2026 Volume 50 Issue 3

ToxTalk®

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President's Message

Jeri Ropero-Miller, PhD, F-ABFT

SOFT Summer Scoop: Chicago, Strategy, and What's Ahead

Greetings SOFT Members,
I hope everyone is enjoying their summer, making memories, prioritizing self-care, staying current with the latest science, and planning for Chicago in September. This August issue of ToxTalk is packed with updates from across SOFT, so I am sharing a quick Summer Scoop featuring just a few of the accomplishments, milestones, and opportunities that continue to make SOFT such a vibrant professional community.

#1- Meeting in Chicago
The excitement is building as we prepare to gather at the Hilton Chicago for the 2026 SOFT-TIAFT Joint Meeting. Workshop Chairs **Craig Chatterton**, **Sue Pearring**, and **Karen Scott** have assembled an exceptional program featuring 24 workshops spanning emerging substances, impairment, laboratory innovation, informatics, ethics, and professional development.

The Scientific Program Committee—**Suman Rana**, **Donna Coy**, **Brigitte Desharnais**, and **Jennifer Schumann**—processed 480 abstracts with the support of 192 reviewers, resulting in a robust program of oral, lightning, and poster presentations. At the time of publication, we are welcoming 1004 attendees from 50 countries, and registration remains open.

TIAFT President, **Simon Elliott**, and I extend our thanks to meeting hosts **Andre Sukta** and **Luke Rodda**, the Program Committee, and the Planning Committee for creating what promises to be an outstanding week of science, collaboration, and networking.

#2 - Congratulations to Our Future Meeting Hosts
Please join me in congratulating the hosts for our future annual meetings:

2028 Annual Meeting – Milwaukee, Wisconsin
Dates: October 15–20, 2028
Meeting Hosts: **Kari Midthun** and **Bill Johnson**

2029 Annual Meeting – Omaha, Nebraska
Dates: October 21–26, 2029
Meeting Hosts: **Becky Wagner** and **Sara Dempsey**

Thank you to these dedicated volunteers for their willingness to lead the planning of future SOFT meetings.

#3 – Shaping SOFT's Future
At its Mid-Year Meeting in May, the Executive Committee (EC) devoted focused time to, membership, committee operations, awards, handbook updates, committee survey drafts, and other priorities that benefit from in-depth discussion. The EC also reviewed a draft Strategic Plan developed by the Business and Operations Strategy Ad Hoc Committee, chaired by Laurel Farrell, to help guide SOFT's continued growth, sustainability, and service to its members.

#4 SOFT Special Issue in Journal of Analytical Toxicology
Published in partnership with the Journal of Analytical Toxicology since 1980, the 46th SOFT Special Issue features 19 articles authored by dozens of researchers and practitioners. I extend my sincere thanks to Guest Editor Teresa Gray, our peer reviewers, contributing authors, and Oxford University Press for making this issue possible. Their collective efforts showcase the rigor, innovation, and impact of forensic toxicology.

#5 – Help Grow the Congressional Forensic Science Caucus
The Congressional Forensic Science Caucus continues to grow, with Idaho, South Carolina, and Alabama recently joining. I encourage every SOFT member to contact their U.S. House Representative and ask them to support the Caucus. The Caucus helps educate policymakers about the importance of forensic science and its role in public safety, public health, and the justice system. Resources, contact information, and a sample letter are available on SOFT's ToxHub and the CFSO website (https://thecfso.org/).

I look forward to seeing everyone in Chicago. Hold on to your feathers and fedora, and I'll see you in September!

(Acknowledgement: Co-Pilot 365 Enterprise created the graphic and enhanced my writing as my AI editor.)

2027 Slate of Officers and Directors

The 2026 Nominating Committee Announces the 2027 Slate of Officers and Directors

The Nominating Committee's task is to provide a slate of Officers and Directors to the full membership of SOFT at least 30 days prior to the annual Business Meeting.

The 2026 SOFT Nominating Committee was comprised of Chris Heartsill (Chair), Erin Spargo, and Tyson Baird. We respectfully submit the following slate to be considered by the SOFT membership

Terms and Open Positions
The President and President-Elect each serve a one-year term, while the Secretary and Treasurer serve a two-year term which expires on alternate years. Directors are elected for a three-year term.

President- Elect: Robert D. Johnson, PhD, F-ABFT

Dr. Robert Johnson joined the Tarrant County Medical Examiner's Office as the Chief Toxicologist in 2011. Prior to joining Tarrant County, he worked for 10 years as a Research Chemist at the Federal Aviation Administration's Civil Aerospace Medical Institute in Oklahoma City, OK. Dr. Johnson is active in SOFT, AAFS, NSC-ADID, OSAC, and the Southwestern Association of Toxicologists (SAT), he is the current Chair of the OSAC Forensic Toxicology Subcommittee, a past president of SAT, and a past chair of the National Safety Council's Alcohol, Drugs, and Impairment Division. Within SOFT, he serves as the Treasurer on the Board of Directors, he is the past Chair of the Continuing Education Committee, the Co-Editor of ToxTalk. Outside of SOFT, he serves on the College of American Pathologists (CAP) Toxicology Committee and he serves on the editorial board for the Journal of Analytical Toxicology. He has published 64 peer-reviewed articles in his career all of which deal with some aspect of forensic toxicology.

Treasurer: Russell Lewis, PhD, F-ABFT

Dr. Russell "Rusty" Lewis is an independent forensic toxicology consultant and Associate Professor of Forensic Science at the University of Central Oklahoma's Forensic Science Institute. He previously spent 29 years with the Federal Aviation Administration's Civil Aerospace Medical Institute, where he served as Branch Manager of the Bioaeronautical Sciences Laboratory.

Dr. Lewis has more than 30 years of experience in forensic toxicology and analytical chemistry and has authored or co-authored more than 85 scientific publications, book chapters, and government reports. He is board certified in forensic toxicology by the American Board of Forensic Toxicology and serves on the Board of Directors of the Society of Forensic Toxicologists, where he also chairs the Awards Committee and is a member of the Finance committee. He additionally serves as Chair of the National Safety Council's Alcohol, Drugs, and Impairment Division.

Director: Samantha S. Tolliver, Ph.D.

Samantha S. Tolliver, Ph.D., is the Chief Toxicologist at the Washington, DC, Office of the Chief Medical Examiner and has been employed there since 2014.

Her two decades of toxicology experience include postmortem, driving under the influence, drug-facilitated crime, pre- and post-exposure, and workplace drug testing. She has testified in federal, state, and local courts within the United States.

Dr. Tolliver holds a Bachelor of Science in Chemistry from West Virginia State University. She earned both her Master of Science in Forensic Science and a Doctorate in Chemistry from Florida International University. She is certified in toxicology by the National Registry of Certified Chemists. Dr. Tolliver has made scientific presentations at the Drug & Alcohol Testing Industry Association (DATIA), the American Academy of Forensic Scientists, and the Society of Forensic Toxicologists (SOFT). Dr. Tolliver is an active member of SOFT, the American Academy of Forensic Sciences, and the Toxicology Subcommittee of the Organization of Scientific Area Committees (OSAC) and holds the rank of Adjunct Instructor of Pathology at the George Washington University School of Medicine and Health Sciences.

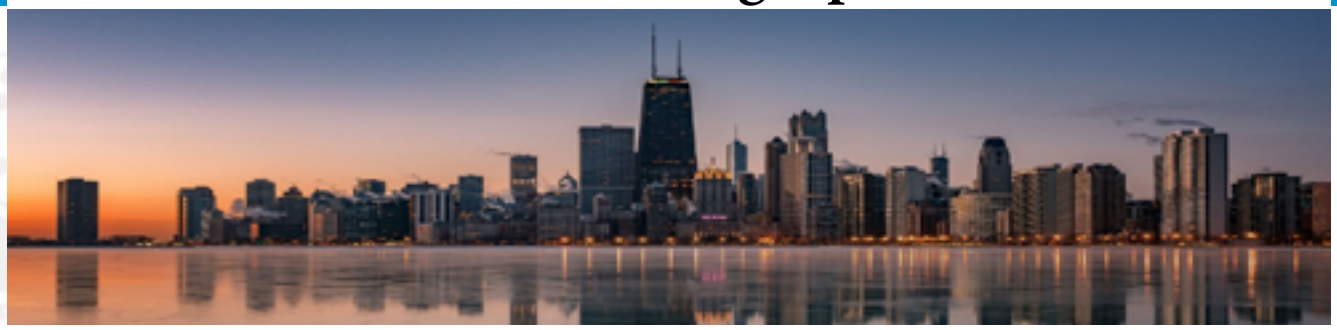
Director: Joseph Kahl, DFS, D-ABFT-FT, NRCC-TC

Joe Kahl is a Toxicology Supervisor with the Miami-Dade Medical Examiner Department, where he manages the QA/QC program and oversees the technical aspects of the Toxicology Laboratory's operations. Day to day, his work centers on analytical toxicology, instrumentation, and method development and validation, along with consensus body standards development and training. Joe earned his Bachelor of Science in Forensic Science from the Burnett Honors College at the University of Central Florida in 2011. The following year, he joined the MDME Toxicology Laboratory as a Toxicologist 1, working his way up to his current supervisory role by 2015. Along the way, he earned a Master of Science in Forensic Toxicology from the University of Florida in 2017 and, more recently, a Doctor of Forensic Sciences from Oklahoma State University in 2025.

Joe has authored and co-authored 11 peer-reviewed publications in the Journal of Analytical Toxicology and has given over 20 presentations at national and international conferences, meetings, workshops, and webinars. He is also involved in the scientific community, serving as a member of the SOFT Young Forensic Toxicologists Committee (2016-2018) and as a founding member and Chair of the SOFT Postmortem Toxicology Committee (2021-2025). Beyond SOFT, he currently sits on the AAFS Toxicology Section Awards and Scholarship Committee and is an active member of the ASB Toxicology Consensus Body and the OSAC Forensic Toxicology Subcommittee.

Joe has had the honor of receiving the SOFT Leo Dal Cortivo Award for Best Poster Presentation in 2022 and the SOFT Young Forensic Toxicologist Service Award in 2025. He is certified as a Diplomat in Forensic Toxicology with the American Board of Forensic Toxicologists and as a Toxicological Chemist with the National Registry of Certified Chemists, in addition to being licensed in the State of Florida as a Clinical Laboratory Supervisor.

Annual Meeting Updates



GREETINGS FROM THE 2026 SOFT-TIAFT ANNUAL MEETING HOSTS

We are thrilled to welcome you to Chicago, Illinois, a city known for fine dining, great music, famous architecture, and exciting sporting events. Chicago provides something for everyone. All the preparations are complete (or nearly complete) for our September joint meeting. This is the sixth joint meeting of our two scientific organizations, the 63rd meeting of TIAFT and the 54th meeting of SOFT. Both organizations have been committed to education, fellowship, scholarly pursuits, and collaboration of toxicological scientists for more than half a century. The joint meeting will present many opportunities for these activities, and we hope that you embrace it fully in the beautiful city of Chicago.

SCIENTIFIC SESSIONS AND WORKSHOPS

We're excited to report several fantastic submissions for this year's Scientific Sessions. **Suman Rana**, **Donna Coy**, **Brigette Desharnais**, and **Jennifer Schumann** have put in a tremendous amount of work to organize and review the 478 submissions from around the world.

Also, we hope you've been able to sign up for a workshop curated for all our attendees. **Craig Chatteron**, **Sue Pearring**, and **Karen Scott** were very busy collaborating with our submitters to organize a 24-session workshop program, the most in our history.

