Believe it or not, we are already halfway through the year, and only four months away from our annual meeting in San Antonio! Preparations are well under way. I was privileged to join Beth, CC, Veronica Hargrove, Ann Marie Gordon, and Frank Wallace in San Antonio for a site visit in April. I’m very excited about the hotel and meeting facilities, and of course, being a Texan, I’m excited about showcasing San Antonio, the state’s oldest city, a place I often visit and which I consider to be the heart of Texas, or perhaps more appropriately, el corazon de Texas!

For those unfamiliar with San Antonio, it has a distinctly different flavor than the other major cities in Texas. It is a city steeped in tradition and Texas history, yet retains and celebrates its Mexican heritage. In fact, we will be meeting about two blocks from the Alamo, a revered Texas treasure, and on Wednesday night we will be participating in A Night in Old San Antonio (NIOSA), celebrating the city’s diverse cultural legacy. I was fortunate to be able to attend the yearly public NIOSA while in San Antonio in April. The city came out in force to join in the festivities. However, a more intimate version of NIOSA will be held exclusively for our meeting attendees.

Additionally, any day of the week you can step out of the door of the hotel onto the famed San Antonio Riverwalk and in less than five minutes be among scores of restaurants, bars, shops, and other assorted attractions. In October, San Antonio averages a daily maximum temperature between 80 and 84 degrees Fahrenheit (27 to 29 degrees Celsius) and the minimum temperature usually falls between 58 and 63 degrees Fahrenheit (14 to 17 degrees Celsius), with only about four days of rain.

Of course, let’s not forget why we are there in the first place. Besides three days of platform and poster presentations, there will be 12 workshops from which to choose, along with plenary speakers, YFT, Elmer Gordon Open Forum, visiting with the vendors, and other opportunities to network and learn.

Our Journal of Analytical Toxicology Special Editor, Kayla Ellefesen informs me that special SOFT edition of JAT is on track; with a large number of intriguing papers being submitted.

On another front, I hope you received and completed SOFT’s survey. The survey was professionally developed and was sent to 3,919 email addresses, comprised of current members; people who are no longer members but had a membership in the past five years; and nonmembers who attended the meeting in the past five years. We want to know who you are and what you think so we can continue to be innovative and relevant to you.

Dwain C. Fuller, F-ABFT, TC-NRCC
SOFT President
The 2019 SOFT annual meeting is rapidly approaching! The San Antonio planning committee has been busy working out all of the details. We are happy to share that we have many interesting workshops scheduled. You can view the workshops HERE. Workshops are scheduled for Monday October 14th and Tuesday October 15th. REGISTRATION and the HOTEL ROOM BLOCK are both also open, please visit the SOFT website to view all available meeting information.

We are also pleased to announce that we will have a plenary speaker presentation by Silas W. Smith, MD, FACEP, FACMT, of the New York University School of Medicine, Ronald O. Perelman Department of Emergency Medicine. Dr. Smith’s appointments also include the JoAnn G. and Kenneth Wellner Clinical Associate Professor of Emergency Medicine and Section Chief Quality, Safety, and Practice Innovation as well as Associate Director, Fellowship in Medical Toxicology New York City Poison Control Center New York, New York. Dr. Smith is author and co-author of numerous peer-reviewed journal articles as well as several chapters in Goldfrank’s Toxicologic Emergencies. SOFT and the American College of Medical Toxicology (ACMT) have a history of collaborative relationships and we are honored and grateful Dr. Smith will be sharing his time with us at the SOFT annual meeting.

Look forward to seeing everyone in October!

-Brad & Veronica

See you in San Antonio!
The SOFT Awards Committee is pleased to announce the 2019 winners of the Educational Research Award (ERA) and Young Scientist Meeting Award (YSMA). Congratulations to this year’s winners!

- Educational Research Award (ERA): Tiara Evans, Victoria Mei, and Michael Truver
- Young Scientist Meeting Award (YSMA): Jacob Samuel

Award winners receive basic meeting registration and a $2,000 stipend to be used to cover the cost of travel expenses to the Annual Meeting so they can present their research. We look forward to seeing their presentations at this year’s meeting in San Antonio, TX. Also, be sure to attend the business meeting to see the winners receive their awards. We had an outstanding applicant pool, with the most applications ever received in a single year! Thank you to all who submitted applications to this year’s committee!

Congratulations on winning this year’s ERA award! How did it feel when you found out that you had won? I was overwhelmed with joy!

