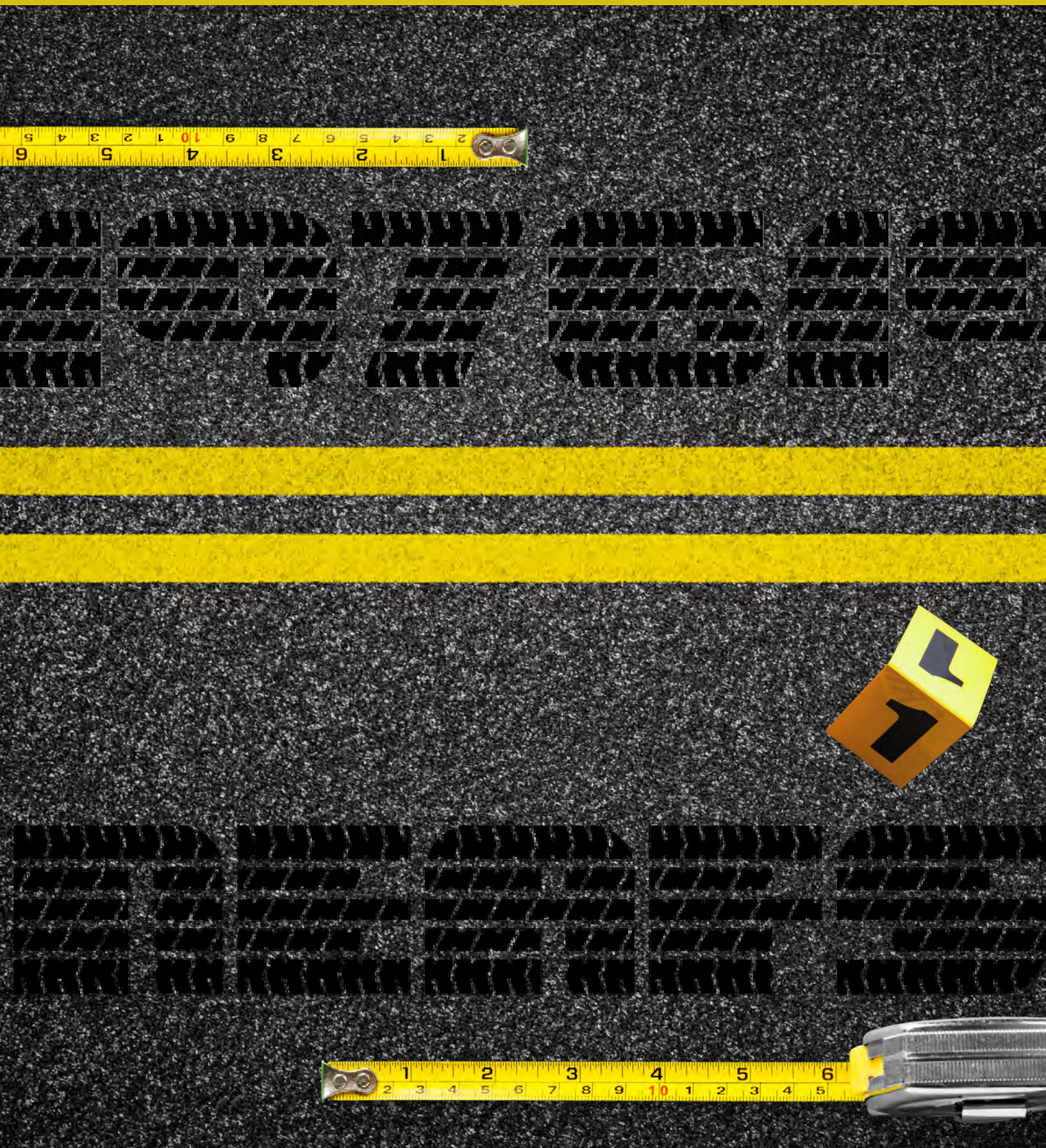
NEAFS Newsletter

Volume 48, Issue 4 Winter 2023



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Massachusetts State Police Crime Lab
124 Acton Street
Maynard, MA 01754

president@neafs.org

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Nassau County Office of Medical Examiner
Division of Forensic Service
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treasurer@neafs.org

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secretary@neafs.org

Director: Amanda White

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director1@neafs.org

Director: Sarah Roseman

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Director: Anisha Paul

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director3@neafs.org

Staff 2023

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pastpresident@neafs.org

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Nassau County Office of the Medical Examiner
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dues@neafs.org

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certification@neafs.org

Regional Associations Committee Representative: Beth Saucier Goodspeed
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rac@neafs.org

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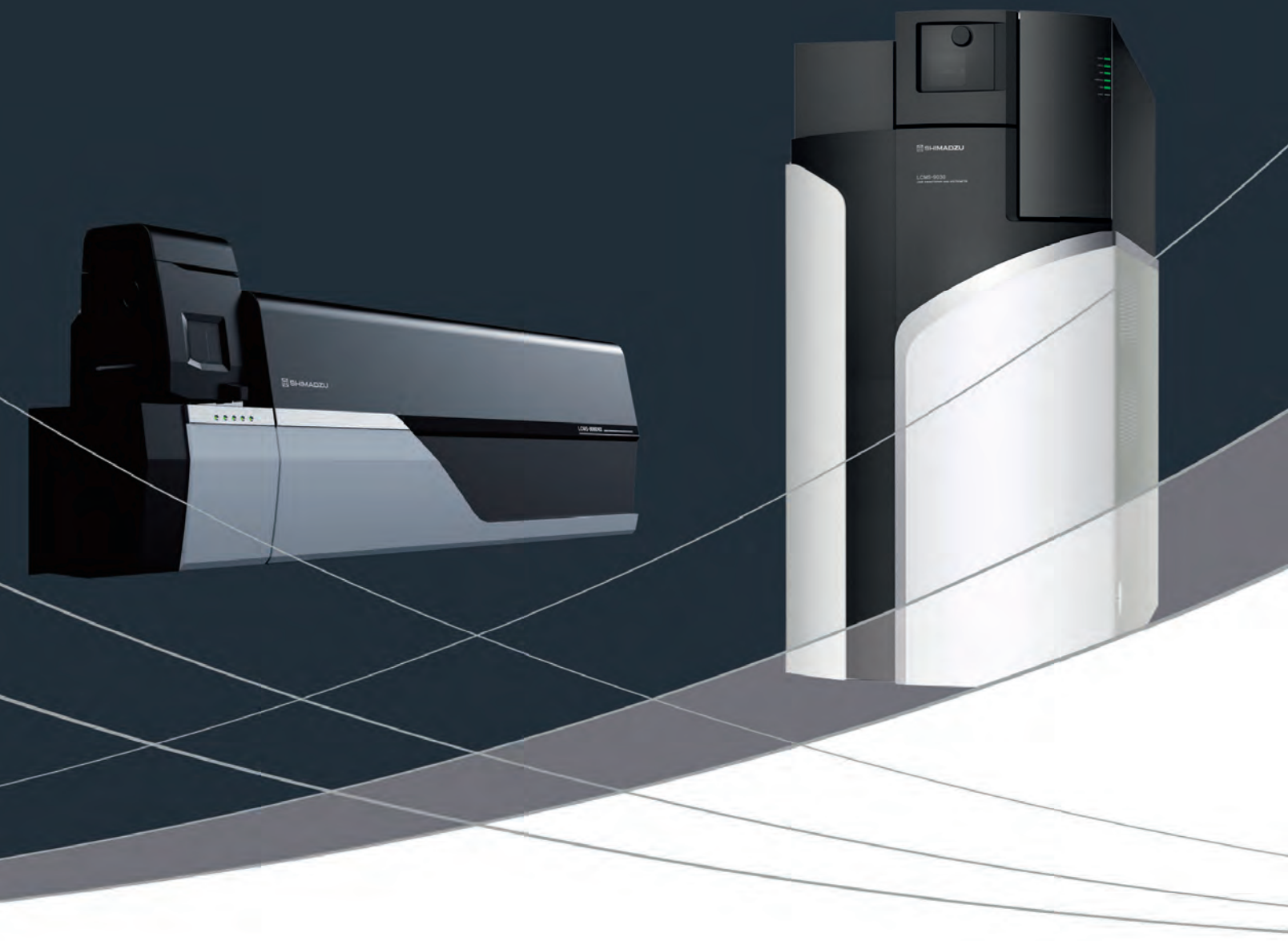

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MEET THE 2023 BOD

Elizabeth Duval – President
Massachusetts State Police Crime Laboratory since 2009
Forensic Scientist III, DNA Unit Supervisor - 2019 – present
BS Genetics, Texas A&M University
BS in Forensic Science, University of New Haven

Stephanie Minero– President-elect
Nassau County Office of the Medical Examiner, Division of Forensic Service, Controlled Substance Analysis 2011-present
NYPD Police Laboratory, Controlled Substance Analysis 2008-2011
BS in Forensic Science- Long Island University/CW Post
MS in Biology- Long Island University/CW Post

Alanna Laureano- Secretary
Westchester County Department of Labs & Research, Division of Forensic Sciences Since 2007
Senior Forensic Scientist and DNA Technical Leader
BS in Molecular Biology and Biochemistry- University at Albany, SUNY
MS in Forensic Biology- University at Albany, SUNY

Matthew Marino - Treasurer
New Jersey State Police Office of Forensic Sciences, East Regional Laboratory from November 2011 to present
Forensic Scientist 2 in the Drug Unit, Criminalistics Unit and Quality Assurance Unit
Forensic Technician, Westchester County, NY Forensic Laboratory from July 2007 to September 2011
BS in Natural Sciences with a concentration in Chemistry-St. Thomas Aquinas College

Amanda White - Director
New York State Police Crime Laboratory, FS III- Controlled Substance Analysis from 2019-Present
Westchester County Department of Labs & Research, Controlled Substance Analysis 2016-2019
NYPD Police Laboratory, Controlled Substance Analysis/Latent Print Development 2011-2016
MS Biomedical Forensic Science, Boston University
BS Biology & Anthropology, SUNY Oneonta

Anisha Paul M.S.F.S, D-ABFT-FT - Director
Vermont Forensic Laboratory, Department of Public Safety - Forensic Chemist Toxicology division since 2017
Adjunct professor at Champlain College since 2017
Masters of Science in Forensic Science from Arcadia University
Certified as a Diplomate by the ABFT in the field of Forensic Toxicology

Sarah Roseman - Director


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HOWDY - To My Fellow NEAFS Members, Friends, and Family,

So, what to say……. First, I would like to say it has been both an honor and singular privilege to have proudly represented NEAFS as its President this year. Personally, it has been the highlight of my career. I have grown and learned so much from you all and gone out of my comfort zone to develop myself personally and professionally.