SOFT-TIAFT 2026 Scientific Schedule

Session	Title
Session 1	Analytical I: HRMS & Innovations
Session 2	Drugs & Driving I
Session 3	Analytical II: Quality & Troubleshooting
Session 4	Drugs & Driving II
Session 5	NPS I: Toxicosurveillance
Session 6	Alternative Matrices I
Session 7	NPS II: Synthetic Cannabinoids & Cathinones
Session 8	Alternative Matrices II: Hair & Nails
Session 9	Postmortem I
Session 10	New Technologies, AI & Data Science I
Session 11	Postmortem II
Session 12	New Technologies, AI & Data Science II
Session 13	Drug Facilitated Crime & Other Topics
Session 14	NPS III: Synthetic Opioids
Session 15	Clinical & Environmental
Session 16	Best Practices
Session 17	NPS IV
Session 18	Analytical III
Session 19	Lightning I: New Technologies, NPS & Analytical
Session 20	Lightning II: Drugs & Driving, Postmortem, Clinical & Environmental, & Other Topics

SOFT-TIAFT 2026 Workshops

Workshops	Title
Workshop 1	Ethics in Action: Tools for Real-World Forensic Toxicology Challenges
Workshop 2	Excel Beyond the Basics
Workshop 3	Fentanyl and Beyond: Detection, Interpretation, and Emerging Threats in the Evolving Synthetic Opioid Landscape
Workshop 4	GLP-1 Receptor Agonists: The Ever-Changing Landscape with Clinical and Forensic Implications
Workshop 5	Publishing Peer-Reviewed Manuscripts – From Journal Selection to Editorial Decision
Workshop 6	Should We Analyse Anabolic Steroids In The Forensic Context?
Workshop 7	A Structured Method for Identifying Driver Impairment: Experiences from Switzerland and Germany
Workshop 8	An Early Warning Toolkit For Toxicologists: Turning Drug Data Into Action
Workshop 9	Are You AI Curious? Come Chat(GPT) with Us!
Workshop 10	Beyond Nitazenes? Orphines and the Changing New Synthetic Opioid Landscape
Workshop 11	Beyond the Bench: Leveling Up Your Forensic Toxicology Career
Workshop 12	Robots in the Lab: Friend or Foe?
Workshop 13	A Forensic Toxicologists Guide to Pharmacology Studies
Workshop 14	Building Strong Reviewers: Practical Skills for Effective Peer Review in Forensic Toxicology
Workshop 15	From Black Boxes to Built-In: Designing and Deploying LIMS and Case Management Systems in Forensic Toxicology
Workshop 16	From the Transdermal to the Rectal Route: Specific Routes of Drug Exposure / Administration. Pharmacokinetics, Results Interpretation, Applications
Workshop 17	Global Perspectives on Oral Fluid Drug Testing in DUID Investigations
Workshop 18	How to Detect Drug Test Subversion Attempts in Urine, Hair and Oral Fluid
Workshop 19	Abused and Misused: The Importance of Prescription, Over-The-Counter, and Lesser-Discussed Drugs in Human Performance Forensic Toxicology
Workshop 20	Beyond the “Date-Rape” Label: Drug Trends in Modern Drug Facilitated Crimes
Workshop 21	Coding in Python from the Ground Up
Workshop 22	Oral Fluid Testing: Lessons and Trends from Workplace and Clinical Drug Testing
Workshop 23	Practical Mental Health Tools for Forensic Toxicologists and Toxicology Educators: Communication, Leadership, and Organizational Strategies
Workshop 24	Toxic Clues: How Metabolomics Can Transform Forensic Detection – Untargeted Metabolomics and How It Can be Used in Forensic Settings

We want to thank every single person who submitted; your excitement to share your knowledge and findings is inspiring.

WELCOME RECEPTION AND PLENARY SPEAKER

Our Welcome reception and plenary speaker will be Monday night. Our plenary speaker will be **Dr. Brandon Warrick**, "Addiction: Not a Moral Failure – Breaking the Blame Game with Neurobiology and Health Equity". Substance-related harms are often viewed through the lens of personal responsibility, yet history and science tell a more complex story. Through clinical cases, historical toxicology outbreaks, and modern addiction research, this presentation explores how neurobiology, trauma, and environmental factors shape substance use behaviors. The session examines how assumptions about addiction influence public perception and policy, why vulnerable populations experience disproportionate harms, and how a more evidence-based understanding of addiction can improve outcomes.

OFF-SITE NETWORKING EVENT: THE FIELD MUSEUM

The Field Museum houses nearly 40 million objects; however, only a fraction are on display to the public. Must-see highlights include **SUE**, the largest and most complete Tyrannosaurus rex ever discovered; Máximo the Titanosaur; Inside Ancient Egypt; Evolving Planet; The Ancient Americas; Tsavo Lions; and The Grainger Hall of Gems.

WEDNESDAY NIGHT: CHOOSE YOUR OWN ADVENTURE

An evening with no officially scheduled events, which allows you to see Chicago and choose what you would like to do. This is unique to our joint meeting, and we hope you'll take advantage of it. We are offering some add-on **excursions**, if you prefer to do something with a group of your peers. The Architecture River Cruise, the Chicago Cubs baseball game, the Crime Bus Tour, and the Prohibition tour have been curated by our local planning team. Thank you to **Brian Jones**, **Ashley Truex**, **Mike Tanner**, and **Dominique Gidron**.

FOOD AND BEVERAGE

The F&B team of **Ann Marie Gordon** and **Delisa Dalgleish** is ensuring that each meal is of the highest quality and quantity! You won't walk away hungry. They are on the front line in handling all catering, choosing meals to minimize repetition while still meeting many dietary needs. The work is tireless and time-consuming, and we can't thank them enough.

MOBILE APP

Sunday Hickerson and **Tyler Devincenzi** are ramping up the work for the App. They are compiling the information needed to ensure you can stay connected to all of the events and activities during the meeting.

AND MUCH MORE!

We also want to extend our appreciation to Frank Wallace for coordinating the Audio/Visual needs of the meeting. **Dani Mata** and **Alanna de Korompay** for organizing the Elmer Gordon Forum. **Whitney Young** and **Bronwen Davies** for collaborating and bringing two of our Young Scientist committees together for a wonderful program.

We want to extend special thanks to our entire Planning Committee, **Beth Olson**, **Abby Russo**, **Richard Coven**, **President Jeri Ropero-Miller**, and **President Simon Elliott**, whose hard work and support throughout the planning process helped bring this meeting to life. We also must thank our Exhibitors, whose support continues to be outstanding. Your hosts are genuinely excited to share this experience with you. Chicago offers a wonderful background to complement the enjoyable meeting.

Welcome to Chicago! See you soon!

- Andre Sukta and Luke Rodda
Hosts of SOFT-TIAFT 2026

Updates for the SOFT Annual Meeting App

What is happening at the 2026 Chicago SOFT/TIAFT Meeting?

Each yar the SOFT Mobile App strives to deliver the best companion experience to help you get the most out of your time at SOFT Meetings. The SOFT Mobile App Team truly listens to your feedback each year and works to incorporate ideas to deliver the most up-to-date information. The best way to find out what is happening at SOFT is to download the SOFT Mobile App which will be published ahead of the meeting.

There are so many ways to use The SOFT Mobile App to stay connected!

1. **Announcements and Notifications!**

Stay informed about any changes, reminders, winners of raffles, etc.

2. **Schedule Creation!**

Browse through the schedule and click all your favorite meetings and presentations that you want to attend - This creates a personalized schedule for you.

3. **Abstract Access!**

Read or download the abstracts from all the presentations. Additionally, posters are also available for download.

4. **Interaction with Exhibitors!**

Locate each booth and visit each exhibitor to find products or service information to help your lab be more successful. The SOFT Meeting is grateful for the sponsorship of annual meetings and activities - Use every opportunity to talk with as many as you can.

5. **Friends and Peers!**

Make your profile public (within the app only) and then find/message your friends. With such a big meeting, this may be the best way to find each other. Use this feature to introduce yourself to someone you have been wanting to meet.

6. **Social Media!**

The Mobile App has its own social media platform. This is one of the best ways to interact with other attendees on a large scale. It works much like the others, posting pictures, comments, etc. This can help others share your experiences while at the meeting. You can also use this feature to celebrate each other as well.

7. **Maps, information, links, and MORE!**

New for 2026: Access to the website with the same information as the Mobile App!

How To Download & Login (Available 2-3 weeks before the meeting):

1. Open your App Store or Google Play Store
2. Search "Society of Forensic Toxicologist"
3. Download
4. Open the app and search for "SOFT-TIAFT 2026"
5. Download the event
6. Enter your information

See you in Chicago!

Your Mobile App Team,

Sunday Hickerson & Tyler Devincenzi

Tools and Tips from The Mobile App Team

HOW TO ENABLE LIVE TRANSLATE

01 Open the Google Translate app.

02 At the bottom, tap Live translate.

03 Choose the two languages you want to translate between.

04 Choose the mode:

- **Conversation:**
  - Plays translations out loud through the phone speaker or connected headphones.
- **Text only:**
  - Shows translations on screen without audio.
- **Listening:**
  - Available only when headphones are connected.
- **Custom settings:**
  - Lets you choose text only, speaker, or headphones if connected.

05 Start speaking. The app automatically detects when one language stops and the other starts.

06 Tap any translated text to hear it again.

07 Tap Speak to pause or resume.

Meet the SOFT 2028 & 2029 Hosts!

Thank you to everyone who showed interest in hosting the SOFT 2028 and 2029 meetings! The Board received many applications for the role of host for the 2028 and 2029 annual meetings. We're proud to say that the SOFT community is filled with quality volunteers! Please join us in congratulating **Kari Midthun**, **William Johnson**, **Sara Dempsey** and **Becky Wagner** as they prepare to welcome SOFT to the Midwest!

SOFT 2028: Milwaukee, Wisconsin

Host: Kari Midthun, PhD, F-ABFT

Kari Says: I am incredibly honored and excited to have been selected as a host for SOFT Milwaukee. As a born-and-raised Badger, I'm thrilled that the 2028 meeting is being held in Wisconsin. It's a full-circle opportunity to welcome colleagues to the state that helped shape who I am and will always feel like home. I can't wait to share a little Midwestern hospitality with everyone—and, of course, some cheese curds. We can't forget those!

Host: William Johnson, BA, D-ABFT-FT

Bill Says: Serving as co-host for SOFT 2028 – Milwaukee is a great privilege. Born and raised in Wisconsin, I can confirm Milwaukee is a vibrant city filled with a wide assortment of things to do. From regional and professional sports, museums, outdoor recreation, music, dining and all things Harley, there is no shortage of fun and interesting things to do. I'm so looking forward to welcoming my SOFT family back to Milwaukee for a week of great science and collaboration, with a side of "Midwest Nice".

SOFT 2029: Omaha, Nebraska

Host: Sara Dempsey, PhD

Sara Says: I am thrilled to co-host the 2029 SOFT Annual Meeting in Omaha! I look forward to collaborating with the SOFT community to create a memorable meeting filled with outstanding scientific content alongside fun, engaging events for all attendees. I hope to see everyone in Omaha!

Host: Becky Wagner, PhD

Becky Says: I am truly honored and excited to serve as co-host alongside Sara Dempsey for the 2029 SOFT Annual Meeting in Omaha, Nebraska! I'm looking forward to the journey of planning a meeting that celebrates forensic toxicology, scientific excellence, and the strength of our community. My hope is that we create an inspiring and engaging conference that sparks new ideas, fosters meaningful collaborations, and leaves attendees with lasting connections and unforgettable experiences.

Forensic Science Caucus Letters

The Consortium of Forensic Science Organizations (CFSO) is hard at work trying create pathways to share important information about forensic science around the country. We now have three new states participating in the Forensic Science Caucus in Congress. Idaho, South Carolina, and Alabama are now members! But we can do better!

CFSO encourages you to reach out to your House of Representatives member today – either by calling or emailing – and kindly ask them to join the Forensic Science Caucus.

Here's how you can help:

Step 1: Find your Representative and their Justice staffer.

Use the following link to look up your Member of the U.S. House of Representatives and identify the staff member who covers Justice issues: http://thecfso.org/wp-content/uploads/2025/06/List-of-119-Congress-Contacts.xlsx or http://thecfso.org/wp-content/uploads/2025/06/List-of-119-Congress-Contacts.pdf

Step 2: Contact the Justice staffer directly.

Reach out by phone to ask that their office (the Member of Congress) join the House Forensic Science Caucus. Use the following template letter to guide your request: http://thecfso.org/wp-content/uploads/2025/07/Caucus-Letter.pdf

Important tip: If you call the Congressional office, the front office staff member who answers the phone will not be the right person to act on this request. You need to reach the Justice staff member specifically. You can find their name on our contact list, or ask the front office staff member to connect you with the staff member who handles Justice issues.

