Analysis of ETG by LC/MS/MS – Implications to Alcohol Consumption**

*Subbarao V. Kala\*, Tom D. Freijo, Steve E. Harris, Jorge Reyna and Stan Gerlich  
One Source Toxicology Laboratory  
Pasadena, TX 77504*

Objective: This presentation will describe the detection confirmation of ethyl glucuronide by liquid chromatography / mass spectrometry / mass spectrometry.

Ethyl glucuronide (ETG), a minor metabolite of alcohol, is used as a biomarker for the recent alcohol consumption. We have analyzed ETG in urine samples using Microgenics DRI- immunoassay for screening and confirmed its presence by LC/MS/MS electrospray ionization. Validation of the ETG determination was carried out for both immunoassay and LC/MS/MS analysis. The immunoassay, a semi-quantitative procedure, was found to be linear for ETG in the range of 100 to 5000 ng/mL urine. For the LC/MS/MS analysis the negative urine samples were spiked with ETG (final concentrations ranging from 50 to 5000 ng/mL) and the LOD, LOQ and ULOL levels were determined. Urine samples were separated by Luna HILIC 200 A Column (150 mm x 2.0 mm id, 3 µm Phenomenex) using mobile phase consisting of acetonitrile (90%)/5 mM ammonium (10%) acetate and ETG was detected by MS/MS. MRM transitions m/z 221/75, m/z 221/85 were monitored to detect and quantitate ETG. Deuterated ethyl glucuronide (D5-ETG) was used as an internal standard (MRM transitions: m/z 226/75, m/z 226/85). Since ion suppression was found with undiluted urine, samples were diluted 10 times with acetonitrile prior to LC/MS/MS analysis. This method was found to be highly sensitive and the LOD for ETG was found to be 50 ng/mL urine (25 pg on column). The ULOL was >5,000 ng/mL urine. The implications of ETG analysis for alcohol consumption and the ion suppression effects of urine matrix on ETG determinations will be discussed.

### **Evaluation of Unexpected Peaks in Headspace Gas Chromatography**

*G. Thomas, B.S., T. Danielson, Ph.D., A. Mozayani, Ph.D.  
Harris County Medical Examiner  
1885 Old Spanish Trail  
Houston Texas. 77054*

Objective: Analyses by headspace gas chromatography often generate peaks due to other than target analytes. The objective of this presentation is to illustrate the need for careful evaluation of unexpected peaks seen in these chromatograms.

In two post-mortem cases, dual column headspace gas chromatographic analysis for ethanol gave either inconsistent results and/or unusual peaks.

In the first case, ethanol concentrations determined on BAC-1 were 0.23, 0.15, and 0.15 g/dL in blood, vitreous and urine, respectively. However, on the BAC-2 column, ethanol peaks were smaller and a second, earlier eluting peak was observed.

In a second case an early eluting peak was observed at 0.95 minutes on both columns. Direct injection of specimen vial headspace air onto a gas chromatograph / mass spectrometer indicated ethyl chloride in the

*"Hair analyses are useful  
in post-mortem cases,  
where severe  
decomposition limits the  
availability of 'normal'  
forensic specimens."*

first case and difluorochloromethane in the second. Ethyl chloride is a chlorinated hydrocarbon and has become a popular substance of abuse as an inhalant, during sexual activity. Difluorochloromethane is a Freon and is abused by inhalation. These examples indicate that unusual peaks in headspace gas chromatograms should be carefully assessed.

### Measurement of Ion Suppression during LC/MS/MS Determination of Methadone and Methadone Metabolite

*T. Danielson, Ph.D., A. Mozayani, Ph.D.  
Harris County Medical Examiner  
1885 Old Spanish Trail  
Houston, Texas 77054*

Objective: Differential ion suppression by artifacts in the specimen matrix can cause inaccuracies in determination of drugs by tandem mass spectrometry. The objective of this presentation is to present an approach to determining ion suppression using methadone and its main metabolite, EDDP, in post-mortem blood and liver, as examples.

Liquid chromatography mass spectrometry (LC/MS/MS) often involves a reverse phase chromatographic separation that allows matrix constituents to pass through the column and into the mass spectrometer. These matrix components might then compete with analytes or internal standards for ionization energy and cause matrix dependent reductions in the abundances of quantitation ions.

One approach is to use deuterated internal standards that elute simultaneous to the target analyte. However, since deuterated and non-deuterated drugs may be slightly separated by HPLC there is yet a possibility of differential suppression.

We examined intensities of quantitation and qualifier ions intensities after addition of methadone, methadone-D<sub>3</sub>, EDDP and EDDP-D<sub>3</sub> to drug-free blood and liver extracts. These measurements indicate that matrix differences between blood and liver were slight and generally not observed under our extraction and chromatographic conditions.