I have spent this past year as your President making changes, from my point of view, and hopefully yours, for the benefit of NEAFS. Whether that be pursuing new opportunities for membership growth and retention, providing new membership perks, or pushing the boundaries of NEAFS through networking and outreach service.

But before I thank all the key players this year, I'd like to thank all the **NEAFS BOD and staff, both past and present,** for believing in me and supporting my growth and development within this fabulous organization. When I joined in 2010, I never pictured myself here and had I known what lay ahead I may have been tempted to not take the long road that has brought me here.But because I am a fervent believer that service to and for others should always rule over surface fear, I took the first step and never looked back. And so, I joined the Awards Committee and Research Grant Committees under the Awards Chair, David Fisher. So, I'd first like to thank David for seeing promise in me by promoting me to Awards Chair. I 'd then like to thank the past Boad of Directors Erica Nadeau, Beth Saucier-Goodspeed, Sheauling Kastor, Tiffany Ribadeneyra, Maria Toscanos, Melissa Balogh and Adam Hall, for seeing further promise in me which led to my election to the BOD. Finally, I would like to give an immense thank you again to all the wonderful selfless unsung heroes of NEAFS for their help in making my meeting last year a reality. I'd like to especially thank Janine Kishbaugh, for weekly Monday night meetings, her constant support and guidance for planning every facet of the meeting, to her boots on the ground commitment and care onsite, you were often the calm in a storm of planning and helped me in more ways than I can ever count and will never forget.

I would also like to give a special thank you to those people on the Board and staff who carried the heavy workload with steadfast dedication **this year** in helping me make new possibilities for membership growth, membership perks and outreach possible. I don't think we truly appreciate the amount of work these folks give, without compensation, on their own time. I often refer to myself as just the "facilitator". To Joseph Phillips initiating and pushing the idea of **Bi-Annual membership**, to Alanna Laureano for crafting the proposal and updating the By-Laws along with help from Joe, and to Joe and Brandi Clark getting the proposed by-laws out for elections, handling all the voting, and then updating all the material on the NEAFS website. Thank you to Stephanie Minero for taking on the task (in a Program Chair year where she

has soooo much time) to help facilitate the newest NEAFS membership perk of access to peer reviewed journals. She did so by doing all the heavy lifting of meeting potential vendors and securing our contract to make my idea a reality. I'd also like to thank her for being my sounding board, editor in chief and wing woman. I'd like to also thank you to Amanda White and Joe Phillips for working with me on the newest proposed changes to the by-laws and for their creation of the proposal and proposed changes for student membership. And finally, to outreach, where I have had help in the "heavy lifting" with the equal share of consideration, input and feedback from the board and Staff. By partnering with SpeakHire I hope having outreach opportunities available for all NEAFS members that are easy to participate in by providing mentoring throughout the year to secondary educational students in need will also extend the reach of NEAFS and make us a shining example of service and collegiality for other professional forensic organizations.

Finally, and equally important, I would like to thank all of you, our NEAFS membership, for your interest and care for the longevity and welfare of NEAFS and in its growth and improvement by your participation this year in reviewing and voting for the By-Law changes.

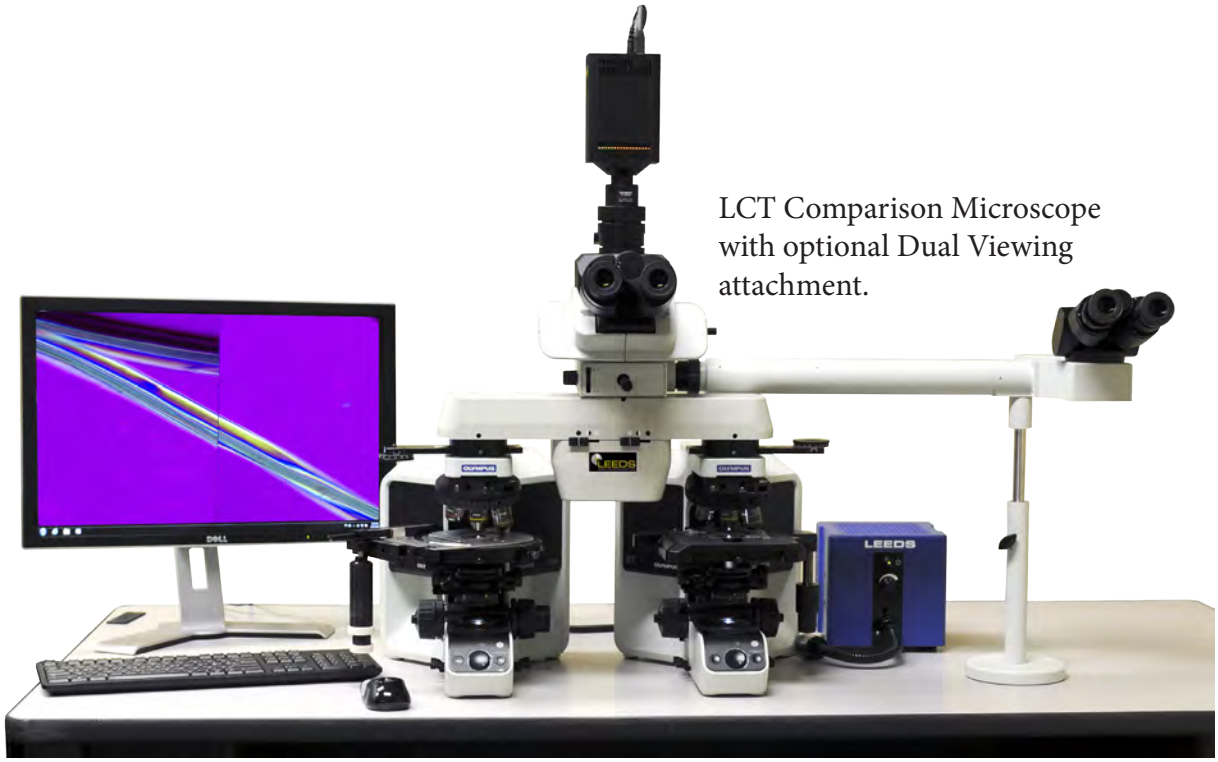
Life is not static, nor is science, and we all know that the field of forensic science is not static. And I think we can all agree that's a good thing. The fact that it is not is what makes it equal parts interesting, challenging and rewarding. Turning to NEAFS, we also need to realize that the continued longevity of NEAFS should not be static at best. I hope with recent improvements, along with your much needed participation, we can talk less about longevity and celebrate progress, which negates the need for such discussions. Change is hard, and sometimes uncomfortable but most often necessary and even if its value is difficult to see in the moment, in hindsight it's 20/20. That change depends on all of us, not just a few, and if we all actively engage in whatever ways we can then the skies the limit for the future of NEAFS.

Yours in Service and Collegiality,

Betsy (Elizabeth Duval)
2023 NEAFS President

Leeds Fluid & Trace Comparison Microscopes

Color-Balanced at the Factory and Ready to Go!



LCT Comparison Microscope with optional Dual Viewing attachment.

The Leeds Trace Evidence Comparison Microscope (LCT) is designed for forensic science. pathology, and and other disciplines where color-balance is key.

The LCT's optical system provides factory-tuned color and intensity balance -- requiring **no additional filtering or adjustment by the operator.**

LCT provides a ***large 22mm field of view***, and an erect, unreversed image, enabling the examiner to quickly and easily manipulate specimens for examination.

With the Leeds LCT Microscope, two specimens can be viewed **as split-field, superimposed, or individual images**. Separate, bridge-marked slide controls allow for continuous adjustment from 100% of the left image to 100% of the right image, or any position in between.

The modular design enables transmitted and reflected light configurations. The LCT can be configured for brightfield, darkfield, polarized light, phase contrast, fluorescence, and other contrast methods.

Visit **www.leedsmicro.com** to learn about optional imaging configurations for the LCT.