What can you tell us about SOFT’s award program? My advisor, Dr. Madeleine Swartwood, suggested that I apply for this award.

Can you tell us about the work you were doing when you decided to apply? I was fortunate enough to travel to Sweden this past December and collaborate with Dr. Robert Kronstrand and his team. My submission entails the identification of metabolites for two synthetic cannabinoids; 5F-MDMB-PICA and 5F-MDMB-PINACA. The evaluation of their receptor activity at the CB1 receptor.

What did you hope to achieve when you decided to apply for a scholarship in the area of research you worked in? I hoped that the work that I have completed during my doctoral degree would get recognition from fellow colleagues in our field. Also, the money was a nice incentive.

What advice do you have for other students in forensic toxicology? My interest in forensic toxicology started in undergrad when I did research with one of my professors. I knew I wanted to pursue a career in forensic science and with my background in chemistry, forensic toxicology was a perfect fit.

What advice would you give to future award applicants? Some advice would be to believe in yourself and to work hard because it pays off in the end.

When do you hope to be in 5 years? Since I graduate at the end of this year, I would like to be working my way up wherever I end up, whether that is in academia or in a crime laboratory.

What continuing education are you currently pursuing/training in? I am currently completing my doctoral degree in forensic science at Sam Houston State University and I am looking at employment and post-doc opportunities.

What impact did your advisor/mentor have on you or on your present career path? Dr. Sarah Kiergan has had a great impact on my present career path. I worked with her for my capstone research when I was in the master’s program. She made me believe in myself and gave me the courage to continue on into the doctoral program.

What advice do you think the SOFT Award Program impacts a person’s career? I think the SOFT Award Program has a strong impact on students in Forensic Toxicology. It allows them to present their research in front of fellow colleagues in the field.
SOFT 2019 ERA WINNER

Congratulations on winning this year’s ERA/FSMA award! How did it feel when you found out that you had won? I was so shocked and happy! It was a great feeling to hear the amazing news with my mentors, friends, and family, who all helped and supported me to complete the research.

When did you first learn about SOFT’s award program? I learned about the award program through a conversation with my mentor, Dr. Gail Cooper and Dr. Maria Concheiro, both recommended that I apply because the plan was to attend the SOFT conference in October.

Tell us about a teacher/mentor that had an impact on you or set you on your present career path? The mentor that had the biggest impact on my present career path is Dr. Maria Concheiro, who is an amazing woman and I am extremely grateful to her. She was the one that introduced me to conducting my research at the New York City Office of Chief Medical Examiner. She has provided me limitless guidance when I needed her help and whenever I asked her questions.

How would you see being the recipient of this award to influence others and how would it impact your career? Being the recipient of this award, I would encourage others to also attend a research that show interest and to also contribute to the forensic toxicology community. Receiving this award would open more opportunities for my career because I can meet those that are also in the forensic toxicology community.

How do you think the SOFT Awards Program impacts students in Forensic Toxicology? The SOFT Awards Program greatly impacts students in Forensic Toxicology because this grant provides the financial support that students need to travel and attend conferences. The conference itself is where the students can be exposed to current research and events that are happening in forensic toxicology.

Victoria Mei, MS
John Jay College of Criminal Justice
As niche as our field is, we see toxicologists working across many different industries in today’s world. Some of our colleagues have found employment with private labs, many are working in government labs at the local, state or federal level, others have taken on the role of consultant and we also have several toxicologists that have found a home as professors in the education system. Our field touches so many areas of our economy, government, communities, and legal system, making it a truly unique field to be part of.

We may be spread out across the country and working in different industries, but we all have one thing in common that will carry on with us throughout our careers, our education. We all started in the same place, as a young student seeking knowledge, listening to the wise words of professors, and searching for a mentor to take us under their wing. Some of us were lucky enough to have found these things early on in our careers and some of us have had to wait patiently. We may not always agree on all aspects of toxicology but it’s important to acknowledge that supporting and mentoring young toxicologists is imperative to the future success of our industry. Time and time again we have seen the rapid changes in our field and how they impact our communities, often for worse. As Nelson Mandela wisely said, “Education is the most powerful weapon you can use to change the world.” Investing in our younger toxicologists now will be the change we all want for the future of our industry, our communities, and our government.