Visit the SOFT website for email templates!

Annual ERA & YSMA Recipients

Congratulations to our 2026 Educational Research Award and Young Scientist Meeting Award Recipients!

These distinguished awards commend students and young scientists who have demonstrated exceptional contributions to the field of forensic toxicology through their research endeavors. The recipients will have the opportunity to present their findings at the SOFT-TIAFT annual meeting in Chicago, IL. Each award comprises complimentary meeting registration along with a $2,500 stipend intended to defray travel expenses. We look forward to the enlightening presentations of the awardees at SOFT-TIAFT 2026.

Educatuional Research Award

Award Recipient: Grayce Behnke
Abstract Title: Brain:Femoral Blood Ratios of Amphetamine, Benzoylecgonine, Cocaethylene, Cocaine, Methamphetamine, and Fentanyl
Affiliation: Harris County Institute of Forensic Sciences/Oklahoma State University

Bio: Grayce Behnke is a forensic toxicologist at the Harris County Institute of Forensic Sciences. She obtained both a B.S. in Forensic Chemistry and an M.S. in Forensic Science from Marshall University. She is currently pursuing her PhD in Forensic Sciences from Oklahoma State University. Her research has focused on the brain as an alternative matrix in postmortem forensic toxicology.

Can you briefly explain what your submission was about?

This study examined brain-to-femoral blood (BR:BL) concentration ratios for amphetamine, benzoylecgonine, cocaethylene, cocaine, methamphetamine, and fentanyl in postmortem toxicology cases. Paired brain and blood samples were analyzed using liquid chromatography–tandem mass spectrometry. Cases were excluded if they involved trauma, decomposition, or therapeutic fentanyl exposure. Most analytes, especially fentanyl, methamphetamine, and amphetamine, showed BR:BL ratios greater than 1, reflecting their lipophilicity and tissue distribution. Benzoylecgonine, a polar cocaine metabolite, generally showed lower brain concentrations. Although positive correlations existed between brain and blood concentrations, substantial variability limited direct prediction of blood levels from brain tissue. Findings support brain tissue as a valuable alternative postmortem toxicology matrix.

What do you find most exciting about forensic toxicology research?

What I find most exciting about forensic toxicology research is that the field is constantly evolving. Drug trends and markets change rapidly, which continually creates new questions and opportunities for research. There is always something new to investigate, whether it involves emerging substances, postmortem interpretation, or advances in analytical methods. I also find it incredibly rewarding to contribute research that helps bridge knowledge gaps and provides information that can improve case interpretation and support the forensic science community.

Award Recipient: Kate James
Abstract Title: Identification of Δ9-THCB, Δ9-THCH, and Δ9-THCP Phase I Biomarkers and Minor Metabolites with Human Liver Microsomes
Affiliation: Virginia Commonwealth University

Bio: Kate James received her bachelor's degree in forensic chemistry from Waynesburg University and her Master of Science in forensic chemistry/drugs & toxicology from Virginia Commonwealth University. Throughout her educational career, Kate has pursued her love of research in both drug chemistry and toxicology, authoring publications and presentations focusing on 2D NMR detection of illicit analogs as well as the metabolism of cannabinoid analogs of varying alkyl sidechain length. In addition to research, she is extremely passionate about guiding and encouraging the next generation of forensic scientists and hopes to continue to do so through teaching and student mentorship. Kate continues to follow her passion by conducting research within the forensic toxicology field in an effort to provide information to her community and peers.

Can you briefly explain what your submission was about?

With the growing availability of novel THC analogs, reliable biomarkers of these compounds are needed to accurately assess exposures and inform regulatory decision-making. Therefore, this submission discusses how differences in alkyl sidechain length may affect the metabolic profiles of THC analogs, and presumptively identifies the in vitro phase I major and minor metabolites of Δ9-tetrahydrocannabutol (Δ9-THCB), Δ9-tetrahydrocannabihexol (THCH), and Δ9-tetrahydrocannabiphorol (THCP). Presumptive identification was performed using liquid chromatography-tandem mass spectrometry (LC-MS/MS) alongside multiple reaction monitoring (MRM) and precursor ion (PI) scanning methods.

What's one piece of advice you would give your younger self before starting this journey?

I would advise my younger self to fully embrace setbacks and critiques. In research, we constantly face unanticipated obstacles ranging from an untimely instrument error before a tight deadline or an especially harsh second reviewer. However, I have found that I have learned and grown more as a scientist from these challenges than my successes. I believe that by welcoming these obstacles and being more open to critiques, we can grow into more well-rounded and knowledgeable scientists.

Award Recipient: Samantha Swan
Abstract Title: A Data Processing Framework for the Untargeted Analysis of HRMS Data to Enable NPS Detection and Metabolomics in Forensic Casework Development and Validation of a Deep-Learning Screening Method for NPS in Routine Forensic Casework
Affiliation: San Francisco Office of the Chief Medical Examiner, Oklahoma State University Center for Health Sciences

Bio: Currently, I am the Forensic Toxicology Machine Learning Specialist for the Office of the Chief Medical Examiner for the City of San Francisco, focused on developing machine learning methods applicable to routine casework. I am also pursuing my doctorate in Forensic Science at Oklahoma State University, researching applications of machine learning and deep learning methods for the untargeted analysis of high-resolution mass spectrometry datasets for forensic casework.

I began coding during my Bachelor of Science

in Neurobiology, Physiology, and Behavior at the University of California, Davis through the Gremer Laboratory, studying the climate response of native California plants. I expanded further in programming and into machine learning as part of the Moxon Laboratory, a biomedical engineering laboratory studying spinal cord injury and the neurobiology of gambling behaviors. These research experiences showed me the value of data science and potential for machine learning in biological research, so I completed my Master of Science in Bioinformatics from Boston University.

Can you briefly explain what your submission was about?

My submission was about developing machine learning methods for general untargeted screening of novel psychoactive substances (NPS) that are applicable to high-resolution mass spectrometry for the Office of the Chief Medical Examiner for the City of San Francisco (OCME). Data-independent acquisition techniques are capable of acquiring all small molecules within a sample, but a targeted reference based library constrains the utility of this data. By utilizing machine learning methods to identify and elucidate NPS, I aimed to develop a method that is scalable for routine casework that can enhance routine methods and identify NPS as quickly as they arise for casework.

What do you find most exciting about forensic toxicology research?

As someone coming from a bioinformatics with a background in research, forensic toxicology has been a mindset shift. A guiding principal of my current projects is scalability and applicability to routine forensic casework for the OCME. Given that my prior experience have been many degrees removed from application, this required me to adjust my model validation methodologies, understand the quality control process in forensics and the impacts on method development, and consider how to maximize the active time of the forensic toxicologists. This has certainly been a challenge- but very exciting to begin thinking about how machine learning can be implemented on a practical level for routine forensic casework.

Young Scientist Meeting Award

Award Recipient: Lauren Eccarius

Abstract Title: Quantitation and Stability Assessment of Kratom Alkaloids in Human Blood
Affiliation: Center for Forensic Science Research and Education (CFSRE)

Bio: Lauren Eccarius earned her Bachelor of Science degree in Forensic Science with a concentration in Forensic Chemistry from the University of Nebraska - Lincoln in May 2023, graduating with Highest Distinction. In May 2025, she earned her Master of Science degree in Forensic Toxicology from Thomas Jefferson University, receiving the Jefferson College of Life Sciences Academic Achievement Award. During her collegiate career, Lauren was an FBI Honors Intern for two years and three summers, working in the Science and Technology Branch at Headquarters in Washington, DC, a field office in Omaha, Nebraska, and the Research and Support Unit of the FBI Laboratory in Quantico, Virginia, where she found her interest in forensic toxicology.

She worked as a part-time Graduate Assistant for the CFSRE's NPS Discovery program during her graduate studies at Jefferson and, as a result, joined Dr. Alex Krotulski's team as a full-time Forensic Toxicologist upon graduation. Her work centers around investigation of NPS, and she is highly involved in casework, clinical projects, analytical method development and validation, metabolism research, and other endeavors. She has been an Associate Member of SOFT since 2024 and is excited to continue progressing in her career.

Can you briefly explain what your submission was about?

My submission highlighted the analytical and interpretive challenges associated with Kratom alkaloids in forensic toxicology testing. It included the development and validation of a quantitative assay for mitragynine, 7-hydroxy mitragynine, mitragynine pseudoindoxyl, and dihydro-7-hydroxy mitragynine (also known as MGM-15) via LC-QTOF-MS, results from a stability study conducted over 12-16 weeks, and quantitative data generated from the analysis of over 200 authentic cases. Overdoses and intoxication events from these alkaloids are on the rise yet underreported.

What advice would you give to other students or young scientists interested in forensic toxicology?

I would advise students to pursue graduate school, internships, and other opportunities that can set them up for a successful career. Through those experiences you not only receive the necessary training and education to become a toxicologist, but you are able to learn firsthand from experts in the field. I am very lucky to have been surrounded by outstanding mentors who have inspired and guided me at the start of my career in forensic toxicology, including but not limited to Dr. Marc LeBeau, Dr. Barry Logan, Dr. Alex Krotulski, and Sara Walton.

Regional Toxicology Liaison (RTL) Program

Amy Miles, BS, RTL Midwest Region

The Regional Toxicology Liaison (RTL) Program continued to expand its impact during the second quarter of 2026, providing support to forensic toxicology laboratories, advancing impaired-driving initiatives, and strengthening partnerships among toxicologists, prosecutors, judges, law enforcement, and traffic safety professionals across the United States.

A major focus of the quarter was testimony training and workforce development. RTLs delivered specialized training programs in Oklahoma, New England, North Dakota, South Dakota, Colorado, and Nevada, helping forensic toxicologists strengthen courtroom testimony skills, improve communication of scientific findings, and enhance collaboration with prosecutors and judicial partners. Training topics included toxicology interpretation, oral fluid testing, emerging drug trends, forensic standards, and expert witness preparation.

The RTLs also provided ongoing technical assistance and mentorship to publicly funded laboratories. Support included consultation on oral fluid testing implementation, cannabis-impaired driving issues, laboratory operations, funding challenges, toxicology data reporting, and expert testimony. Regular communication with laboratories across all regions helped identify emerging needs and connect laboratories with resources and professional networks.

One of the quarter's most significant efforts supported the Washington State Patrol Toxicology Laboratory during a high-profile legal challenge over THC testing methodologies. RTLs Chris Heartsill and Matthew Slawson worked closely with prosecutors and laboratory personnel in preparation for a June en banc/Frye hearing, providing scientific expertise that supported accepted forensic toxicology practices.

Advancing toxicology data integration remained another priority. RTLs collaborated with State Highway Safety Offices, NHTSA regional partners, FARS stakeholders, and impaired-driving task forces to improve the collection, reporting, and use of toxicology data. These efforts are helping ensure that forensic toxicology remains an integral component of traffic safety planning and impaired-driving prevention initiatives.

The RTL Program also continued development of a national leadership training initiative funded by Responsibility.org. The planned program will provide forensic toxicologists with leadership and management training through a multi-module curriculum designed to strengthen future laboratory leadership. Workforce wellness and resilience remained key themes as RTLs delivered presentations and participated in initiatives focused on supporting the health and sustainability of the forensic science workforce.

Beyond regional activities, RTLs maintained active leadership roles in national organizations, including SOFT, OSAC, ASB, and the National Safety Council. Contributions to standards development, accreditation activities, educational programming, publications, and professional service helped advance best practices and strengthen the forensic toxicology profession nationwide.

Overall, the second quarter of 2026 demonstrated the RTL Program's continued commitment to supporting forensic laboratories, promoting scientific excellence, enhancing impaired-driving investigations, and building stronger connections between toxicology and the broader traffic safety and criminal justice communities.

RTL REGIONAL TOXICOLOGY LIAISONS

CFSO Update

SOFT CFSO Liaison

Marc LeBeau, Ph.D. F-ABFT

In the first half of 2026, the Consortium of Forensic Science Organizations (CFSO) continued its robust advocacy efforts. Recently, their focus shifted towards future budget planning, pursuing new multi-billion dollar grants, and addressing systemic gaps in toxicology data reporting.