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NEAFS 50th Annual Meeting

- HARRAH'S RESORT, ATLANTIC CITY -

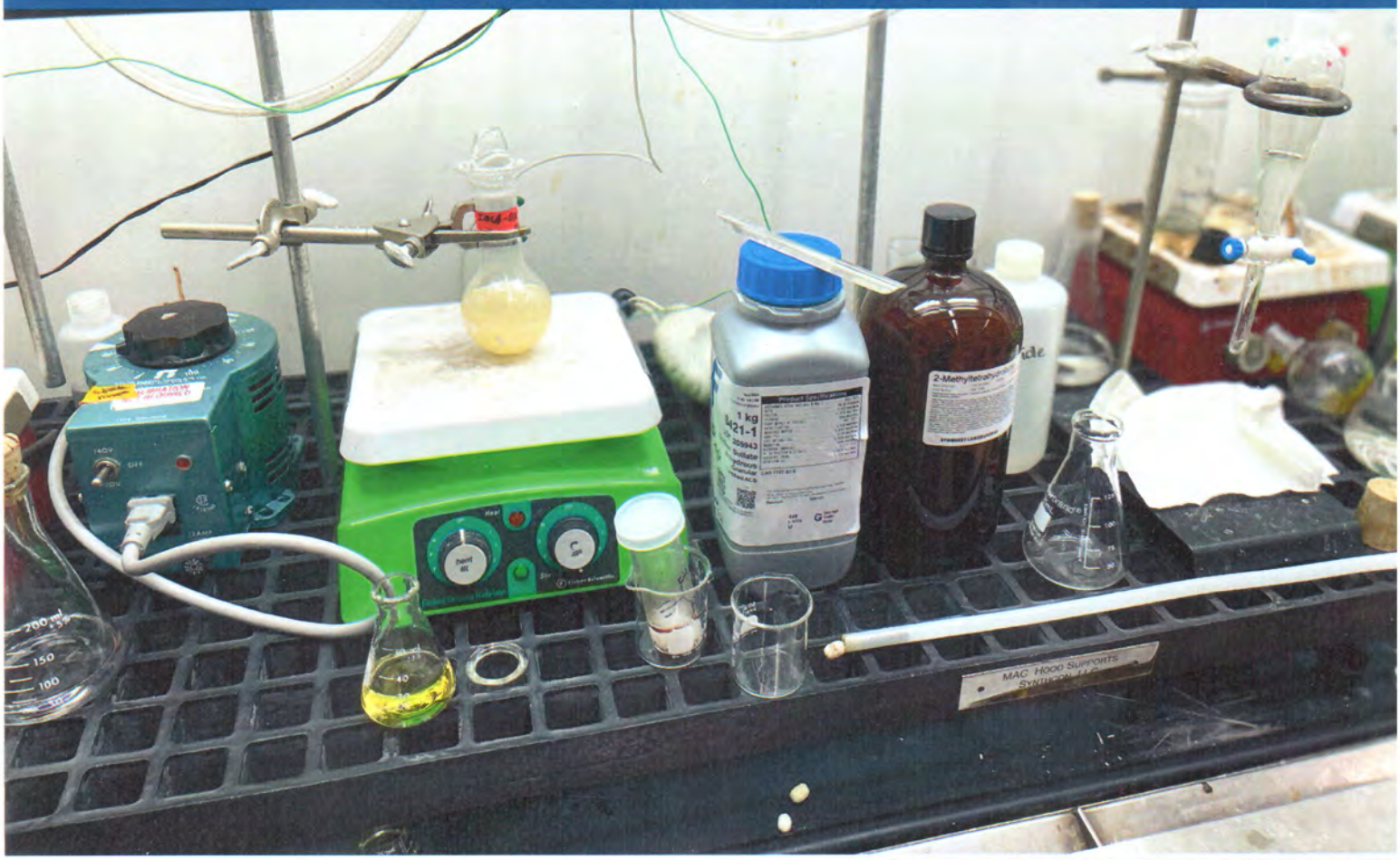
10/21/2024-10/25/2024

Want to get involved?

Have an idea for a workshop or presentation?

Contact Alanna Laureano at secretary@neafs.org or click here and make sure to mention the 2024 meeting.

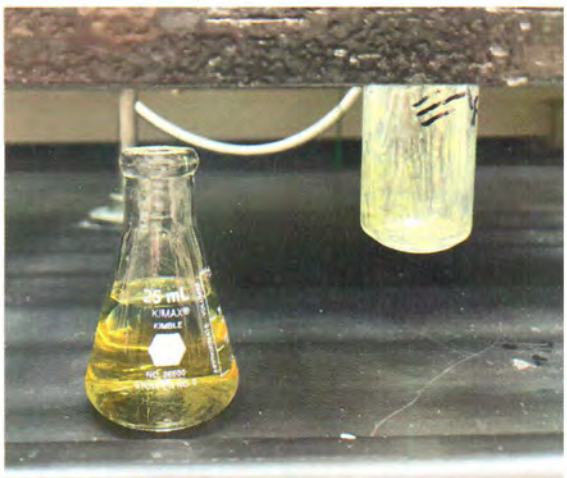
IMPROVE ALL FUME HOOD SAFETY



Multiple-Air-Channeling Hood Support (MHS) Safety Device **simultaneously elevates all equipment and chemicals** off the bench surface.

Continously unobstructed air space creates **more effective and efficient fume exhaustion**, compared to fume hoods not equipped with the MHS Safety Device.

MHS Safety Device **improved entire hood performance** at ALL 15 indivdual testing locations (e.g., front to back, front, middle, rear).



Photos: MHS Safety Device installed in organic chemistry laboratory at UCCS' Department of Chemistry and Biochemistry.

MHS SAFETY DEVICES ARE CUSTOMIZED TO FIT ANY LABORATORY FUME HOOD.

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2024 NEAFS Board of Directors and Staff

The Nominating Committee recommended the following slate of officers to the Board of Directors and an announcement was made to the Membership at the Annual Business Meeting on Wednesday, November 8th, 2023. No additional nominations were received. The terms of office are January 1 through December 31.

President
Stephanie Minero

President-Elect/Program Chair
Alanna Laureano

Secretary
Amanda White

Treasurer
Matthew Marino

Directors
Anisha Paul
Sarah Roseman
Danielle Malone

Past President
Elizabeth Duval

Awards Chairperson
Eric Sorrentino

Certification Chairperson
Peter Diaczuk

2024 NEAFS Board of Directors and Staff

Corporate Liaison Chairperson
Keri Labelle

Education Chairperson
Sandra Haddad

Ethics Chairperson
Angela Vialotti

Executive Secretary
Adrian Garcia Sega

Membership Chairperson
Joseph Phillips

Dues
Angelina Pollen

Social Media Coordinator/Merchandise Chairperson
Alyssa Berthiaume

Publications Chairperson
Brandi Clark

Registration Chairperson
Beth Saucier Goodspeed

Site Chairperson
Janine Kishbaugh

Regional Associations Committee Representative
Beth Saucier Goodspeed

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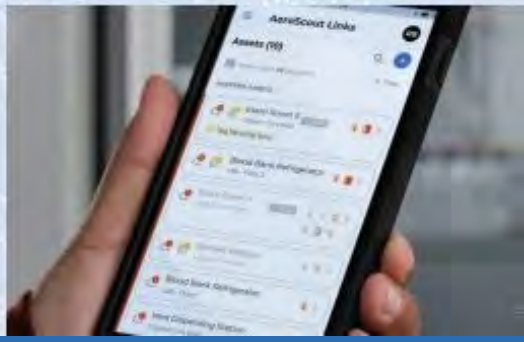

NEAFS has partnered with

SPEAKHIRE

Developing Tomorrow's Leaders

SPEAKHIRE develops the social and cultural capital of individuals from immigrant families to become leaders in the workforce.

Become a Champion

SPEAKHIRE ensures diverse individuals get a fair chance of pursuing colleges and careers of their choice. We envision a future workforce with more professionals of color of all backgrounds in positions of power across a variety of careers.

If you're looking for an opportunity to empower the next generation of leaders, join SPEAKHIRE as a Career Pathways Champion. Deliver a Seminar about a career skill, coach a young person through the Foundational Year, or share your school to career pathway through Pathways Days or SPEAKHIRE Series. As a Champion, you help young people explore careers and learn early career skills, supporting them as they pursue a career pathway, preparing them for future careers, and empowering them toward life success.

LEARN MORE AT HTTPS://WWW.NEAFS.ORG/SPEAKHIRE

>>> NOW ACTIVE <<<

SCIENCE DIRECT SUBSCRIPTION

INFORMATION

>>> READ MORE

Our organizational subscription to Science Direct is now active, and we are thrilled to announce that all members may now submit a request to receive their login credentials. The subscription covers almost 800 scientific journals (list attached) in the Physical Sciences category – one which we felt covered as much of the diverse and technical disciplines within our organization as possible while also maintaining a financially responsible commitment.

HOW TO ACCESS

READ MORE <<<

In order to request your credentials, you must log in to the Member Area of the NEAFS website by navigating to www.neafs.org and selecting “Member Area” under the “Membership” header on the main page. There you will be prompted to enter your name, preferred e-mail address, and member number. In return, you will receive an e-mail from a member of our board and staff with your registration ID and password. Instructions on how to activate will be attached to the email.

ADDITIONAL INFORMATION

>>> READ MORE

By requesting your Science Direct credentials, you agree to the following terms and conditions listed on the NEAFS website. All of this information will also be hosted on the Member Area of the website for future reference along with a listing of journals that can be accessed with the subscription. If you have any questions, please contact Stephanie Minero (presidentelect@neafs.org).

NEAFS Edition

MEMBER NEWS

ANISHA PAUL

Member and Director Anisha Paul of the Vermont Forensic Laboratory, Toxicology Section recently received The Impaired Driving Prevention and Enforcement Award. This award is presented to an individual who has demonstrated commitment to Education, Enforcement and Community Engagement to help decrease the incidence of Impaired Driving. See more information at https://shso.vermont.gov/content/events-awards-training-opportunities

ERICA NADEAU & ALANNA FREDERICK

Members Erica Nadeau and Alanna Frederick were honored along with individuals from the East Longmeadow PD, FBI, Longmeadow Fire Department, Longmeadow PD, Massachusetts State Police and the Acting US Attorney Joshua Levy. See https://www.neafs.org/membernews for details.