Many factors can contribute to the success of a student but one form of support that can have a tremendous impact on the future of a young toxicologist is a monetary donation that supports conference attendance. SOFT has long focused on supporting our community of young forensic toxicologists and we are happy to announce that we have implemented a new donation opportunity to help to continue to support the ERA and YSMA fund. Previously, members could choose to donate to the SOFT Awards fund but were only able to do this during annual dues payment. We have added a “Donate” button to the SOFT Awards Page that will allow for anyone to contribute to this fund at any point in the year. Donations will help sustain these awards for future students and young toxicologists.

We would like to thank all of our wonderful members that have already donated to the Awards fund this year. Your support of the Awards program, SOFT, and our industry is greatly appreciated!
Ahmed Al-Asmari
William H. Anderson
Dan T. Anderson
Timothy Appel
Sabra R. Botch-Jones
Donna Bush
Phyllis Chandler
Adriana Cid Bermudez
Edward J. Cone
Anthony G. Costantino
Michael J. Coyer
Susan Crumpton
Nathalie Desrosiers
Christopher Divito
Kayla N. Ellefson
Simon Elliott
Wendy Fang
Albert D. Fraser
Dwain C. Fuller
Demi B. Garvin
Dimitri Gerostamoulos
Ann Marie Gordon
Teresa Gray
Michelle Hahn
Brad J. Hall
Rebecca L. Hartman
Huda Hassan
Chris Heartsill
Bradford R. Hepler
Robert D. Johnson
William R. Johnson
Prentiss Jones, Jr.
Erin Karschner
William R. Johnson
Prentiss Jones, Jr.
Erin Karschner
Philip M. Kemp
Diishad Khan
Sean E. Kocur
Ann-Sophie Korb
James C. Kramer
Thomas Kupiec
Matthew Lambing
Marc A. LeBeau
Dayong Lee
Corey Lightfoot
Daniel Lipian
Ray Liu
Danielle Mackowski
Jacqueline Martin
Maria A. Martinez
Shantay Martinez
Christophe Maruejouls
Peter Maskell
Diane Mertens-Maxham
Amy Miles
John Mitchell
Ashraf Mozayani
Innocent Mutambuze
Adam Negrusz
Matthew Newmeyer
Maria Oliveras
Robert J. Osiewicz
Michelle Peace
Richard Pinder
Pat Pizzo
Robert H. Powers
S. Tinsley Preston III
Rosemarie Rios
Luke N. Rodda
Jeri D. Ropero-Miller
Joseph J. Saady
Alberto Salomone
Tania Sasaki
Michael I. Schaffer
Matt Slawson
Chetan Soni
Erin A. Spargo
Elizabeth Spratt
Peter R. Stout
Erin C. Strickland
Andre Sukta
Craig Sutheimer
Madeleine J. Swortwood
Jayne Thatcher
Samantha Tollyer
Robert F. Turk
Sandra Valtier
Bridget Verdino
Svante Vikingsson
Richard W. Waggoner
H. Chip Walls
Jeff Walterscheid
James H. Watterson
Julie Weber-Roark
Melinda K. Wilson-Hohler
Ruth Winecker
John Wyman
Tramadol is a synthetic opioid used in the treatment of moderate-to-severe pain, and used extensively because of its lower side-effect profile compared to other opioids. It is also considered a serotonin-noradrenergic reuptake inhibitor and has been investigated as an off-label adjunct in the treatment of major depression disorder. Its monoaminergic actions may be due, in part, to structural similarities with venlafaxine. Tramadol may be taken orally and undergoes extensive phase I metabolism via the cytochrome P450 system. In particular, metabolism through the 2D6 isozyme yields the active metabolite O-desmethyltramadol, and metabolism through 2B6 and 3A4 yields the inactive metabolite N-desmethyltramadol. Subsequent phase II metabolism yields several glucuronide conjugates, the excretion of which may be reduced in cases hepatic or renal insufficiency. The half-life of tramadol varies from 4.3 to 6.7 hours, and its volume of distribution is >1 L/kg.

Typical doses range from 50 to 150 mg/day, with therapeutic concentrations reported to range between 0.1 and 0.8 mg/L. Toxic concentrations vary and have been reported from 0.01 to 23 mg/L, while lethal concentrations consistent with acute ingestion have been reported to be >15 mg/L. This considerable overlap of reported therapeutic, toxic, and lethal concentrations may be due to several factors including (but not limited to): the concomitant ingestion of other drugs, tolerance, the route of administration, the overall health status of the individual, and, especially in postmortem casework, the extent of postmortem redistribution (PMR). Tramadol has been shown to demonstrate PMR owing to its high degree of lipophilicity and alkaline character, and resultant tissue concentrations may be several-fold higher than blood concentrations. PMR of tramadol may also lead to a variance in measured blood concentrations taken from different draw sites, as is the case with cardiac/central blood versus femoral/peripheral blood. This variation in blood concentrations may lead to misinterpretation. Presented is a brief case review highlighting the postmortem distribution of tramadol in a decomposed overdose victim.