As a reminder, SOFT is among the six member organizations of the CFSO. The consortium was created to allow members to speak with a unified voice on shared issues, strengthening our ability to shape national public policy and advocate for more federal funding for public crime labs and medical examiner/coroner offices.

The BIDEN Program Grant Opportunity
A key milestone for our community is the enactment of the One Big Beautiful Bill Act (Public Law 119-21), which creates the $3 billion Bridging Immigration-Related Deficits Experienced Nationwide ("BIDEN") Program. Over the past year, CFSO collaborated closely with Congress and the Department of Justice to ensure that forensic science practitioners are explicitly eligible to participate.

The initial Notice of Funding Opportunity (NOFO) was issued in June and is particularly pertinent for toxicology laboratories seeking to address resource shortages. Eligible categories include:

- Personnel: Funds may be used to hire, retain, and train essential forensic and analytical lab staff.
- Technology & Instrumentation: Funds support long-term implementation, maintenance, and subscriptions for advanced equipment, making this ideal for laboratories upgrading or maintaining high-end instrumentation like LC-MS/MS or QTOF systems to combat emerging drug trends.

FY2028 Appropriations Priorities & GAO Gaps
The CFSO Board is currently finalizing its budget priorities for fiscal year 2028, ahead of the executive branch's fall submissions to the Office of Management and Budget (OMB). For the toxicology and medicolegal death investigation communities, advocacy efforts will mainly concentrate on:

- **HHS Surveillance Funding:** Advocating for substantial and targeted financial support for the Centers for Disease Control and Prevention's (CDC) initiatives, specifically the State Unintentional Drug Overdose Reporting System (SUDORS) and Overdose Data to Action (OD2A). These programs depend entirely on comprehensive postmortem toxicological data to accurately monitor the overdose epidemic.
- **Drug Reporting Gaps:** Incorporating the findings of recent Government Accountability Office (GAO) reports to advocate for dedicated funding that addresses critical communication deficiencies between law enforcement agencies, forensic laboratories, and medical examiners concerning emerging substances.

National Forensic Science Week 2026
National Forensic Science Week is set for September 20–26, 2026. The CFSO Board is creating a toolkit for member organizations, which will be distributed soon. This toolkit focuses on combating the political "CSI Effect" by offering labs ready-to-use timelines, templates, and talking points for hosting visits with congressional representatives. Members are highly encouraged to use this framework to invite lawmakers into their facilities and directly inform them about the actual, rigorous details of forensic toxicology operations.

Professional Mentoring Program

The Professional Mentoring Program forges ahead in 2026 with a focus on connections and self-discovery. On July 9th, the mentoring program hosted a webinar focused on feedback. Our program participants were invited to discover the power behind their most deeply-rooted professional behaviors. A recap of our webinar can be found below. Additionally, the mentoring program is already looking ahead to this year's SOFT-TIAFT conference and is prepared to be involved in a big way! This year, many of our events will be open to all SOFT members. We're offering everyone the rare treat of seeing just how the PMP is impacting the professional careers of our participants. The details of our events are below.

Understanding Yourself and Others - A Webinar Recap

Career growth is tremendously influenced by the utilization and development of one's greatest talents. Honing natural skills and embracing personality traits turns a talent into a true strength. Part of the mentoring program webinar encouraged participants to complete the CliftonStrengths self-evaluation survey centered around discerning their top strengths. The goal of this webinar was to introduce ways to identify our unique strengths and then discuss how they may be effectively applied along our journey of personal and professional growth.

One crucial but common occurrence in our routine work lives is feedback. Feedback plays an ever-present and critical role in our daily environments. Some types of feedback, like constructive or critical evaluations, may be especially difficult or even painful to process. However, we have found that the way in which feedback is given or received can have a greater impact than the actual critiques or advice itself. This webinar explored how we can each use our own strengths to facilitate better communication with our peers in the process of both giving and receiving different types of feedback.

Spinning out of our personal experiences, the mentoring committee curated an expansive list of questions to encourage participants to engage and openly discuss their thoughts on several topics pertaining to feedback. Through two 15-minute breakout sessions, our small groups explored how to establish professional boundaries, ways to manage misinterpretation of peer communications, how psychological and emotional behaviors impact our abilities to process feedback, and we even discussed how to develop essential skills for personal and professional growth. Our second breakout session placed our participants into a pair of scenarios which required them to dissect a volatile work-related situation and describe ways the interaction could have been improved to produce a more positive, mutually beneficial outcome. The conversations shared during these breakout sessions were truly the highlight of our webinar. The exchange of honest opinions and ideas provided a wonderful environment for our participants to learn more about themselves and how they can apply even the most basic strengths to promote better connectivity and communication in the workplace.

Several of the questions from our breakout sessions produced incredibly meaningful responses. The mentoring committee wanted to share some of these questions to the greater SOFT community. These could be used to help drive teambuilding exercises and encourage development of essential mentoring skills. Please find a brief list of these impactful questions below:

1. What specific factors make feedback from a supervisor feel constructive versus critical?
2. Why is it often harder to give honest feedback to a close friend than a coworker?
3. How do you separate your personal self-worth from your professional performance?
4. How can someone practice active listening when they disagree with what is being said?
5. How can a team build a culture where giving peer-to-peer feedback feels safe?
6. How do you balance being empathetic while still holding someone accountable?

Looking Forward to SOFT/TIAFT 2026 in Chicago!

PMP Workshop (WS 11) - Beyond the Bench: **Leveling Up Your Forensic Toxicology Career - Sunday, September 20, 2026 from 1:30-5:30pm**

Discover where a career in forensic toxicology can take you. Join us to hear from some of the most distinguished figures in our industry to receive practical advice on interviewing, leadership, career transitions, mentoring, and networking! This engaging, career-focused workshop is designed for toxicologists at every stage of their professional journey.

PMP Poster Presentation - The Society of Forensic Toxicologists (SOFT) Professional Mentoring Program Year in Review: Assessment of 2025 Mentee/Mentor Outcomes and Trends - Time and Date TBD

Over the last few years, participation in the mentorship program has steadily grown. What's it all about? How do we engage with SOFT members? How do we measure our success? Through our poster presentation you will learn how the SOFT Professional Mentoring Program fosters career development and professional success through mentorship, leadership training, technical growth, and networking, all based on participant feedback from the 2025 program. Have you been curious about participating in the program? This is your chance to see how impactful it has been for individuals just like you.


Get ready to do the Charleston!
FEATHERS AND FEDORAS: THE PRESIDENTS' BANQUET AND GALA
Join us for the President's Banquet in the International Ballroom.
September 24 · 7 p.m
Dress Code:
Wear your best suit, a fringed dress, cap, or your finest feathers!

Young Forensic Scientist

YFT Committee Update

Hello Fellow SOFT Members!

We are only a few weeks away from the joint SOFT-TIAFT meeting in Chicago, IL! The Young Forensic Toxicologists (YFT) Committee is hard at work finalizing details for our programs. If you have any questions, please reach out to us at YFT@soft-tox.org or come find us in person at the annual meeting (we will be wearing YFT pins on our badges). We look forward to seeing everyone!

YFT/YSC Symposium and Professional Development Fair

Join us on Saturday, September 19th from 5:30-10:00 PM for the annual YFT/YSC Symposium and Professional Development Fair! Attendees are limited to forensic toxicologists 41 years of age or under. The night begins with a social hour for professional networking with peers while drinks, heavy appetizers, and desserts are served. Attendees are welcome to check out the Professional Development Fair during this hour where they can network with representatives from educational programs, forensic laboratories, and professional accreditation and certification agencies to discuss potential career opportunities (e.g., jobs, internships). **If you are interested in promoting your program as a PDF representative, please complete the** Reservation Form **by Friday, August 21st!**

The symposium will continue with an icebreaker with the SOFT and TIAFT Board of Directors, an update from last year's Leo Dal Cortivo poster award recipient, Katya Beltran, presentations focused on leadership as a young scientist including one from Kayla Neuman, followed by one of last year's winners of the TIAFT Young Scientist Award. The evening will conclude with a panel discussing Drug Early Warning Systems. If you have any questions you would like answered by our panel, we invite you to please ask them in-person or submit them during the symposium through the SOFT app!

- Jennifer Schumann – EDNAV EWS
- Hendrik Green – Activity Assays and Toxicity of NPS in EWS
- UNODC – UNODC Drug Early Warning Advisory
- Brianna Stang – NPS Discovery Drug EWS

Leo Dal Cortivo Award

Abstract acceptance emails have been sent out! **Thank you to those who have submitted applications by the Friday, July 31st deadline.** Winners will receive a cash prize of $1000 and complimentary meeting registration for a future SOFT meeting. Further information about eligibility criteria and a list of previous winners can be found here. The award winners will be announced during the SOFT Business Meeting on Thursday, September 24th. We are excited to see all the new presentations this year!

YFT Workshop

YFT is excited to host the workshop, **Abused and Misused: The Importance of Prescription, Over-The-Counter, and Lesser-Discussed Drugs in Human Performance Forensic Toxicology**. Join us for this half-day workshop held on Monday, September 21st from 1:30-5:30PM. Discussion topics include the global significance of antihistamines, methorphan, SSRIs, ketamine, and zolpidem to human performance forensic toxicology. We hope to see you there!

YFT/YSC Night Out

Join us for a night of networking with other young forensic toxicologists in a more casual setting off-site! Food and beverages will be available for purchase. Location, date, and more details to come.

Employment Board

Stop by our job board located by the front registration desk for new employment and internship opportunities! Bring copies of any open forensic toxicologist positions at your organization or your resume/CV to put on the employment board.

SOFT-DFC Snapshot –Tetrahydrozoline

By Elizabeth Fisher and Leanne Hazard, M.S., F-ABC for the SOFT DFC Committee

SOFT-DFC Snapshots are short reports of critical information about the more common drugs associated with drug-facilitated crimes (DFC). They do not have complete literature reviews about the drug or drug class.One key aspect istheir focusonthe ability to detect adrug aftera single-dose administration, as is often the situation in DFC investigations. As such, these summaries also highlight instances in which availabledataislimited,hopingthiswillencouragefurtherresearchstudies.Finally,SOFT-DFCSnapshots point to the use of these drugs in actual DFC cases, as cited in the medical and open literature.

Tetrahydrozolineisanimidazolederivativedrugthatactsasanalpha-adrenergic agonist.Itwas identifiedin1949,wentthroughclinicaltrialsinthe1950's,waspatentedin1954,andbecameavailable for medical use in 1959 [1,2]. Tetrahydrozoline is used in many ophthalmic and nasal preparations for its vasoconstrictive and decongestant properties [3]. These properties make it ideal to treat congestion, conjunctivitis,dryeye,andeyerednesssincethedrugisrapidlyabsorbedatthesiteofapplicationwhen usedtopically[2,3]. Althoughthereisaprescriptionnasal sprayavailableunderthetradenameTyzine®, it is not frequently used anymore [1]. The majority of tetrahydrozoline is found in over-the-counter eye drop preparations.

When used as directed topically in the nasal passages and eyes, tetrahydrozoline interacts with alpha-1 adrenergicreceptors[3].Sideeffectsaretypicallyminimal,andcentralnervoussystem(CNS) effectsmay be negligible; however, when ingested orally, tetrahydrozoline can interact with alpha-2 adrenergic receptors, leading to more noticeable and potentially hazardous CNS effects such as miosis, dry mouth, hypotension, bradycardia, drowsiness, hyporeflexia, hypothermia, and respiratory depression [3].

Tetrahydrozoline is widely available as an over-the-counter licit drug, making it easily accessible by people who may want to use it for other illicit or criminal purposes. It is colorless, odorless, tasteless, and often comes in small containers or bottles, making it attractive for criminal perpetrators. These propertieshavebeenexploitedbycriminalsindrug-facilitatedcrimes(DFC)throughouttheworld[1].Its' quick onset of action, ease of availability, and ability to cause central nervous system depression when ingested orally make it an enticing drug for use in DFCs.