THE NORTHEASTERN ASSOCIATION OF FORENSIC SCIENTISTS (NEAFS) IS PROUD OF OUR MEMBERS AND WANT TO SHOWCASE THEIR ACHIEVEMENTS AND ACCOMPLISHMENTS WHETHER IT BE CERTIFICATION, WRITING A BOOK OR A DISCOVERING A NEW TECHNIQUE. IF YOU ARE A NEAFS MEMBER AND HAVE GIVEN A COURSE OR A WORKSHOP, RECEIVED A CERTIFICATION, PUBLISHED A BOOK, MADE AN ACHIEVEMENT OR ADVANCEMENT IN THE FIELD OR ANY OTHER ACHIEVEMENT OR ACCOMPLISHMENT THAT YOU ARE INTERESTED IN SHARING, PLEASE EMAIL PUBLICATIONS@NEAFS.ORG.

Welcome

NEW MEMBERS

CELESTE WAREING
BOSTON UNIVERSITY BIOMEDICAL FORENSIC PROGRAM

NATALIA PEDRAZA
FORENSIC AND NATIONAL SECURITY SCIENCES INSTITUTE

ZOE SIKON
KEENAN FUNERAL HOME

ELLEN FRASER
MAINE CDC DHHS HEALTH & ENVIRONMENTAL TESTING LAB

BRIANNA KIESEL. CAMERON FILIPE. CASSIDY MCGANN. JESSICA LEGER. KARIN JACOBSEN. KARLA VELÁZQUEZ. RACHAEL MARGOSSIAN. SAMAN SALEEM
MASSACHUSETTS STATE POLICE CRIME LABORATORY

JOE TREVIÑO III
NEW YORK POLICE DEPARTMENT

KAYLA MARSCHKE
NEW YORK STATE POLICE

ARUL VEERAPPAN
NEW YORK UNIVERSITY SCHOOL OF MEDICINE

Welcome

NEW MEMBERS

DELILAH DEWILDE
PHILADELPHIA POLICE DEPARTMENT

ALYSSA PARRELLA. AMBER PATURZO. JACQUELYN VERDI. REGINA COFFEY
RHODE ISLAND DEPARTMENT OF HEALTH

JULIA DIRRE
SYRACUSE UNIVERSITY

NIARA NICHOLS
UNIVERSITY AT ALBANY

ALEX DURKEE. ASHLEY MORGAN. LISA SIKOP. SYNDEY LEFFLER
UNIVERSITY OF NEW HAVEN

SWGDRUG

Public Comment Period

The Scientific Working Group for the analysis of Seized Drugs (SWGDRUG) will be accepting public comments for revisions of the two following documents until February 7, 2024:

- Revised SWGDRUG Recommendations v 8.2
- SD-7

Please visit www.swgdrug.org to review proposed revisions and submit comments.

Also, the December 2023 SWGDRUG Bulletin is now available.

2023 NEAFS Annual Meeting

MERITORIOUS SERVICE AWARD

AWARDED TO:

DENNIS HILLIARD

We the undersigned are all past Presidents of NEAFS or past recipients of the Meritorious Service Award and who would like to jointly present a nomination for the annual Meritorious Service Award. We hope to do this on a yearly basis. Our goal is to ensure that some individuals who made significant contributions to NEAFS in the past (perhaps distant past) are recognized. We believe that some longstanding members of NEAFS have been overlooked due to the passage of time and we hope to correct that. This year, we wish to nominate Dennis Hilliard who has been the Director of the Rhode Island State Crime Laboratory, a position he has held for many years.

Dennis was NEAFS President in 2006 and ran the 2005 meeting in Mystic Connecticut. He ascended to President in the normal way coming up through the Executive Board. What may not be known about Dennis is that he rewrote the bylaws for the organization, which was the first major revision from when they were first written. The original bylaws did not take into account the major growth of NEAFS from when it was first founded in the mid-1970's. Dennis did a complete rewrite removing what were unworkable sections, replacing others, and adding new ones. Many in the organization probably don't remember that directors were actually regional directors, one for New England, one for New York and one for New Jersey or Pennsylvania. Over the years, Dennis has given many presentations at the NEAFS annual meeting and he is still part of a dwindling "old-guard" who regularly attend the annual meeting.

We humbly nominate Dennis Hilliard for the 2023 NEAFS Meritorious Service Award.
Respectfully submitted,
Christopher Chany, Peter Diaczuk, Lawrence Quarino, David San Pietro, and Ted Schwartz

NORTHEASTERN ASSOCIATION OFFORENSIC SCIENTISTS

MERITORIOUS SERVICE AWARD NOMINATION

THE NORTHEASTERN ASSOCIATION OF FORENSIC SCIENTISTS IS ACCEPTING NOMINATIONS FOR THE MERITORIOUS SERVICE AWARD.

ALL NOMINATIONS MUST BE RECEIVED BY SEPTEMBER 1ST. THE WINNER OF THE NEAFS MERITORIOUS SERVICE AWARD WILL BE ANNOUNCED DURING THE ANNUAL MEETING.

FOR MORE INFORMATION AND REQUIREMENTS VISIT THE NEAFS WEBSITE OR CLICK THE LINK BELOW.

HTTPS://WWW.NEAFS.ORG/MERITORIOUSSERVICEAWARD

GEORGE W CHIN AWARD

AWARDED TO:

TAYLOR MCCLURE

DUQUENSE UNIVERSITY

"Throughout my academic career, I have always loved science. My fascination with DNA birthed in high school biology and my obsession with true crime combined to foster a desire to apply my scientific skills in service of others. I consider a career in forensic science, particularly as a forensic DNA analyst, to be the perfect way to achieve this goal. After graduating next spring with my masters degree in forensic science and law, I hope to continue my education and earn a graduate certificate in forensic genetic genealogy. I am eager to utilize my love for genetics and forensic science to serve others through degraded remains testing and assisting in solving cold cases.

To help me achieve my goals in the forensic science field, I have maintained a stellar academic record through challenging coursework in the Forensic Science and Law Program at Duquesne University. I also believe strongly in extracurricular involvement and giving back to the community, so I have involved myself extensively in many organizations and groups on campus. I have been a member of Beta Beta Beta, the American Society for Biochemistry and Molecular Biology, and the American Cancer Society, and held executive board positions in the professional Greek organizations Omicron Delta Kappa and Delta Delta Epsilon. I have enjoyed volunteering my time as a Team Leader during freshman orientation and working on campus as an Admissions Ambassador, sharing our forensic science program with prospective students and recruiting the next classes of future scientists. My academic and extracurricular achievements have been recognized by my peers at

GEORGE W CHIN AWARD

AWARDED TO:

TAYLOR MCCLURE

DUQUENSE UNIVERSITY

Duquesne, as I was recently honored with the Forensic Science & Law Excellence Award and an Outstanding Senior Award. My most rewarding involvement has been through Phi Sigma Lambda, the professional forensic science fraternity. I joined Phi Sigma Lambda in the fall of 2020, and during my tenure as president in 2022, I and the other executive board members helped to reorganize and revitalize the fraternity following our Covid-induced decline. I am also a mentor through my big/little family tree, and consistently reach out to my littles, who are underclassmen in the forensics program, to check in on how classes are going and offer advice. Through Phi Sigma Lambda, I was also a volunteer for the virtual summer workshop in 2021. This was an extremely rewarding experience as I was able to assist high school students in learning more about forensic science and participating in activities to give them perspective on forensic techniques. Inclusion of young scientists in the forensic science field is extremely important to me, as I am passionate about sharing my profession with others and recruiting the next generation of young scientists and leaders in both their community and their fields. I believe the depth of my involvement and academic success speak to my dedication and determination to be the best version of myself possible. I strive to always give back by mentoring and encouraging younger students to reach their full potential as well."

GEORGE W NEIGHBOR AWARD

AWARDED TO:

OLIVIA DEPERGOLA

UNDERGRADUATE STUDENT AT DUQUENSE UNIVERSITY

"I have always been extremely passionate and appreciative of the work that forensic scientists do to support law enforcement, the criminal investigation process, and ultimately victims. This is why it is my goal to work as a forensic toxicologist or DNA analyst after I graduate from Duquesne University. Within the role of a forensic analyst, I will be able to directly support the criminal justice system by analyzing and reporting upon evidence. Further in the future, it is my goal to work in a laboratory managerial or quality assurance position as I become more knowledgeable and qualified. Throughout my undergraduate education, I have learned the importance of forensic analysts remaining honest in their work to ensure appropriate convictions are made. The primary goal of quality assurance is to prevent issues of misconduct before they ever occur. This work is extremely important in saving time, money, effort, and the livelihood of victims and the accused. I will meet my goals by first graduating with a bachelor's degree in biochemistry, for which I have worked diligently to maintain a GPA of 4.00. I will then return to Duquesne University's Forensic Science and Law program for the fifth year to earn a master's degree. I believe my research experience will also propel me forward as I strive to work in a forensic laboratory. Currently, I am researching how much force is required to fracture human hyoid bones of various sexes and ages in a simulation of manual strangulation, as this data may be essential to post-mortem examiners in cases of suspicious deaths. In addition to academics and research, being an active and involved student at Duquesne University has presented me with many opportunities to

GEORGE W NEIGHBOR AWARD

AWARDED TO:

OLIVIA DEPERGOLA

UNDERGRADUATE STUDENT AT DUQUENSE UNIVERSITY

connect with my campus and local communities. I have participated in community service through numerous student-led organizations throughout my four years at Duquesne. As Vice President of Phi Sigma Lambda, the professional forensic science and law fraternity, I encouraged members to volunteer with our philanthropic partners to raise awareness and funds for their missions. We work with the Pennsylvania Innocence Project to raise money for the wrongfully convicted, and we provide support to the Center for Victims to help victims receive various services and education. My dedication to helping others was noticed by my peers and faculty, and within the past month I was generously awarded the Valerie Lijewski Service Award, the Omicron Delta Kappa Circle Leader of the Year Award, and I was nominated for a Student Life Leadership Award. Being recognized for my hard work and commitment to others is extremely gratifying and encouraging. Just as George W. Neighbor Jr. remained dedicated to mentoring students throughout his life, I will also share my knowledge and support the younger generations in order to foster amicable and safer communities. I believe I am a strong applicant for this award due to my consistent service to others and to the advancement of the forensic sciences, which I feel speaks to the memory of George W. Neighbor Jr."