### Psychotropic Drugs and Public Safety

*Lauren DeWitt, Registered Pharmacist  
Medical Director of Citizens Commission on Human Rights  
Austin, Texas*

*Moira Dolan, MD  
Internal Medicine Physician  
Executive Director, Medical Accountability Network  
Austin, Texas*

This presentation describes the potential and actual contribution of psychoactive drugs in acts of criminal violence, including family homicide, school shootings and criminal behavior.

The talk provides definitions, describes psychotropic drug classes, gives a history of psychotropic drug development, and details 8 case histories.

Handouts include copies of three recent articles as well as a bibliography for further study.

*"In two post-mortem cases, dual column headspace gas chromatographic analysis for ethanol gave either inconsistent results and/or unusual peaks."*



**Southwestern Association of Toxicologists**

**Meeting Grant Application**

**The SAT Meeting Grant (\$300.00 plus meeting registration) may be awarded to two individuals per meeting (at the approval of the board). It may be applied toward the current meeting or one of the next two meetings.**

Guidelines for Meeting Grant

- SAT Member in good standing
- Presenting paper at meeting
- Non-supervisory position
- Sponsoring letter from laboratory or section manager

Application for the SAT Meeting Grant should be forwarded to:

Ashraf Mozayani  
 Joseph A. Jachimczyk Forensic Science Center  
 (713) 796-6830  
[Ashraf.mozayani@meo.hctx.net](mailto:Ashraf.mozayani@meo.hctx.net)

Applicant's Name: \_\_\_\_\_

Job Title: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_

Sponsor: \_\_\_\_\_ Job Title: \_\_\_\_\_

Applicant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Date Application received: \_\_\_\_\_ SAT member verified: \_\_\_\_\_

Recommendation of committee: \_\_\_\_\_ Approve \_\_\_\_\_ Disapprove

Action of Board: \_\_\_\_\_ Fund \_\_\_\_\_ Do Not Fund Date: \_\_\_\_\_

## MEMBERSHIP



## APPLICATION

Thank you for your interest in the Southwestern Association of Toxicologists. We are a regional scientific organization, serving primarily the states depicted in our logo above. All of our members are actively engaged in forensic, clinical, or environmental toxicology, or are students with an interest in toxicology.

New members of S.A.T. must:

- Be actively engaged in the field of toxicology, or be an undergraduate or graduate student interested in chemistry, toxicology, or the forensic sciences
- Obtain recommendation/sponsorship from at least two individuals who are currently members. The membership committee may accept professional references from non-members pending review of other circumstances.
- Enclose non-refundable \$30 application fee (this will serve as your first year's dues should you be accepted)

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## EDUCATION

College or University	Dates Attended		Degree Earned	Major Field
	From	To		

Dissertation Title (if applicable): \_\_\_\_\_

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Employer (most recent first)	City, State	Job Title	Dates		Supervisor
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## ACHIEVEMENT AND DISTINCTION

Please list any publications, patents, certifications, honors or awards, etc. (attach extra sheets if necessary):

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I certify that the above information is correct to the best of my knowledge.

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Applicant's Signature

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Date

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Name (please print): \_\_\_\_\_

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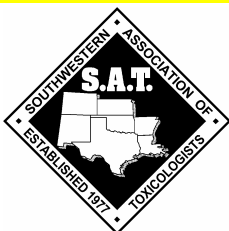
### Additional Instructions:

If the applicant does not know two full members of S.A.T., the sponsors should be professional references. For those applicants, please include your curriculum vita along with this application. All applications are submitted to the Board of Directors at each semi-annual meeting (April and November). Pending acceptance, dues will begin with the next fiscal year (July).

Mail completed applications along with the non-refundable \$30 application fee (payable to S.A.T.) to:

Aria McCall  
Dallas County Institute of Forensic Sciences  
5230 Medical Center Drive  
Dallas, Texas 75235

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## SOUTHWESTERN ASSOCIATION OF TOXICOLOGISTS

### How do I...

...access the membership directory or by-laws?

Visit <http://tech.groups.yahoo.com/sat-tox> and visit the "files" section

...notify of an address change?

Contact our secretary, Connie Huber at (316) 383-4500 [chuber@sedgwick.gov](mailto:chuber@sedgwick.gov) and our treasurer, Kathy Erwin at (512) 424-2105 [kjerwin@suddenlink.net](mailto:kjerwin@suddenlink.net)

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### LOTS of new members!

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WELCOME TO S.A.T.

### FUTURE MEETINGS

**Austin  
Fall 2008**

**San Antonio  
Spring 2009**

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Editor: Michael Frontz- [mefron@bexar.org](mailto:mefron@bexar.org)

Communications Committee:  
Glenn Harrison- [glenn.harrison@txdps.state.tx.us](mailto:glenn.harrison@txdps.state.tx.us)  
Garry Metcalfe- [G\\_Metcalfe@ocmeokc.state.ok.us](mailto:G_Metcalfe@ocmeokc.state.ok.us)  
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