Drug Class	Alpha-adrenergicagonist
Generic Name	Tetrahydrozoline
Brand Names	Azoline, Murine, Optigene, Vine®[4], Tyzine®[3] Geneye Extra, Geneyes, Opti-Clear, Clarine, Altazine[5]
DosageForms	Ophthalmic Solution: 0.05%[3,6], NasalSolution: 0.05% & 0.1%, NasalSpray: 0.1% Ophthalmic 0.05% Solution: 1 to 2 drops up to 4 times per day for people over 6 [5]. Nasal Solutions: 0.1%: 2 to 4 drops every 4 to 8 hours for people over 18[7], 0.05%: 2 to3 drops every 4 to 6 hours for children between 2 to 6 years old [7]. Nasal 0.1% Spray: 3 to 4 squirts every 4 to 8 hours for people over 6[7]

FDA Approval

Tetrahydrozoline is approved under Title 21 as an over-the-counter ophthalmic drug in a form suitable for topical administration [8]

Tetrahydrozoline is one of our approved ophthal-

mic vasoconstrictors. Its' approved concentrations are 0.01 to 0.05 percent. No warnings regarding oral consumption are required[8].

Pharmacological Effects:

Tetrahydrozoline exerts its' effects due to its' action on alpha-adrenergic receptors. It can act on both alpha-1 and alpha-2 adren-ergic receptors. It has a very quick onset of action ranging from five to ten minutes with a duration of action of four to eight hours [1].

The pharmacological effects and potential toxicity can differ depending on whether it is used topically as directed or ingested [3] When used as a topical application, it exerts its effects at the site of administration [3]. The eyes and nose have alpha-1 adrenergic receptors that allow it to produce vasoconstriction and decongestion with very few other CNS or systemic effects [3]. It is rapidly absorbed after either topical or oral ingestion [2]. If it is ingested, tetrahydrozoline is rapidly distributed into the CNS and can interact with alpha-2 adrenergic receptors, potentially causing respiratory depression, hypotension, bradycardia, dry mouth, hyporeflexia,hypotonia,miosis,andhypothermia[2,3,9]. Oralingestionof the drug can cause profound CNS depression [3,9]. Case reports have suggested that adverse cardiovascular effects after ingestion may last a day or even longer [9,10].

Metabolism/Elimination

Very limited information is available regarding metabolism and elimination of tetrahydrozoline. Research on half-life is also very limited, with some studies reporting a serum half-life of approximately six hours [11].

SingleDoseStudies

Limited dosing studies are available for tetrahydrozoline. Dosing studies that have been conducted looked at serum and urine concentrations after receiving ocular doses. One study administered two drops of tetrahydrozoline ocularly to 10 adults at four-hour intervals for twelve hours [11]. Serum and urine were collected at various intervals for up to 24 hours after the administration [11]. This study found that tetrahydrozoline wasabletobedetectedinbothserumandurineforup to 12 hours after the last dose given when used ocularly as directed by the manufacturer. At 13 hours post-dosing, serum concentrations were detectable in all 10 samples and ranged from 0.068 to 0.360 ng/mL.

At 24 hours post-dosing, urine concentrations ranged from 13 to 210 ng/mL while some serum concentrations were below the lower detectable limit. Research suggests that laboratory values above these levels in urine and serum indicate a non-medicinal use such as intentional poisoning, murder, suicide, or drug-facilitated sexual assault.

Non-DFC case studies can provide more information regarding metabolism, blood and/or urine levels, and clinical manifestations. A 17-year-old woman accidently ingested 10-15 mL. Twenty-five minutes post-ingestion, she exhibited lethargy, slow speech, and ataxia. She continued to exhibit drowsiness 36 hours post-ingestion [9]. In a second case study, a two-year-old male was brought to the emergency room three hours after ingesting 2-3 mL of Visine®. He was lethargic and unresponsive except to deep pain stimulation. Additionally, he had low oxygen saturation, low blood pressure, low heart rate, and pinpoint pupils [12]. In another case study, a 76-year-old man was admitted 24 hours after consuming eight bottles (120 mL) of Visine® mixed withwine [10]. He called emergency services after a period of unconsciousness. He presented with irregular heartbeat and low heart rate. An electrocardiogram performed later showed a complete atrioventricular block. The urine drug screen detected tetrahydrozoline[10]. Additionally, a case involving an 18-month-old child who had consumed milk laced with Visine® showed similar manifestations to thosepreviouslydiscussed.Hedisplayedlethargy,pinpointpupils,and atrioventricular block. His urine concentration was 2430 ng/mL and serum concentration was 21.56 ng/mL. The milk contained a concentration of 2995.4 ng/mL [13].

DFC Cases

Tetrahydrozoline has been reported in DFC cases worldwide. When implicated in DFC cases, it is typically ingested orally. One DFC case involved a 16-year-old female [3]. She sought medical treatment approximately seven hours post-incident. In this case, there were witnesses that saw a male placing liquid from a Visine® bottle into her drink at a party. She vomited and had periods of intermittent consciousness throughout the evening.

Her vital signs were normal at the emergency room with no signs of distress. She was also awake and oriented at that time. Her urine ethanol concentration was 0.15g/dL and her tetrahydrozoline concentration was 1481 ng/mL [3].

Another reported DFC case involved a 19-year-old female presenting to the emergency room approximately 23 hours post-assault[3]. The victim and a male friend were drinking alcohol at a residence. After one drink the victim felt "buzzed". She had a second drink and began to feel "weird" and "grayout" She also had periods of intermittent consciousness, vomited, and felt dizzy [3]. Her urine was negative for ethanol, and a routine drug screen didn't detect any analytes. Upon further investigation, tetrahydrozoline was reported in her urine at a concentration of 108ng/mL, using the average of three extractions [3].

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Human Factors in Forensic Toxicology – Part 2: Defined Testing Schemes

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Introduction

From Human Factors in Forensic Toxicology – Part 1:

> *You may have heard the terms "human factors" or "cognitive bias", but are not quite sure what they actually mean, or how they might be relevant to you as a toxicologist – after all, we use analytical instrumentation and apply explicit acceptance criteria to do our work. This article is the first in a series that aims to demystify the topic of human factors and explain how they apply specifically to our field. It is understood that there is a diverse range of needs among laboratories – varying caseloads, legislative requirements, levels of funding and thus, often differing protocols, procedures and practices. The big picture topic of human factors, however, is universal. We hope these articles will be a useful initial training resource for toxicologists looking to better understand this topic and improve lab processes.*

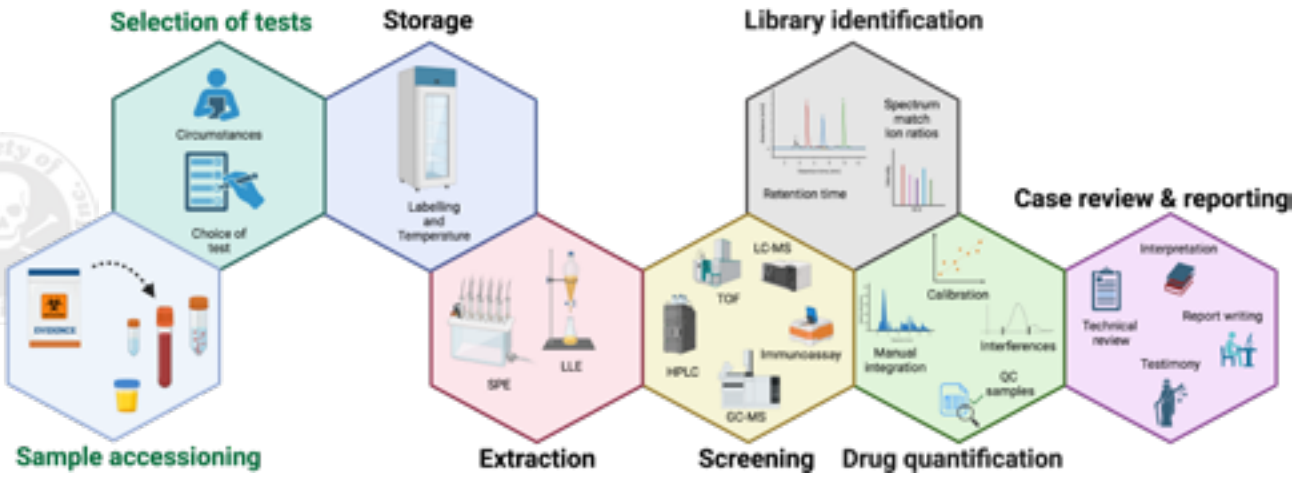
This article is the second in our series discussing human factors in forensic toxicology. The first was a short introduction, including some definitions of human factors, whereas this article delves into two examples of how and when human factors impact our work. We also discuss defined testing schemes, an effective strategy to mitigate these human factors that may be familiar to some already. If you have not done so already, we recommend that you review Part 1 before continuing with Part 2.[1]

Toxicology case workflow

Figure 1 depicts the general workflow of a forensic toxicology case. The two areas we will focus on in this installment are sample accessioning and selection of tests.

Figure 1: Typical workflow of a toxicology case with two key decision points highlighted in green.2 Created with BioRender

Sample accessioning



During sample accessioning, active decisions are made for every case and each sample within the case as to whether they will be accepted for analysis.

Protocols with guidance such as "only accept suitable samples" or "test the most appropriate sample" leave the decision of what gets tested open to individual interpretation and situational variability. There are indeed various factors to consider, for example:[3]

- Does the sample have an intact chain of custody?
- Is it sealed?
- Are all details present and do they match the paperwork?
- How much sample is available?
- Is the most appropriate sample defined anywhere for this case type?
- Is the sample preserved? If so, how?

As you read this, you may be forming views on how each factor plays into the decision to accept or reject a sample, but would your views be the same as someone trained elsewhere? What about as someone with more or less experience than you? Can you think of more than one plausible and realistic view? Human factors concerns arise when two competent toxicologists make different decisions under the same circumstances because the decision relies on individual interpretation rather than standardized criteria. Protocol language that lacks specificity opens the door to greater variability and to undocumented influence of particular considerations. In this example, the factors described above can be objectively triaged and consistently evaluated by any toxicologist. A clear and detailed set of criteria, typically delineated in standard operating procedures (SOPs), enables the process of sample accessioning to be more consistent and protected (though unlikely to be fully immune) from individual variation. This is not to say that training and experience are moot when detailed SOPs are in place, rather that a clear and consistently applied SOP is a structural solution to mitigate human factors at the point of sample accessioning.[4]

Selection of tests

Once a sample has been accepted for analysis there will be some element of test selection, which often depends on the case type, requestor requirements, etc. Similar to sample accessioning, if a protocol doesn't exist or lacks specificity, test selection is left to an individual's judgement. Further, when tests are selected after review of the case circumstances,[3] those circumstances can result in subjective, inconsistent, or biased decision making. If personal information about those involved, such as age, ethnicity, or location, is considered (consciously or not) during test selection, past experiences, assumptions, or stereotypes may influence which tests are performed (either individually or systematically). Similarly, knowing case details can create expectations about what substances are likely to be present, leading the decision-maker to preferentially seek information that aligns with those expectations. This gives rise to what's called expected frequency bias. The most common example of this is the use of 'rules of thumb' to make testing decisions, i.e., guidance such as "if the deceased is over 70, don't test for illicit drugs".[6] Where testing is not performed because of the 'rule', a negative report may be wholly incorrect. Beyond the individual case, such negative reports will accumulate over time for individuals over 70, with toxicologists concluding that "those over 70 do not use illicit drugs" – this is known as circular reasoning.[7] Because the testing was never done, the absence of illicit drugs may be due to the testing strategy rather than the prevalence of drug use. Compounded over time and in various laboratories, this can lead to false conclusions about drug use prevalence in a group compared to the general population.

A solution: Defined testing schemes

In a defined testing scheme, forensic toxicology expertise is applied upfront to design a standard set of tests. One aim of this process is to limit individual variation, as we discussed with sample accessioning. Including a broad screening technique in the scheme, such as an LC-MS screen that can identify 100+ drugs in one analysis, further reduces the need for multiple case-by-case decisions.[8] The inclusion of lesser-seen drugs in broad methods can standardize testing protocols and disrupt circular reasoning. The positive effects of defined testing schemes have been demonstrated when compounds previously tested only on suspicion were added to routine panels. For example, when

GHB was included in routine postmortem testing rather than on a case-by-case basis, it was found to be more prevalent and to have played a significant role in deaths even when GHB use was not suspected.[9] Not only is this more efficient, it increases consistency and mitigates expected frequency bias by removing the influence of case circumstances as much as possible.