GEORGE W NEIGHBOR AWARD

AWARDED TO:

ZOE TIMOTHY

GRADUATE STUDENT AT ST. JOSEPH'S UNIVERSITY

"My interest in forensic science is two-fold. I graduated with a cumulative GPA of 3.963 from Saint Joseph's University (formerly the University of the Sciences) with a Bachelor of Science degree in pharmaceutical chemistry. My degree was American Chemical Society-certified, and I pursued multiple research opportunities during my tenure at the university. I was a member of Dr. Adeboye Adejare's research group for two years as an undergraduate laboratory member. I subsequently gained experience conducting organic synthesis reactions, chromatography skills to identify and isolate compounds, and further instrument training beyond my coursework. Additionally, I received a grant from the USciences Summer Undergraduate Research Fund for my computational chemistry research project. This computational chemistry project was designed and conducted individually with oversight by Dr. Adejare. My undergraduate experiences and long-term interest in drug chemistry initially guided my career aspirations in forensic science toward drug analysis and toxicology. I am now pursuing a Master of Professional Studies degree in Forensic Science at the Pennsylvania State University with a focus on forensic chemistry. My exposure to toxicology and the forensic application of chemistry through this program has only strengthened my interest in pursuing a related career. My ideal career would involve analyzing unknown or street drug samples and optimizing the methodology to detect novel illicit substances. Analysts' methodologies must continue to adapt through research to account for the constantly changing landscape of illicit drugs.

GEORGE W NEIGHBOR AWARD

AWARDED TO:

ZOE TIMOTHY

GRADUATE STUDENT AT ST. JOSEPH'S UNIVERSITY

While drug chemistry remains a focus, my graduate research project regards shooting reconstruction and a methodical study of bullet impact behavior at the critical point of ricochet. Talking to my advisor, Mr. Mike Kusluski, about the firearms and shooting reconstruction, I was animated and passionate about understanding the project goals and analysis. This summer I am performing the bulk of the testing and preliminary data analysis, so I am immersing myself in the forensic study of shooting reconstruction. This experience will develop my skills as a forensic scientist so that I have a multi-variable experience beyond what is learned didactically. I will be able to pursue a career in shooting reconstruction for law enforcement or in an extended research setting, rather than being limited to my interest in drug chemistry.

I am a chemist through my undergraduate studies and professional development, but I must become a forensic scientist. In the upcoming year, I aim to attend and present my research at various conferences (NEAFS, AAFS, and AFTE) to develop within the professional forensic science community. Attending these conferences requires funds to afford registration, travel, and lodging. Scholarship funds provided by NEAFS would be used to pursue these professional development opportunities and to participate in workshops hosted at the seminars that may have additional fees."

STUDENT PRESENTATION COMPETITION WINNERS

AWARDED TO:

LISA SIKOP

UNIVERSITY OF NEW HAVEN - GRADUATE

The Impact of Bone Marrow Transplantation on Forensic Human Identification and Genetic Genealogy Testing

AWARD
2023

AUTUMN REYNOLDS

CEDAR CREST COLLEGE - UNDERGRADUATE

Determining Fluid Dynamic Properties of the Interaction of Blood on Surfaces of Different Roughness Values at Varying Angles of Impact

STUDENT POSTER COMPETITION WINNERS

AWARDED TO:

CRISTINA LEMUS

CEDAR CREST COLLEGE - GRADUATE

Limitations of Chemiluminescent Detection of Cannabinoids in Edibles and Urine Samples

AWARD
2023

CASEY RECH

CEDAR CREST COLLEGE - UNDERGRADUATE

Comparison of Nile Red and Diamond Dye Fluorescence on Non-Porous Surfaces

CAROL DE FOREST AWARD

AWARDED TO:

BRIANNA GREGORY

CEDAR CREST COLLEGE

Investigation and Detection Methods for Digital and Penile Penetration with no Ejaculation

AWARD
2023

CAROL DE FOREST AWARD

AWARDED TO:

BRIANNA GREGORY

CEDAR CREST COLLEGE

Investigation and Detection Methods for Digital and Penile Penetration with no Ejaculation

"While bubbles float around the bathtub, a five-year-old girl is laughing and popping all the bubbles from the soapy water. Once bath time is over her mother starts to drain the bath and leaves the room. The girl loves to see the water spiral down the drain, and she starts to collect the leftover long pieces of brown hair left from the drain. She takes her time and sorts each piece of hair by color. Once her mother comes back into the room, the girl squeals in excitement that the straight brown hair she found must be her own and the darker brown curly hair must be from her mom. This is the story my parents shared with me when I told them I wanted to pursue a career in forensic science. My mom knew this was what I was meant to do because, as it turns out, the little girl in the bubble bath separating hairs was me.

I aspire to become a Forensic DNA Analyst; DNA has the power to tell a story of who was present at a particular place or which people may have been interacting with each other. I decided to further my education with a master's degree to strengthen my growing knowledge of the forensic science discipline. The generalist point of view of the Cedar Crest College program has taught me about all the subdisciplines of forensic science and how they intertwine. In addition, research is a required component of curriculum, allowing me to explore my own questions which in turn fuels my curiosity of forensic science. Research also provides hands on experience where I have learned how to process biological samples to successfully obtain DNA profiles. Research and lab exercises also help cement the theoretical knowledge we learn in the classroom, learn how to apply that knowledge and foster our critical thinking skills. In addition, this will help me to ask questions and critically think through casework rather than just follow an SOP step by step.

CAROL DE FOREST AWARD

AWARDED TO:

BRIANNA GREGORY

CEDAR CREST COLLEGE

My research idea came to mind when I thought back to the summer of 2016. At this time the world was fixated on the Rio de Janeiro Olympic games. Gymnastics was the star of the show with the budding star Simone Biles captivating the audience with difficult routines and fan favorites such as Aly Raisman returning to the floor. What was unknown was that the games were about to be overshadowed by a revelation that would stun the world. A lawsuit was filed that spiraled into criminal charges against the former Team USA doctor, Larry Nassar, for sexual abuse against young women under his care. This case emphasized that rape includes any non-consensual sexual penetration, in this case the use of fingers in the vaginal cavity. The nature of this case captured my interest in examining detection methods of digital penetration which further sparked my passion for forensic science.

Success in my research is inevitable because I am very fortunate to be a part of the FEPAC accredited forensic science program at Cedar Crest College. I also completed my B.S. in Forensic Science and Biology at the same institution. I am proud to be working with Janine Kishbaugh and Larry Quarino whose combined field and research experience will elevate the magnitude of this project. My internship experience from DNA Labs International has allowed me to gain knowledge of new techniques that will be applied to this research to ensure that the maximum amount of DNA will be obtained from the samples. Lastly, my many life experiences have instilled confidence and independence in myself such as competing on an all-male wrestling team as the only female and being a protective older sister who cares for her younger siblings, one who has high functioning autism. All these experiences have turned me into a leader who is always looking to better herself. With the chance to receive the Carol De Forest grant I will not only honor Carol De Forest with my research, but my contributions to the field of forensics through my sexual assault research will help to make this world a better place.

Investigation and detection methods for digital and penile penetration with no ejaculation

Introduction:

The purpose of this research is to determine the ability of obtaining male DNA from skin cells found on female swabs collected after simulated sexual assaults involving penile and digital penetration. In sexual assault cases, the examiner is looking to identify male sperm or seminal fluid where male epithelial cells can be found. Research from Sween et al. has shown that the window of survival and detection of DNA from male epithelial cells from digital penetration can extend as far as 72 hours (1). McDonald et al. (2), Owers et al. (3), and Sibille et al. (4), examined old casework samples and reported successful detection of male epithelial cells after penile penetration up to 48 hours. If we can identify the time interval where male epithelial cells can be detected in the vaginal cavity with both digital and penile penetration, then we can recommend that these types of samples be collected to increase the amount of information available to aid in the investigation and solving of sexual assault cases.

Little work has been done on sexual assault samples that are not expected to contain sperm. The objective of this research is to study the collection of non-sperm samples obtained at different time intervals from the vaginal cavity that were deposited via digital and penile penetration. Using a modified extraction method, we hope to increase profiles obtained from vaginal samples. Previous research has indicated that male Y-STR profiles were detected after digital penetration up to 72 hours(1). In addition, casework studies with little to no sperm present were reevaluated in a research study to express that DNA profiles can be obtained from male epithelial cells (3). We hypothesize that digital penetration with the addition of saliva can produce Y-STR profiles up to 72 hours after penetration. In order to test this hypothesis and thereby meet the objective of this study, I will do the following:

Aims:

- Determine if more DNA is obtained from penile versus digital penetration samples.
- Identify if the maximum time interval, 72 hours, results in full Y-STR profiles. Identifying this can determine if these types of samples can be collected when there is a delay in reporting a sexual assault.