Case History
The decedent was a 47-year-old male with a history of head and neck cancer. He was found unresponsive in his home by a relative and was pronounced at the scene by emergency medical personnel and exhibited signs of advanced decomposition. Our analysis of tramadol in femoral blood revealed a concentration of 35.2 mg/L. Based on the femoral blood concentration, the advanced state of decomposition of the decedent, and a high probability of PMR, a full distribution was performed. O-desmethyltramadol was not analyzed for this case.

<table>
<thead>
<tr>
<th>Tissue site</th>
<th>Tramadol concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Femoral blood (mg/L)</td>
<td>35.2</td>
</tr>
<tr>
<td>Cardiac blood (mg/L)</td>
<td>69.7</td>
</tr>
<tr>
<td>Liver (mg/kg)</td>
<td>82.2</td>
</tr>
<tr>
<td>Brain (mg/kg)</td>
<td>55.8</td>
</tr>
<tr>
<td>Stomach contents (mg/total)</td>
<td>489</td>
</tr>
</tbody>
</table>

Carried into femoral blood sites, as well as liver, brain, and stomach contents were analyzed for tramadol, which revealed potentially toxic concentrations of the drug. General symptoms of opioid toxicity can include central nervous system depression, respiratory depression, and unconsciousness, while tramadol’s actions on biogenic amines might also lead to other adverse effects including hypertension, agitation, and seizures. Internal examination of fatal opioid overdoses often reveals significant pulmonary and cerebral edema, though the lack of any apparent autopsy findings in this case may be due to the decedent being found in the advanced stages of decomposition. Blood results involving tramadol may be subject to PMR, and toxicologic interpretation of blood concentrations alone could lead to misinterpretation and should be avoided, particularly in cases involving an extended postmortem interval. Blood-tramadol concentrations >15 mg/L and tissue concentrations >50 mg/kg are considered to be an indication of acute ingestion, which is consistent with the findings of this case. The cardiac-to-femoral ratio (C/F; 1.98) in addition to the tissue-to-femoral ratios (T/F; 1.58 L/kg for brain and 2.33 L/kg for liver) also supports this. However, it should be noted that the C/F and T/F ratios for any drug may only be indicative of site location differences between the two tissues, and may or may not be a full representation of an acute ingestion or PMR. Evaluation of parent-to-metabolite ratios, in particular with O-desmethyltramadol, may provide supporting evidence of an acute ingestion, however this metabolite is not included in our analysis. The cause of death was attributed to tramadol intoxication, but the lack of a comprehensive medical history, parent-to-metabolite ratios, and a suitable urine specimen makes it difficult fully ascertain acute versus chronic ingestion.

References
The Food and Drug Administration (FDA) garnered praise and criticism when it approved a sublingual form of sufentanil (DSUVIA) in November of 2018. Those in favor cited a need for alternatives to intravenous (IV) pain medications for use when access to IV sites are limited (i.e., burn patients, elderly, obese). While others raised concerns about the potential for abuse and diversion in the midst of an opioid epidemic. DSUVIA is a sublingual form of sufentanil that is produced by AcelRx Pharmaceuticals. The approved formulation includes a single 30 mcg/mL tablet that is dispensed from a single-dose applicator (1). According to the manufacturer, each applicator is packaged in its own sealed, tamper-evident pouch and will only be available in medical settings. No retail pharmacies will carry or dispense this formulation (2).

![Figure 1: Sublingual Sufentanil (DSUVIA) Applicator](image)

So, what is sufentanil? Sufentanil is a synthetic opioid with approximately 5-10 times the potency of fentanyl. It has been used medicinally since the 1970’s as an analgesic or anesthetic in various surgeries. It gained popularity among the medical community because it has no active metabolites and provides rapid analgesia. The effects of sufentanil, like other opioids, include pain relief, sedation, and respiratory depression. In clinical trials, average maximum concentrations of 40.6 µg/mL and 63.1 µg/mL were achieved at approximately one hour from single doses of 15 µg and 30 µg, respectively (3,4). Drug accumulation was observed during multi-dose studies with concentrations increased by approximately 2.4-fold compared to single-dose results (4).