Using a defined testing scheme increases the defensibility of the laboratory's work. It does not minimize the role of toxicologists' expertise, but to the extent possible, employs the expertise earlier, in the design of the testing scheme. Schemes are understandably not purely scientific; they must take other factors into account such as customer contracts, legal obligations, fiscal constraints, etc. We also recognize that there will inevitably be situations where individual decisions are needed, e.g., for tests such as volatiles, carboxyhaemoglobin, or in cases of low sample volume where prioritization is required. Where individual decisions are needed, they need to be justified, recorded, signed and dated to make sure the decision-maker and the decision-contributors can be identified later in the process.[10,11] In addition to making the decision process transparent, the process of justifying and owning any individual decisions promotes self-monitoring, forces consideration of alternatives, and prompts reflection – this strategy is known as cognitive forcing.[12]

Conclusion

A defined testing scheme does not need to be rigid, inflexible and inoperable – more than one scheme can be developed and used in the same laboratory, e.g., a scheme for DUI cases, another for drug-facilitated sexual assault cases, etc. There is no 'one size fits all' to defined testing schemes, as each lab has its unique set of constraints to work within, be those analytical, financial or legal (which may, themselves, introduce selection bias[13]). However, use of a specific sample accessioning SOP alongside a defined testing scheme will not only make your lab more efficient, it will increase the transparency of your decisions and reduce the potential for cognitive bias or other negative impacts of human factors.

As we continue this series, you may find that you or your laboratory already do some of these things. If that is the case, we hope that you still find these articles informative – bringing you from "yup, I do this in practice" to "oh, now I also understand the specific human factors at play and how they are mitigated by certain protocols or controls", equipping you when asked about human factors in court. This increased understanding may also come with some unease as you may be realizing that there are some instances of human factors that are not easily mitigated. For example, in **Part 1**, attention was discussed; just having a detailed SOP does not ensure that it is referenced during task performance (attention paid to the protocol) nor does it ensure that it is followed step-by-step, without rushing or multitasking (attention paid to the task). Increasing awareness, deepening understanding and mitigating the negative impacts of human factors where we can, are all objectives of this series – stay tuned for more. We would love to hear from those within the field who have questions or comments on this topic – join the conversation anonymously here.

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Cyclorphine and N-Propionitrile Chlorphine: Two Names, Same Drug, More Problems

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The emergence of N-propionitrile chlorphine, also known as cyclorphine, occurred amid increasing regulatory pressure on fentanyl derivatives and nitazene analogues and has been emblematic of the ongoing shift of clandestine manufacturers toward alternative synthetic opioid scaffolds to evade scheduling efforts. The 'orphine' opioid subclass was an early contender as a replacement for the nitazene (benzimidazoles) opioid subclass, driven initially by the emergence of brorphine in 2020, though its prevalence declined after compound-specific scheduling efforts. Although N-propionitrile chlorphine was described in scientific literature prior to its appearance in forensic casework, evidence suggests that it became a drug of concern in late 2025 with reports from seized drug and toxicology samples obtained from medicolegal investigations. An official public alert was issued in January 2026 (1), followed by a series of subsequent public health advisories as confirmed identifications accumulated across multiple states. N-Propionitrile chlorphine is now at the top of SOFT's novel psychoactive substance (NPS) scope recommendations for novel opioids (2).

Brorphine and N-propionitrile chlorphine belong to the benzimidazolone subclass of novel opioids, colloquially referred to as 'orphines'. The original substituted N-benzyl piperidine 4-benzimidazolone scaffolding was investigated by pharmaceutical companies in the 1960s and 1970s as alternatives to morphine, beginning with substances like bezitramide and R6890 (now called spirochlorphine). The orphines were studied for their mu opioid receptor activity and were determined to act as high affinity agonists – in vitro pharmacology data has estimated N-propionitrile chlorphine specifically to be approximately 10 times more potent than fentanyl (3). Characteristic of evolution and diversification in the NPS market, additional orphine-type drugs have been reported with small modifications in chemical moieties; derivatives chlorphine, 5,6-dichloro desmethylchlorphine (SR-17018), and 5-chloro desmethylchlorphine have all been reported to early warning systems, among others. The rapid diversification of this subclass further complicates surveillance efforts and reporting mechanisms as laboratories struggle to keep up with the swiftly expanding scope of testing, with emergence sometimes outpacing the availability of reference material required for laboratory testing development.

N-Propionitrile chlorphine demonstrates the difficulty in standardizing nomenclature. The name "N-propionitrile chlorphine" was established right after its appearance on online drug gray market sites as a more scientific name that gives some context regarding structural components; however, "cyclorphine" (the name given by clandestine drug manufactures) has been more readily adopted in media. Two names leads to confusion and means one must have the expertise to understand that referring by either name is referring to the same drug (or molecule). In addition, assigned names during pharmaceutical investigation (e.g., R6890, SR-17018) do not provide any indication of structural classification, further prompting individual understanding and memorization of chemical names, street names, and other informal names bestowed by media and investigators.

Through June 2026, N-propionitrile chlorphine has been reported in biological samples from nearly 150 deaths originating from nearly 20 U.S. states, Canada, and the United Kingdom by the Center for Forensic Science Research & Education. In the Great Lakes area, N-propionitrile chlorphine has been detected alongside several nitazenes in casework, suggesting a very diverse and potent regional drug supply. In contrast, occurrence of the drug as the sole opioid detected has been documented in states such as Tennessee and Texas, where a significant number of N-propionitrile chlorphine positive cases continues to rise. Many cases also report fentanyl, illustrating that the illicit opioid supply continues to be diverse and polysubstance in nature. A significant concern

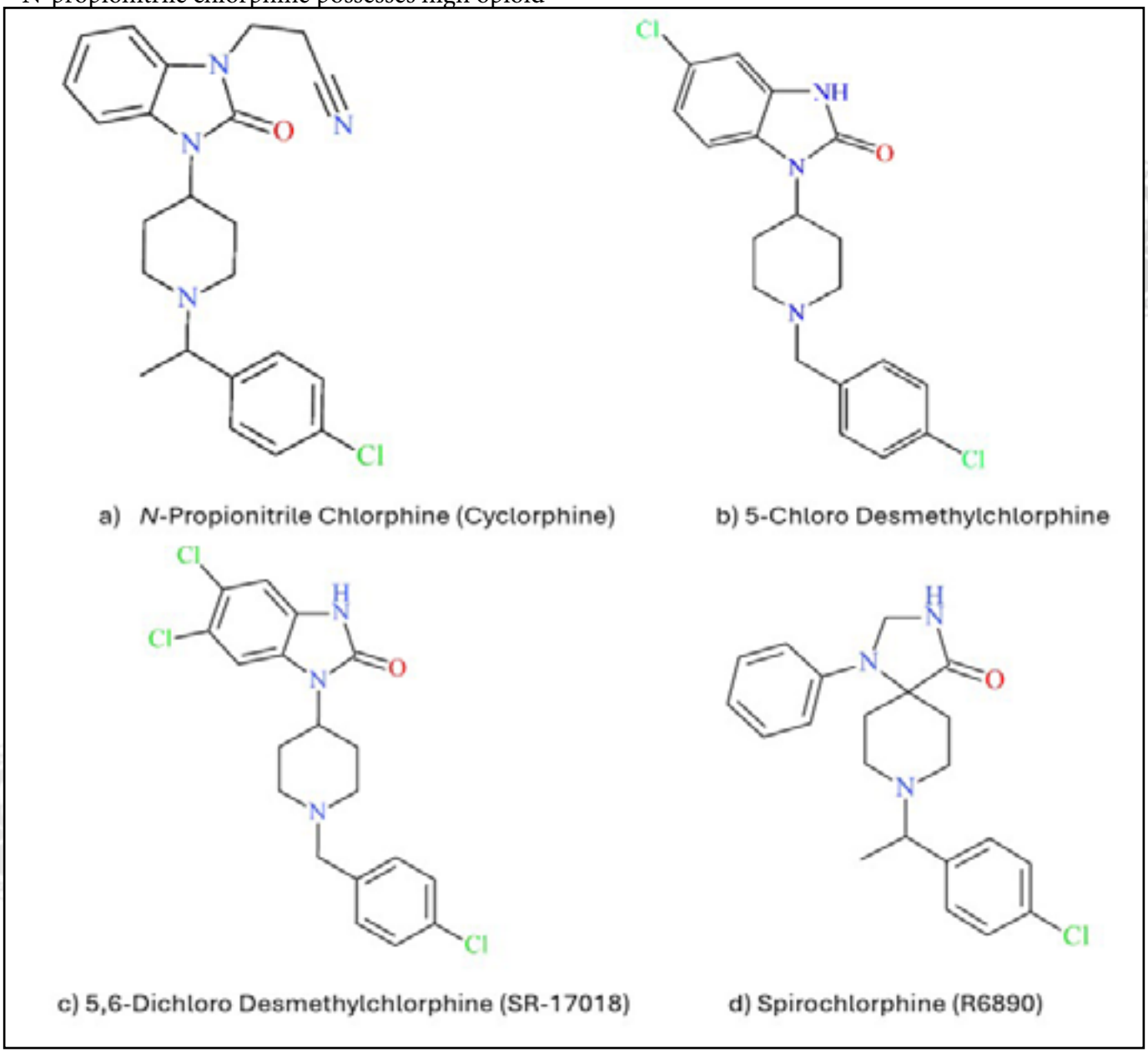
is that the diversification of the illicit opioid market leans towards potent synthetic opioids; with an increasing number of highly potent opioids, the additive effect could result in lethal respiratory depression while each contributing compound could technically fall below reporting limits in toxicological assays.

N-Propionitrile chlorphine is an emerging synthetic opioid that has reached the illicit drug supply, likely as a result of Chinese control actions around nitazenes announced in July 2025 (4). N-Propionitrile chlorphine is being implicated and confirmed in non-fatal and fatal overdoses, but the true numbers are difficult to determine due to variability in surveillance techniques since 'orphines' are not reliably detected by conventional opioid immunoassays or standard toxicological screening methods (5). Further, although N-propionitrile chlorphine possesses high opioid potency and has been implicated in fatal intoxications, many reported deaths involve co-reported substances, complicating interpretation of its independent contribution to toxicity. This is just the latest evolution in a rapidly changing landscape of NPS and diversification in novel opioids. Continued surveillance through forensic laboratories, early warning systems, and comprehensive toxicological testing will be essential for monitoring the spread, prevalence, and public health impact of this emerging synthetic opioid.