The investigator has previously completed research to successfully identify male DNA in the mouth after fellatio occurred, which has similar foundations to the proposed research. This research is unique because it is focused on sexual assault without semen present, which currently lacks standardized procedures in forensic science. In addition, this research is investigating increased collection time intervals to simulate delayed reporting by sexual assault victims. This research can help to create effective collection and analysis methods to maximize Y-STR results.

Background:

In 2011, the Federal Bureau of Investigation changed the definition of sexual assault by removing the word forcible. Now sexual assault is defined as “penetration, no matter how slight, of the vagina or anus with any body part or object, or oral penetration by a sex organ of another person, without the consent of the victim” which essentially means any sexual activity that is not consented to (5). With the reference to “any body part”, digital penetration falls into the category of rape. Sexual dysfunction may occur in men which may make them reliant on other methods of penetration such as the use their fingers to compensate for the act of penile penetration (6). 43% of woman are assaulted via digital penetration and it is the most common sexual act reported against sexually abused children (7). In 2013 the U.S. Department of Justice reported that 50% of victims who were sexually assaulted by digital penetration were under the age of 14 (8). Additionally, 1 in every 7 victims were under the age of 6 and only 34% of them identified the assailant (9).

Sexual assault kits (SAK) received by crime laboratories can have vaginal samples that are negative for sperm or semen. If penile penetration occurred, then this finding can be due to the male perpetrator having a vasectomy, azoospermia, not ejaculating into the vaginal cavity or a false allegation of rape. If digital penetration occurred then no sperm or semen will be expected, so it is important to determine how to analyze these types of vaginal samples to ensure the best possibility of obtaining a DNA profile. In addition, these samples are taken from the vaginal cavity where female DNA will be the main contributor in a mixture DNA profile when using autosomal short tandem repeats. To help analysts focus on the male portion of the sample many researchers choose Y-STR analysis which results in a paternal family association. Research has used casework and mock sexual assault samples to successfully obtain Y-STR DNA profiles which can be used to aid in criminal investigations.

Sibille et al. studied vaginal samples from completed casework SAKs where sperm were absent (4). Using Y-STR analysis, the study was able to identify male DNA profiles in 30% of cases with the longest time interval since deposit of 48 hours. This study used samples that were left over from casework and not the full intact swabs therefore diminished results were likely obtained. Having unanalyzed samples may have increased the amount of DNA profiles obtained. This 2002 research led to the idea that male Y-STR profiles could be obtained from sexual assault vaginal samples even if not sperm were not present.

Sween et al. investigated male digital penetration of the vaginal cavity (1). This study obtained male Y-STR profiles up to 72 hours post digital penetration and further reinforce the idea that male DNA profiles can be detected without sperm present. Owers et al. found similar male Y-STR DNA profiles using old casework vaginal samples from both penile and digital penetrations (3). In this study, however they only worked with case samples with the longest time interval since deposit of 48 hours but were still able to obtain usable profiles. In addition, the researchers were able to determine that vaginal samples were more successful in obtaining male cellular material rather than vulva or external genitalia samples.

This research will use improved methods in comparison to previous studies in an attempt to increase the time interval to 72 hours. Mock sexual assault samples created by participating couples provide more realistic samples. This may provide more accurate results over those from previous studies where previously analyzed casework samples were used. Optimized extraction and capillary electrophoresis methods developed from previous research could increase the amount of male DNA obtained in digital and penile penetration samples without sperm. Saliva, sometimes used as a lubricant during assaults, will be used during the collection of some mock sexual assault samples to determine if increased DNA results are obtained compared to non-lubricated collected samples (10). Improvement of current methods can increase efficiency and standardization in sexual assault kit analysis with samples that do not contain sperm or semen.

Experimental Procedure:

Sample Collection

A total of 12 male/female couples have volunteered to participate in this study. Couples range from ages of 20-48 years. Out of the 12 couples, 3 couples will only be completing the digital penetration (with and without saliva) collections. The female and male participants are submitting a buccal swab (cotton) to establish a reference DNA profile.

Research Design

Couples must abstain from any sexual activity for at least 1 week before each collection. Each couple will complete a total of 6 separate collections. They will complete 2 time intervals of 24 hours and 72 hours with 3 different activities: digital penetration (no saliva), digital penetration (with saliva) and penile penetration (no ejaculation). After the abstention time, and prior to any sexual activity, control swabs will be taken from the vaginal cavity and the external genitalia. The couples will then complete 1 of the 3 different acts and then wait the allotted time (24 hours or 72 hours) before collecting experimental swabs. For the digital penetration

collections, the external genitalia will be swabbed with the double swab method followed by the vaginal cavity which will use 4 swabs total using 2 at a time. For the penile penetration collection, vaginal cavity swabs (use 4 swabs total with 2 at a time) will be collected in addition to a vaginal smear created from these two swabs. The vaginal smear will be examined for sperm to ensure pre-ejaculate hasn't deposited any sperm to the vaginal cavity.

Workflow

Only male reference samples will be extracted using Chelex-100® (142-1253, Bio-Rad Laboratories, Hercules, CA). Female reference swabs will be retained in the event analysis is required at a later time. All experimental swabs will be extracted using the QIAGEN® QIAamp DNA Investigator Kit (QIAGEN – Catalog #56504) and DNA IQ Spin Baskets (Promega – Catalog #V1225). An extraction protocol was provided where only half the swabs will be taken to reflect casework analysis. An initial incubation time16 hours was increased from the 1 hour incubation designated in the company procedure. An extraction negative will also be completed during each set of extractions to ensure there is no contamination.

Only reference male buccal swabs will be quantified with real time quantitative PCR using primers for the ALU sequence and Sigma Aldrich SYBR Green intercalating dye on the Rotor-Gene 6000 Real-Time PCR Instrument (Corbett Robotics San Francisco, CA) (11). Control swabs will be quantified with a Qiagen® Investigator Quantiplex Kit PCR Assay (QIAGEN Catalog #387016). Experimental swabs will not be quantified in an effort to conserve sample, as these are expected to have a low male DNA concentration resulting in maximum template addition for amplification.

Amplification of all samples will be carried out using the Promega Powerplex® Y23 System (Promega, Catalog DC2305, Madison, WI) on the Life Technologies Veriti 96 Well Thermal Cycler (Life Technologies, Carlsbad, CA). Samples will be analyzed using the ABI 3130XL Genetic Analyzer (Serial 19242-003 Applied Biosystems, Foster City, CA). Samples will be injected initially at 5 seconds and if need be, an increase in injection time to 10 and 15 seconds will be used. Lastly, Post-PCR Cleanup will be performed with QIAGEN® MinElute PCR Purification Kit for any samples with allelic dropout (QIAGEN – Catalog #28004).

Based on the previous work completed by Sween et al. we are expecting to see full profiles at 24 hours for digital penetration samples(1). Because we are adding saliva as a lubricant in some samples, we are expecting that saliva will increase the amount of DNA obtained therefore having the potential to exhibit full DNA profiles more often. Regarding the 72 hour time interval, the results of the Sween et al. study were +75% of a profile for most couples so we do expect variability, but with the newer methods being employed in this study we expect that we will obtain full male DNA profiles more consistently. In addition, penile penetration was not looked at in the Sween et al paper, but because there is no sperm present, we expect to see similar profiles from digital penetration compared to penile penetration. If results are as expected, then this research can identify an effective method to extract and analyze non-sperm sexual assault samples and can reinforce the idea that you do not need sperm present to obtain a full Y-STR profile.

References

1. Sween KR, Quarino LA, Kishbaugh JM. Detection of male DNA in the vaginal cavity after digital penetration using Y-chromosome short tandem repeats. J Forensic Nurs 2015;11(1):33–40. https://doi.org/10.1097/JFN.0000000000000056.

2. McDonald A, Jones E, Lewis J, O'Rourke P. Y-STR analysis of digital and/or penile penetration cases with no detected spermatozoa. Forensic Sci Int Genet 2015;15:84–9. https://doi.org/10.1016/j.fsigen.2014.10.015.

3. Owers R, McDonald A, Montgomerie H, Morse C. A casework study comparing success rates and expectations of detecting male DNA using two different Y-STR multiplexes on vaginal swabs in sexual

assault investigations where no semen has been detected. Forensic Sci Int Genet 2018;37:1–5. https://doi.org/10.1016/j.fsigen.2018.07.016.

4. Sibille I, Duverneuil C, Lorin De La Grandmaison G, Guerrouache K, Teissiè F, Durigon M, et al. Y-STR DNA amplification as biological evidence in sexually assaulted female victims with no cytological detection of spermatozoa.

5. FBI. Federal Bureau of Investigation, Uniform Crime Report. Federal Bureau of Investigation, Uniform Crime Report 2014.

6. Avasthi A, Grover S, Sathyanarayana Rao T. Clinical Practice Guidelines for Management of Sexual Dysfunction. Indian Journal of Psychiatry. 2017.

7. Rossman L, Jones JS, Dunnuck C, Wynn BN, Bermingham M. Genital Trauma Associated with Forced Digital Penetration. American Journal of Emergency Medicine 2004;22(2):101–4. https://doi.org/10.1016/j.ajem.2003.12.012.