While the new formulation is not intended to be available outside of a hospital setting, toxicology and drug chemistry laboratories should remain vigilant. Since a single sublingual dose of sufentanil can remain in the blood for several hours, it may be present in the blood after an individual has been discharged from the hospital. Additionally, multiple instances of drug diversion and abuse by healthcare professionals have been documented in the past. The good news is that multiple analytical methods for the detection and quantitation of sufentanil have been published utilizing various technology. These methods have primarily been used in pharmacokinetic research and therapeutic drug monitoring laboratories but they are easily adaptable to forensic casework. With the FDA releasing plans for the development of new pain management drugs in 2019, this may be one of multiple approvals to come over the next few years (5).

### Table 1: Chemical Characteristics of Sufentanil

<table>
<thead>
<tr>
<th>Nomenclature</th>
<th>C28H18N2O5S</th>
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<tr>
<td>Formula</td>
<td>586.6 g/mol</td>
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<tr>
<td>Molecular Weight</td>
<td>386.2 g/mol</td>
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<tr>
<td>Exact Mass</td>
<td>386.2 g/mol</td>
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<tr>
<td>pKa</td>
<td>8.01</td>
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<td>Structure</td>
<td>[image]</td>
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![Figure 2: GC-MS EI Mass Spectrum of Sufentanil acquired using an Agilent by scan acquisition (70 eV)](image)

References:

It’s difficult to believe three months have passed since our incredibly successful 2019 AAFS Annual Meeting in Baltimore, MD. Our sincerest thanks to all the Toxicology Section officers, chairs, co-chairs, moderators, abstract reviewers, and volunteers for your efforts. Great meetings are impossible without the dedication of so many individuals!

Preparations are well underway for another exciting program at the 2020 Annual Meeting in Anaheim, CA, where the chosen theme is “Crossing Borders.”

We are looking forward to a vast array of quality workshops, scientific sessions, breakfasts, and luncheons next year and will also continue the traditional special sessions on Drugs and Driving, Postmortem Pediatric Toxicology and our joint session with the Pathology/Biology Section.

If you haven’t already, we encourage you to consider abstract submissions and/or identify workshop proposals – now is the time to start! The shared August 1st deadline will rapidly approach; please don’t delay in contacting section Program Chair Sabra Botch-Jones (sabraj@bu.edu) or co-chair Laureen Marinetti (lmarinetti@redwoodtoxicology.com) with your workshop suggestions and other program ideas. You can use the following link to participate in a survey to gauge your willingness to participate:

http://tinyurl.com/AAFS-TOX-2020

Moderators and volunteers play a pivotal role in the success of the annual meeting, and both activities count as service to the Academy for the October 1 deadline for membership and promotion submissions. Volunteering is also an excellent way for newcomers to get engaged and meet people, so please encourage your colleagues and students to participate and contact Sabra Botch-Jones (sabraj@bu.edu) if you’re interested in this opportunity.

Please note another August 1 deadline: nominations for section awards. These awards remain a wonderful way to recognize your fellow colleagues for their contributions and dedication to our field. Contact the Chair of the Toxicology Section Awards and Scholarship Committee, Timothy Rohrig (trohrig@sedgwick.gov), with your nominations.

Mark your calendars now for the AAFS 72nd Annual Scientific Meeting, February 17 - 22, 2020, in Anaheim, CA.

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The San Bernardino Sheriff’s Crime Lab will be hosting the California Association of Criminalists Fall Seminar this year on October 21-25 at the DoubleTree in Ontario, CA. The program will offer several workshops and speakers.

Future updates to the seminar workshop and speaker schedule will be posted HERE.
### FUTURE SOFT MEETINGS

<table>
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<td>2019</td>
<td>Grand Hyatt San Antonio, San Antonio, TX</td>
<td>October 13–18, 2019</td>
<td>Veronica Hargrove and Brad Hall</td>
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<td>2020</td>
<td>Marriott Marquis San Diego Marina, San Diego, CA</td>
<td>September 21–25, 2020</td>
<td>Denice Teem and Dani Mata</td>
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<td>2021</td>
<td>Gaylord Opryland, Nashville, TN</td>
<td>September 26–October 1, 2021</td>
<td>Jennifer Colby and Erin Karschner</td>
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<td>2022</td>
<td>Huntington Convention Center, Cleveland, OH</td>
<td>October 30–November 4, 2022</td>
<td>Doug Rohde</td>
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<td>2023</td>
<td>Gaylord Rockies, Denver, CO</td>
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### 2019 SOFT COMMITTEE CHARIS

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