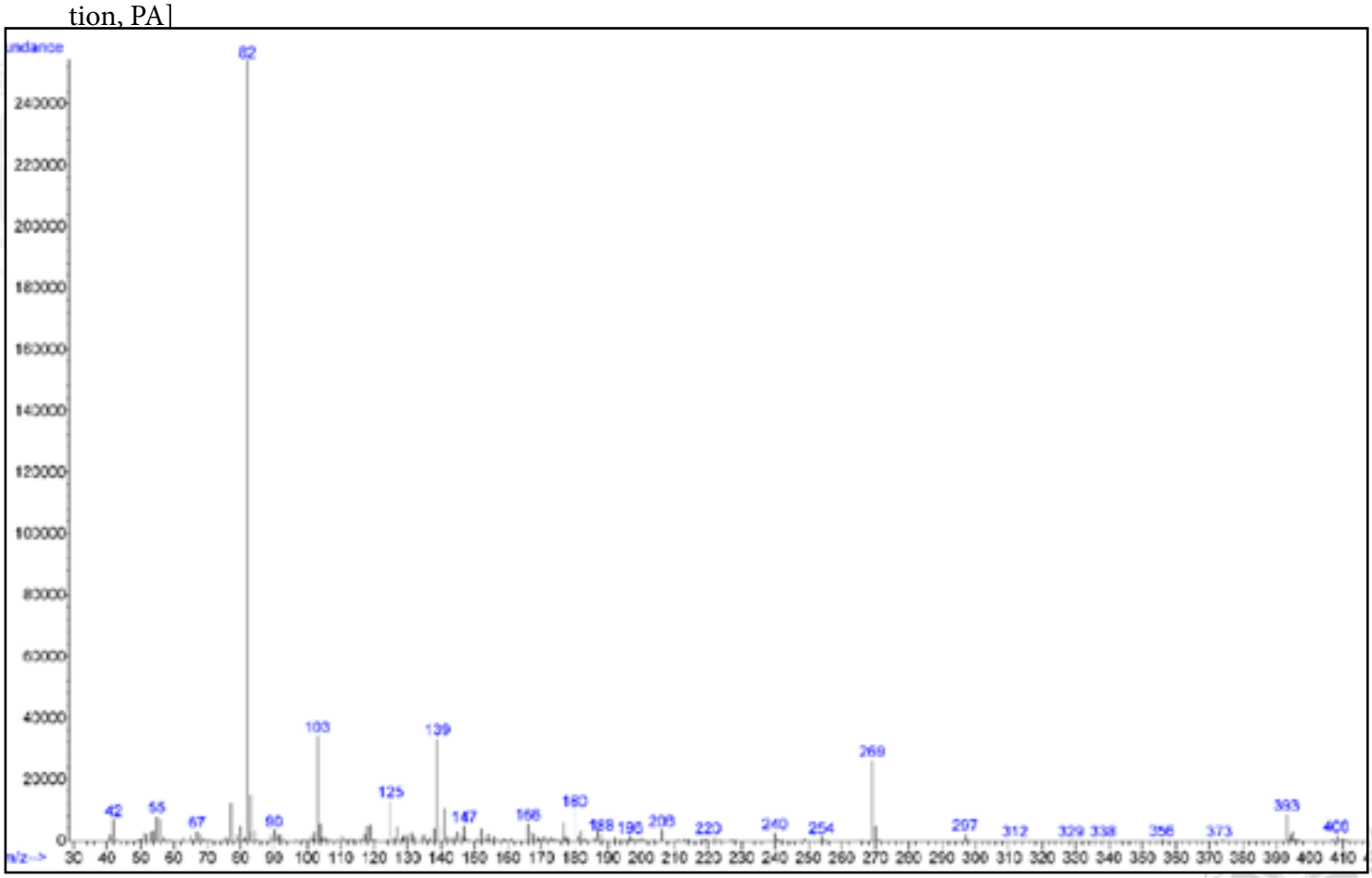
Synonyms: Cyclorphine
Pharmacological Drug Class: novel synthetic opioids

Structures

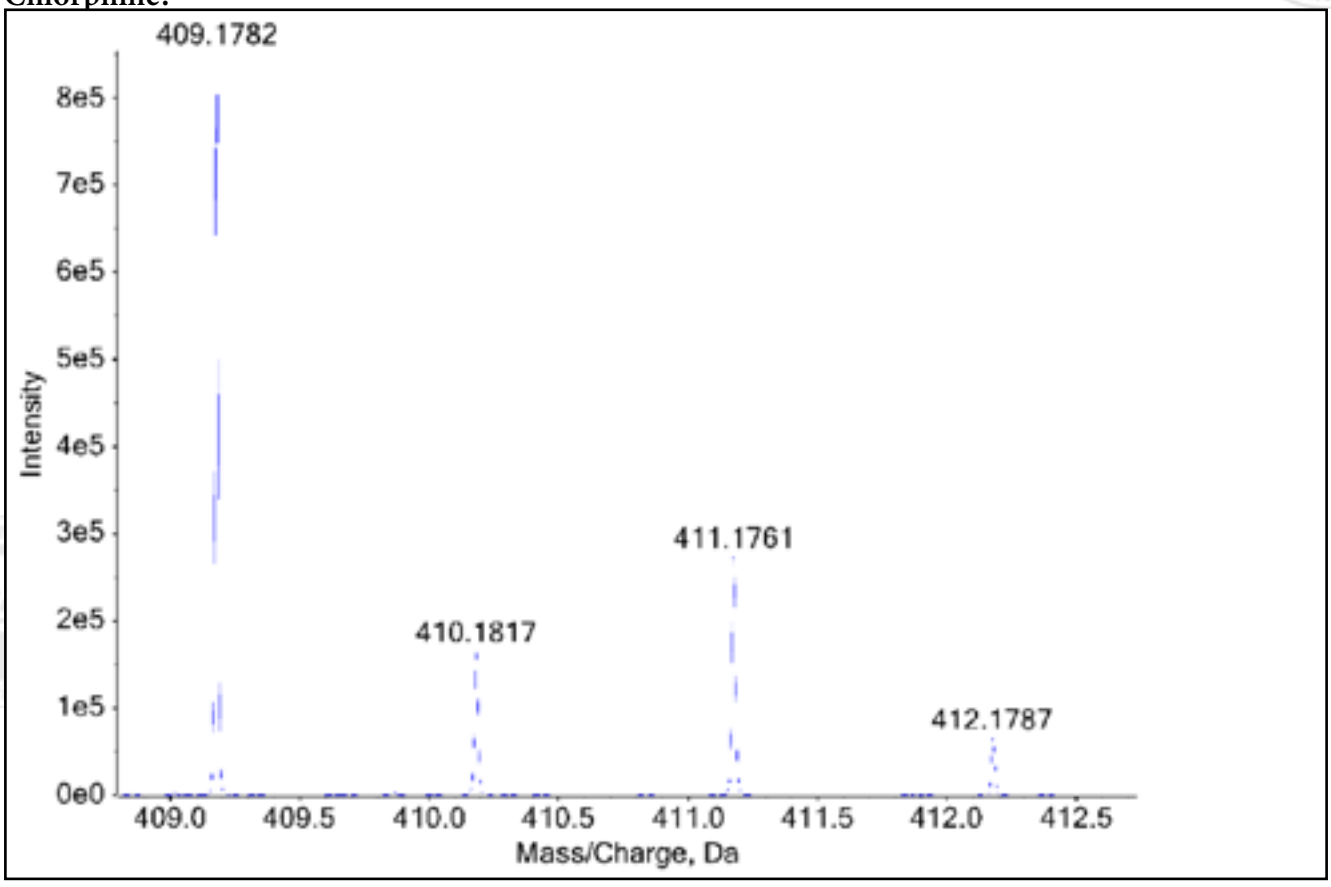
Molecular Weight: 408.9
[M+H]+: 409.1790
GC/MS EI (70 eV) Spectrum:

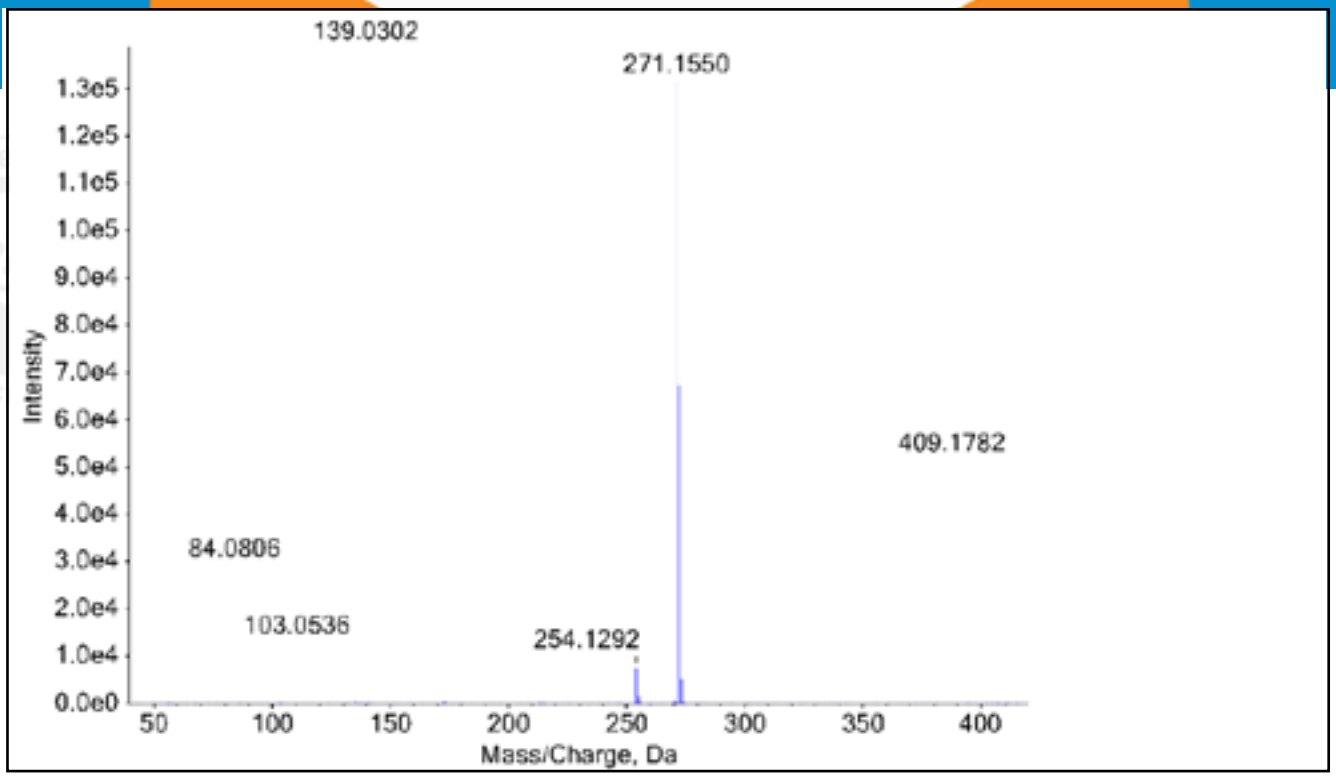


[Source: Agilent 5975 GC/MS, NPS Discovery, Center for Forensic Science Research & Education, PA]



LC-QTOF-MS Spectra for N-Propionitrile Chlorphine:





[Source: Sciex X500R LC-QTOF-MS, NPS Discovery, Center for Forensic Science Research & Education, PA]

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What Forensic Toxicologists Earn: Results of the 2025 SOFT Salary Survey

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Abstract

For years, SOFT members have asked for one thing the field never had: current, credible numbers on what forensic toxicologists earn. The 2025 SOFT Salary Survey answers that call. Working with the University of Wisconsin Survey Center, the Toxicology Resource Committee surveyed roughly 1,500 members and heard back from 528 professionals across the United States and several other countries. The respondents were experienced (a mean of 16.6 years in the field), mostly female (64.3%), and heavily concentrated in public-sector laboratories, with law-enforcement and medical examiner or public health settings together employing about two-thirds of the sample. Base salaries ranged widely, from under $60,000 to more than $150,000, yet most members (72.4%) reported being satisfied with their pay. Benefits were strong and nearly universal, and most comprehensive in the public-sector laboratories that employ most members, where pensions remain common. Cost-of-living adjustments and performance raises, on the other hand, were inconsistent or absent for many. This article summarizes the headline findings. Full results, reported question by question with the calculation of each derived figure, appear in the companion document 2025 Salary Survey: Complete Question-by-Question Results (Supplementary Data).

Why We Ran the Survey

Forensic toxicology sits where analytical chemistry, pharmacology, and the justice system meet. The people in our laboratories interpret casework that drives death investigations, impaired-driving prosecutions, and public health surveillance. Despite these responsibilities, the field has had almost no current data on who these professionals are or how they are paid. Members told us, repeatedly, that they wanted benchmarks they could use in a salary negotiation and a clearer picture of pay, benefits, and working conditions across different laboratory settings.

The timing matters. Caseloads keep climbing as novel psychoactive substances, and polydrug patterns complicate testing. Instrumentation and quality expectations keep advancing. Meanwhile, public laboratories compete for talent against private and clinical employers who can often move faster on pay. Without shared reference numbers, individual scientists and directors negotiate blind, and the profession struggles to make its case for resources. The 2025 SOFT Salary Survey was built to close that gap.