8. NIBRS 2013 SEX OFFENSE COUNTS Rape Sodomy Sexual Assault with an Object Fondling Incest Statutory Rape Incidents.

9. Snyder HN. Bureau of Justice Statistics Sexual Assault of Young Children as Reported to Law Enforcement: Victim, Incident, and Offender Characteristics Sexual Assault of Young Children as Reported to Law Enforcement: Victim, Incident, and Offender Characteristics. 2000.

10. Spivak H. National Best Practices for Sexual Assault Kits: A Multidisciplinary Approach.

11. Nicklas JA, Buel E. Development of an Alu-based, Real-Time PCR Method for Quantitation of Human DNA in Forensic Samples. J Forensic Sci 2003;48(5). https://doi.org/10.1520/jfs2002414.

Budget

Product	**Vendor**	**Catalog #**	**Amount**	**Price**
Cotton Swabs	Fischer Scientific	22-029-683	10 boxes of 100 packages (2 per package)	$139.70
Scalpels	VWR	76457-484	10 boxes of 10 packages	$356.80
QIAamp DNA Investigator Kit	Qiagen	56504	3 (50 reaction)	$1026.00
Powerplex Y23	Promega	DC2320	1 (200 reaction)	$7.718.00
Qiagen® Investigator Quantiplex Kit PCR Assay	Qiagen	387016	1	$660.00
POP 4 Buffer	MCLAB	NP4-101	3	$628.83
Overall Total				**$10,529.33**
Requested from NEAFS				**$2,500.00**

CAROL DE FOREST AWARD

AWARDED TO:

MARY CORRIGAN

UNIVERSITY OF NEW HAVEN

GABA Catabolism Pathway: A Potential Mechanism of Action for Ethanol

AWARD
2023

CAROL DE FOREST AWARD

AWARDED TO:

MARY CORRIGAN
UNIVERSITY OF NEW HAVEN

GABA Catabolism Pathway: A Potential Mechanism of Action for Ethanol

"Completing my Bachelors' degree at Hunter College has made me a highly capable, resourceful and flexible scientist. My science curriculum began with classes of 1,000+ students, and I remained at the top of the class even as those numbers dwindled to 300 and the material increased in complexity. It has made me incredibly self-reliant. Despite the masses of students at Hunter, I continually stood out. I was a recipient of the merit-based Scholarship and Welfare Fund of the Alumni Association all 4 years. Through this association, I was also awarded the David and Sadie Klau Foundation Fellowship for $4,000 as financial assistance for my graduate program. At the close of my sophomore year, I was invited to join the interdisciplinary Thomas Hunter Honors Program based on my academic strength and my writing abilities. This enabled me to take a variety of classes outside of STEM and improve my writing further. I graduated with departmental honors and was granted the Else Seringhaus Award for my excellence in biological research. I graduated summa cum laude (shy of valedictorian by one A-, but humility is key) through a range of biology, chemistry and physics courses. Upon graduating, I was welcomed into the Phi Beta Kappa society. Initially, my plan was to continue my career in biomedical research. I began to see that despite my love of the work and science, my values seemed better aligned with the field of forensic science. I admire and uphold the impartiality and integrous approach to the work being done. That is was led me to the Masters of Science in Forensic Science program at the University of New Haven. Upon completion of my Master's degree, I plan to work as a forensic toxicologist. I have found it to be an excellent segue from neurobiology. I have the great fortune of having Dr. Robert Powers as my advisor. I have been able to discuss his past consultation work with him, sit in on conversations with lawyers for active cases and listen to him testify in court. Between the logistics of the work I have seen with him and the fascinating biochemistry underlying it all, I think I will be very happy in this line of work.

First and foremost, I believe I should be chosen to receive this grant because of the importance and relevance of my project. One of the major contributing factors behind my decision to take this on for my thesis is that I had actually first run into the problem of a mechanism of action for ethanol during my undergraduate behavioral pharmacology class. It was a special area of interest for my professor, so we spent a great deal of time discussing the GABA pathway and the various dead ends previous research had hit. Coming to UNH to find Dr. Powers eager to address the topic solidified the importance of this research for me. Aside from the points already raised in my proposal, I would like to highlight that this grant would provide us the funding necessary

CAROL DE FOREST AWARD

AWARDED TO:

MARY CORRIGAN
UNIVERSITY OF NEW HAVEN

to purchase both of the recombinant human proteins of interest. We are currently planning to use GABase, a combination of GABA-T and SSADH derived from Pseudomonas fluorescens. It is a scientifically sound and accurate model based on peer-reviewed work. However, it is still derived from bacteria, which has inherent limitations when trying to explain human systems. Using a human protein model would greatly strengthen the confidence in our data and likely increase its acceptance in the field.

I believe I am a strong candidate for this grant because of my research background and experience. During my time at Hunter, I worked in several different research labs gaining a solid understanding of the work itself and preparation required for such an undertaking. An example of this would be my time spent with Dr. Maria Figueiredo-Pereira on a drug-repurposing study for Alzheimer's Disease. The grant for this project was in conjunction with several groups, chiefly Dr. Lei Xie in computer science who developed a software system to identify candidate drugs. I concurrently ran the screening toxicity assays for the newly identified drugs while delving deeper on the compounds that seemed promising. This entailed researching potential pathways (the phosphorylation of tau protein, formation of amyloid beta plaques, endocrinological connections), identifying key proteins of interest, and then running the experiments to see what changes occur in these proteins upon treatment. Due to the pandemic, I was unable to complete my research before I graduated, but I did create the foundation for the next student who took over the project. After graduating, I shifted over to an oncology lab at Weill Cornell Medicine, demonstrating my abilities to apply skills gained in one area of focus (neurobiology) and translating them to another (oncology). There, I learned a myriad of new skills: fluorescent microscopy, RT-PCR, generation of T-cells, flow cytometry and more. During my time there, I realized biomedical research is not the right field for me, but I am positive that my time spent there will serve me well in my current forensic research endeavors.

I am confident that we will be successful with this project. We have preliminary evidence that supports our hypothesis thanks to previous graduate students' work. Our goal now is to fine-tune the methodology in order to generate clean data (i.e. less background noise and better linearity in the Lineweaver-Burke plots generated to assess enzymatics). This will be accomplished by building off of where the previous student finished and using additional instrumentation to verify our findings. We now have more resources at our disposal thanks to our department resuming the use of our HPLC triple quad, which we intend to use during part three. Dr. Powers is a knowledgeable and hands-on advisor with years of experience with this instrumentation and the trouble-shooting required. Between the two of us, I do not doubt that we will accomplish all that we have laid out in this proposal."

GABA Catabolism Pathway: A Potential Mechanism of Action for Ethanol

Mary Corrigan & Robert Powers, PhD.

Introduction

Ethanol is a simple alcohol molecule and the primary active ingredient in alcoholic beverages. Due to its low molecular weight and relative lack of charge, ethanol can enter all cells in the body via water channels (aquaporins) and distributes uniformly throughout the body[1]. Ethanol is classified as a central nervous system (CNS) depressant, in that it decreases the rate of neuronal signaling and overall activity level of the nervous system. Symptoms of consumption include reduced cognitive capability, motor skills, levels of anxiety, and overall feelings of intoxication. At high enough blood levels, stupor, loss of consciousness or even death can occur. The overt and recognizable effects ethanol has on the body are well documented, such as loss of motor control, slurred speech, impaired balance, etc.. However, despite extensive efforts, the mechanism by which ethanol actually affects neurons, and elicits those symptoms has yet to be satisfactorily determined[1-3]. This research proposes to explore one aspect by which ethanol may interact with the nervous system, and lead to the characteristic CNS depression, and resultant symptoms elicited by the drug.

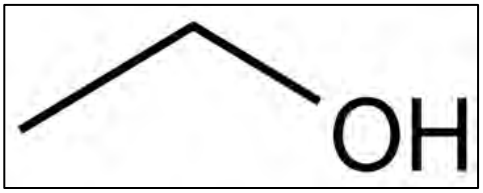

Figure 1: *Molecular Structure of Ethanol*

Background

As a CNS depressant, ethanol depresses the overall the rate of neuronal signaling. The endogenous "down regulation" system of the body relies on the inhibitory neurons, which utilize gamma-hydroxybutyric acid (GABA), as the primary inhibitory neurotransmitter in the mature CNS[2]. The action of GABA on the nervous system is mediated via post-synaptic ligand-gated chloride channels ($GABA_A$) and metabotropic potassium channels ($GABA_B$), resulting in the hyperpolarization of the neuron[4]. Elevated levels or potentiated effects of GABA are known to have a sedative effect, induce sleep, reduce anxiety and relax muscles. Barbiturates and benzodiazepines are well-recognized CNS depressants that exert their effects through interactions with the $GABA_A$ receptor[4]. Distinct binding sites have been identified for both such drug groups. As such, decades of research has been conducted to determine an ethanol binding site on the $GABA_A$ receptor, or some other mechanism of interaction. There has been varying degrees of success, but to date no conclusive binding or allosteric site that enables ethanol to exert its effects has been conclusively determined[3]. Our proposed research will explore a specific alternate pathway that may be available for ethanol to impact the GABA-nergic system and exert its depressant effects.

Anticonvulsants or CNS sedatives typically either act through the inhibition of voltage-gated sodium channels or through potentiating GABA and its effects[5]. Several perform the latter function through the inhibition of GABA catabolism. This depresses the rate of neuronal firing by keeping concentrations of GABA high. The breakdown of GABA is initiated by GABA-transaminase (GABA-T), which converts the compound to succinic semialdehyde. From there,

succinic semialdehyde dehydrogenase (SSADH) converts it to succinic acid, which is then typically shunted into the mitochondrial matrix to join the Krebs Cycle[6].