How It Was Done

The Toxicology Resource Committee drafted a web-based questionnaire of roughly 30 to 40 questions covering roles, workload, employment, compensation, benefits, satisfaction, and demographics. The University of Wisconsin Survey Center reviewed, programmed, and administered it, sending an individualized link to about 1,500 members and following up with reminders over a 24-day window in 2025. No incentives were offered. Every response was confidential and analyzed only in aggregate. Because several questions allowed more than one answer, some percentages below add up to more than 100, and denominators shift slightly from item to item because not every respondent answered every question.

Who Responded

A total of 528 professionals completed the survey, and they represented a seasoned workforce. Experience averaged 16.6 years, with a median of 13.3 years and a range of 1 to 56. Half of all respondents had at least 13 years in the field, and a quarter had more than 23. The group skewed mid-career: about 54% were between 35 and 54

years of age, and roughly 21% were 55 or older, which points to a retirement wave worth planning for now. Among those who answered, 64.3% identified as female and 35.6% as male, and the sample was predominantly White (82.2%), with smaller shares identifying as Hispanic or Latino/a/x (7.2%), Asian (6.8%), or Black or African American (6.6%).

The workforce was firmly in the public sector. Government laboratories tied to law enforcement employed 41.4% of respondents, and public health or medical examiner offices another 24.3%, so together they accounted for roughly two-thirds of the sample. Private laboratories employed 17.9% and academic institutions 7.6%. Most people held stable, full-time jobs, and 93.7% worked in the United States, with the largest state clusters in Texas, California, Pennsylvania, Florida, and New York. Table 1 lays out the full profile.

Table 1. Who responded (N = 528)

Table 1. Demographic and employment profile of respondents. Percentages are valid percentages and may not total 100 because of rounding and item non-response.

Characteristic	n	Valid %	Cum. %
Employment status			
Full-time, salaried	389	73.7	—
Full-time, hourly	90	17.0	—
Contract or temporary	20	3.8	—
Retired	14	2.7	—
Part-time (salaried or hourly)	14	2.7	—
Primary employer			
Government, law-enforcement affiliated	218	41.4	41.4
Government, public health / ME	128	24.3	65.8
Private laboratory or company	94	17.9	83.7
University or academic institution	40	7.6	91.3
Other	46	8.7	100.0
Gender			
Female	338	64.3	—
Male	187	35.6	—
Nonbinary	1	0.2	—
Age group			
Under 25 years	—	0.4	—
25–34 years	—	24.1	—
35–44 years	—	33.8	—
45–54 years	—	20.3	—
55–64 years	—	12.7	—
65 years or older	—	8.7	—

What They Do

Respondents wore many hats, and most selected several roles. The most common were forensic toxicologist (74.8%), case reviewer or certifying scientist (55.6%), and bench analyst (49.2%), followed by technical leader (26.3%) and consultant (16.8%). Interpretive and courtroom work was nearly universal: 83.7% performed or reviewed others' analyses, 70.6% signed reports for court, and 68.9% offered expert opinions to courts or investigators. Supervision was common too, with 37.9% overseeing at least one employee and roughly one in five serving as a director or chief toxicologist. Most worked standard full-time schedules, but 18.2% carried on-call duties, and among those, on-call pay was the exception rather than the rule.

What They Earn

Base salaries spanned a wide range, shown in Table 2. About 17% of respondents earned less than $70,000, while another 17% earned $150,000 or more; the largest single group sat in the $90,000 to $99,999 bracket, and the median respondent landed near $100,000. Extra pay was uncommon. Overtime reached 29.7% of respondents and bonuses 18.7%, while profit sharing (4%) and shift differentials (3.2%) were rare.

Table 2. What members earn

Annual base salary bracket	n	Valid %	Cum. %	Median exp. (yrs)
Less than $60,000	44	8.4	8.4	26.0
$60,000–$69,999	44	8.4	16.9	5.0
$70,000–$79,999	60	11.5	28.4	7.0
$80,000–$89,999	59	11.3	39.7	10.0
$90,000–$99,999	70	13.4	53.1	12.5
$100,000–$109,999	50	9.6	62.6	17.5
$110,000–$124,999	55	10.5	73.2	16.0
$125,000–$149,999	53	10.2	83.3	17.0
$150,000 or more	87	16.7	100.0	20.0

Table 2. Distribution of annual base salary (n = 522 valid responses), with median years of experience in each bracket. Experience rises with pay from $60,000 upward; the lowest bracket is shaped by retired, part-time, and consultant respondents reporting a low base salary.

Even so, most members were satisfied with their pay. Combining the very, somewhat, and slightly satisfied groups, 72.4% expressed some satisfaction, 6.3% were neutral, and 21.3% were dissatisfied to some degree. That satisfaction tracked pay closely: the share of satisfied members climbed from 58% among those earning under $80,000 to 85% among those at $110,000 or more. Where the picture dimmed was salary growth. About a quarter of respondents (26.1%) said they never receive a cost-of-living adjustment, and 60.9% reported that their employer offers no performance-based raise at all.

The Benefits Picture

Benefits were strong and strikingly consistent across the workforce, whatever the paycheck. More than nine in ten respondents had access to paid time off, health insurance, and a retirement plan, with dental and vision coverage close behind (Table 3). Because coverage was nearly universal, benefits did little to separate the satisfied from the dissatisfied; that gap tracked salary instead. Retirement structures stood out: 71.2% had access to a defined contribution plan and 69.9% to a defined benefit plan, and many had both, a pattern that fits the public-sector makeup of the workforce.

Table 3. Benefits offered

Benefit offered by employer	Offered (%)
Paid time off	91.4
Health insurance	91.2
Retirement plan	91.0
Dental insurance	88.7
Vision insurance	86.5
Life insurance	81.4
Health savings account	79.7
Paid parental leave	69.5
Retiree medical / dental / vision	60.4

Table 3. Share of respondents whose employer offers each benefit.

A Closer Look: Pay by Employer, Gender, and Geography

The headline numbers tell part of the story. With the full dataset in hand, we can look beneath the averages at where the pay and the people actually sit. Three cuts stand out. Because salary was collected in brackets, the medians below refer to the bracket that contains the middle respondent.

Employer type shaped pay more than anything else we examined (Table 4). Private laboratories led clearly: 61% of private-sector respondents earned at least $100,000, and 34% cleared $150,000, with a median in the $110,000 to $124,999 bracket. The two public-sector groups that make up most of the workforce, government law-enforcement and medical examiner or public health laboratories, clustered lower, with medians in the $90,000s and roughly 44 to 46% reaching six figures. Academic respondents had the lowest median, though nearly a quarter still topped $150,000, a sign of how widely academic pay swings. Put plainly, the public laboratories that anchor forensic toxicology tend to pay less than the private sector they compete with for talent, which echoes the retention concerns members raised in their own words.

Table 4. Base salary by employer type

Employer type	n	Median bracket	$100k+	$150k+
Gov, law-enforcement affiliated	217	$90,000–$99,999	43.8%	8.3%
Gov, public health / ME	127	$90,000–$99,999	45.7%	15.0%
Private laboratory or company	93	$110,000–$124,999	61.3%	34.4%
University or academic	39	$80,000–$89,999	33.3%	23.1%
Other	46	$90,000–$99,999	47.8%	19.6%
All respondents	522	$90,000–$99,999	46.9%	16.7%

Table 4. Base salary by primary employer (n = 522). Median bracket is the salary range containing the middle respondent.

Pay by gender is best read within experience bands (Table 5). The men in this sample were far more tenured than the women (median 20 years of experience versus 12) and more often held a director or chief role (27% versus 16%), and both of these factors can drive pay. Comparing like with like, most of the apparent gap disappears: among those with 21 or more years, women were slightly more likely than men to earn six figures, and the bands converge as tenure rises. The one difference worth watching sits in the first decade, where a larger share of men than women had reached six figures. These figures are unadjusted for role, employer, and region, so they raise questions for a fuller analysis rather than settle them.

Table 5. Six-figure pay by gender, within experience bands

Experience	Men earning $100k+	Women earning $100k+
1–10 years	33% (n = 52)	23% (n = 143)
11–20 years	60% (n = 42)	52% (n = 130)
21+ years	64% (n = 90)	69% (n = 62)

Table 5. Share of men and women earning at least $100,000, within experience bands. Unadjusted for role, employer, or region; nonbinary respondents (n = 1) are omitted to protect confidentiality.

Respondents came from 48 states plus the District of Columbia, but not in proportion to population (Table 6). Nationally, the survey drew about 1.42 respondents per million residents. Several states ran well above that mark, led by Wisconsin, Kansas, Pennsylvania, and Ohio, which likely reflects where large state laboratory systems sit and how deeply the survey reached into them. Some of the most populous states told the opposite story: California and Florida landed near or below the national rate despite contributing many respondents by raw count. Reading participation against population, rather than by headcount alone, gives SOFT a sharper map of where its engaged membership is concentrated and where outreach could grow.

Table 6. Where members are, relative to the population

State	Respondents (n)	% of U.S. respondents	Per million residents
District of Columbia	8	1.6%	11.53
Montana	6	1.2%	5.24
Kansas	12	2.5%	4.03
Wisconsin	23	4.7%	3.85
New Mexico	7	1.4%	3.29
Pennsylvania	33	6.8%	2.53
Ohio	24	4.9%	2.02
Oklahoma	8	1.6%	1.94
Alabama	10	2.1%	1.93
Minnesota	11	2.3%	1.89

Table 6. Respondents per million residents, states with at least five respondents (U.S. Census Bureau, Vintage 2025 population estimates; see Further Reading). The national rate was 1.42 per million. For reference, three large contributors by count sat near or below that rate: Texas 1.39, California 1.09, and Florida 1.32.

What Members Told Us

Beyond the numbers, respondents named the issues weighing on them. Many earned supplemental income from consulting and expert-witness work, adjunct teaching, or laboratory inspection and specialized review. When asked what concerned them most, they returned to a familiar set of themes: pay that feels low for the specialization and workload involved, cost-of-living pressures that outpace raises, thin opportunities for advancement, stiff competition from private and clinical laboratories, and the rigid pay structures common in government.

What It Means

Taken together, the survey describes a workforce that is experienced, heavily tasked, and firmly rooted in public service, and one that carries deep institutional knowledge. That tenure is a strength, but with roughly one in five members already 55 or older, laboratories should be planning succession and knowledge transfer now rather than scrambling later. The compensation story is mixed: satisfaction is real, yet it coexists with inconsistent raises and open frustration about pay keeping pace with workload and inflation. Strong benefits, especially in public labs, clearly help retention, but benefits alone are unlikely to hold talent against employers who can move faster on salary, a tension the employer-by-employer pay gap in Table 4 makes concrete.

One structural factor sits underneath these pay patterns. In much of the country, a forensic toxicologist has only one realistic employer within reach. Respondents came from 49 states and territories, but a dozen were represented by three or fewer people, a hint at how thinly the field is spread. Where a single public laboratory is the only game in a region, there is little wage competition to pull salaries up, and scientists who are committed to the field can find themselves geographically stuck. That lack of mobility is hard to solve, but it helps explain some of the frustration and retention strain the survey surfaced. We offer this as context rather than a survey finding, since the instrument did not measure how many employers operate in each area.

For individual members, the value here is practical. You can now benchmark your salary and benefits against peers in comparable roles and settings, and directors can point to these numbers when they make the case for budget and pay adjustments. For SOFT, the survey supplies an evidence base for advocacy on staffing and compensation, and a baseline we can measure against in future cycles. A few caveats are worth keeping in mind: this was a voluntary survey of SOFT members, salary was captured in brackets rather than exact figures, and the results lean heavily toward U.S.-based practitioners. One more is worth noting: a single large private laboratory appears to account for roughly a quarter of the private-sector responses, a reminder that individual employers can move subgroup estimates. Removing those responses shifts the private-sector share earning six figures from 61% to 67%.

Explore the Full Data

This article covers the highlights. Every survey question is reported in full, with an appendix

showing how each derived figure was calculated, in the companion supplement, 2025 Salary Survey: Complete Question-by-Question Results (Supplementary Data). Members and laboratory directors can use these data to benchmark compensation, support salary negotiations, inform career planning, and strengthen the case for staffing and pay, and they establish a baseline for future surveys to build on.

Click here to see the full survey results!

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Further Reading

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