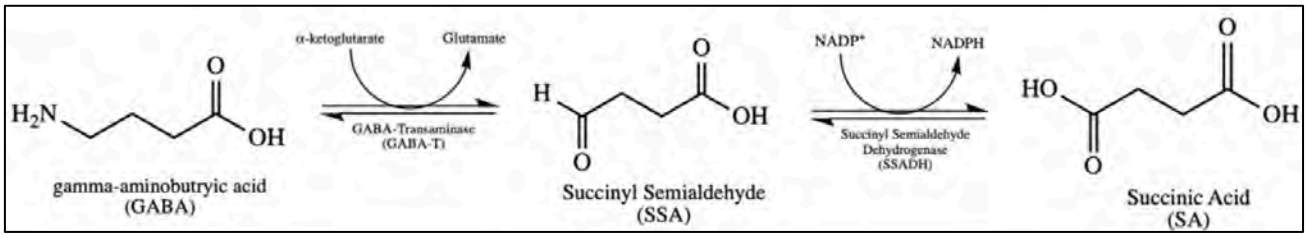

Figure 2: *GABA catabolism pathway*

Vigabatrin is one such drug that operates as an irreversible inhibitor of GABA-T. This drug is structurally similar to GABA, with the addition of a vinyl group on the gamma carbon. This allows it to bind covalently to GABA-T, thus preventing it from dissociating (mechanism-based inhibition)[7,8.] Overdose of vigabatrin typically results in drowsiness, loss of consciousness, or coma. CPP-115 is a structural analog to vigabatrin, and experimental data shows that it is significantly more potent, being able to inactivate GABA-T at nearly 180 times greater effect[9]. The steric hindrance of CPP-115 does not impede the molecule's ability to interact with the active site on the GABA-T enzyme, rather just blocks the formation of reactive metabolites seen with Vigabatrin. Propionate, the endogenous conjugate base of propionic acid, has also been shown to have an inhibitory effect on GABA-T[10]. It was previously studied in the context of propionic acidemia, a condition characterized by lethargy and motor impairment. Both *in vitro* and *in vivo* methods showed that increased levels of propionate resulted in decreased GABA-T activity and higher levels of GABA present. While it is unclear how propionate may exert this inhibitory effect, the structural difference between the molecule and GABA does not impede its ability to interact with GABA-T. Similar to CPP-115, this implies that the carboxyl group is the region that interacts with the active site of the enzyme allowing or facilitating substrate binding, while C-1 of propionate is the active site of oxidation. In turn, C-4 of GABA is structurally analogous to C-1 of ethanol. Our hypothesis is that ethanol acts as a CNS depressant in part via the competitive inhibition of GABA catabolism via GABA-T and/or SSADH.

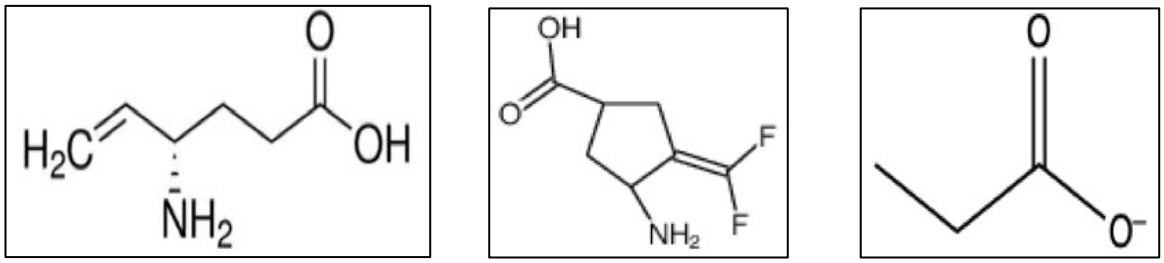

Figure 3: *Molecular structures of GABA-T inhibitors. From left to right: Vigabatrin, CPP-115, and Propionate*

Significance

Despite its legality, ethanol consumption is tied to forensic casework in numerous ways. It is often seen alone or in combination with other psychotropic compounds in drug-facilitated sexual assault (DFSA) cases. Discerning the pathway that ethanol impacts would shed light on how it interacts with other drugs. A significant portion of toxicology cases also deal with consumption of ethyl-alcohol and driving/operating motor vehicles. Identifying the mechanistic

pathway that ethanol effects would provide insight on how it results in the characteristic behaviors of intoxication. This could have potential relevance to drunk-driving laws; the current legal limit of blood alcohol concentration is .08 g/dL. If significant changes to this pathway are seen at lower concentrations for instance, it would provide a scientific foundation to arguments for lowering the legal limit. This project would be the foundation for addressing these issues in the field.

Summary: This research will explore the effects of ethanol on the metabolism of the inhibitory neurotransmitter GABA, and may provide then, an explanation for one mechanistic aspect of the effects of the drug

EXPERIMENTAL PROCEDURE

There are 3 primary goals of this project. The first step is to modify and optimize the GABA enzymatic assay for determination of enzymatic kinetic parameters (Km and Vmax) instead of simply amount of enzyme. Secondly, we will determine the overall inhibition of the component enzymes (GABA-T and SSADH together) by physiologically relevant concentrations of ethanol. The final step will be to determine the role that ethanol plays in the inhibition of each enzyme respectively.

Optimization

The starting point for this research will be to modify and optimize the reaction for "limited substrate" conditions, allowing determination of kinetic parameters. Specifically, we will modify and optimize the concentrations of nicotinamide adenine dinucleotide (NAD+), dithiothreitol (DTT), α-ketoglutarate (α-KG), and the amount of GABase enzyme in the reaction mix. GABase is a commercially available combination of GABA-T and SSADH derived from *Pseudomonas fluorescens.* Human recombinant proteins for GABA-T and SSADH will also be used and similarly optimized individually. Optimization of the experiments will be evaluated in terms of substrate-velocity and Lineweaver Burke plots, allowing evaluation of Km and Vmax.

Enzyme Assay Protocol

The protocol is a modified version of that outlined in Tsukatani, Higuchi & Matsumoto (2005)[11]. Experiments with and without ethanol will be run in triplicate. To measure the rate of reaction, we will look at levels of NADH, a cofactor reduced during the oxidation process. Rate of NADH formation will be observed using a Shimadzu UV-1700 spectrophotometer at 340 nm. Concentrations of ethanol will be used that mimic the physiologic exposure range; 0.0, 0.04, 0.08, 0.16, and 0.32 g/dL. The varying levels of ethanol will be incubated with the previously outlined components (NAD+, DTT, α-KG, GABase (or recombinant proteins)). The precise time of incubation and the intervals at which the reactions will be sampled will be determined during the optimization stage. The triplicates will be averaged, and the results will be used to generate Lineweaver-Burke plots. We will be looking at the K_m and V_{max} values to analyze inhibition.

Determination of results due to GABA-T, SSADH

The general reaction protocol requires a mixture of GABA-T and SSADH. However, we want to determine the degree to which ethanol interacts individually with each of these enzymes. NADH is a good starting measure to see whether or not any inhibition is detected. The NADH being measured in the general reaction is formed as a byproduct from the conversion of succinic semialdehyde to succinic acid. In order to determine the degree of inhibition on GABA-T, we will be measuring the presence of succinic semialdehyde using high performance liquid chromatography-mass spectrometry (HPLC-MSMS). To the same effect for SSADH, we will be looking at succinic acid. The quantification of these products will allow for the specific attribution of ethanol's interference to the respective enzymes.

EXPECTED RESULTS

We anticipate to find that physiologically relevant levels of ethanol can act as a competitive inhibitor of GABA-T and similarly inhibit SSADH as well.

Contribution to Forensic Science

Determining a method by which ethanol acts on the central nervous system will impact the field of forensic toxicology in several ways. As briefly mentioned earlier, one of the most immediate spheres likely to be impacted is legislature surrounding operating motor vehicles after consumption of ethanol. The .08 legal limit was determined by the National Highway Traffic and Safety Administration; they found that the risk of a car accident are significantly higher at or above or blood alcohol content level of .08. Before this, it was essentially assigned arbitrarily by states like Utah, that then saw a reduction in injuries and fatalities cause by drunk-driving. There have been recent attempts throughout the United States to potentially lower this. Understanding how ethanol elicits impairment would allow researchers to determine at what level it begins to assert its affects. This would provide a concrete scientific basis for these laws.

This project would also begin to shed light on the manner by which ethanol interacts with other psychotropic compounds. It is advised with numerous medications that they should not be taken with alcohol due to adverse and potentially life-threatening interactions. By understanding a mechanism by which ethanol acts on the central nervous system could help to explain in part how these interactions occur. This will be a particularly interesting area of research for its relevance to drug facilitated sexual assault cases, which often include ethanol in tandem with other drugs, as well as overdose cases.

BUDGET

The project currently has a budget of $1610.10 allocated by the Forensic Science Department at the University of New Haven. Below is the proposed budget indicating a request of $2453 from the Carol de Forest Student Research Grant.

Material	**Vendor**	**Quantity**	**Cat. #**	**Total Cost**
GABase	Sigma Aldrich	10 units	G7509-10UN	$492
NAD+	Sigma Aldrich	4 x 25 mg	N4256-25MG	$596
α-ketoglutarate	Sigma Aldrich	5 g	K1128-5G	$52.10
Recombinant Human SSADH	Abcam	50 ug	ab99429	$425
Recombinant Human GABA-T	Boster	2 x 20 ug	PROTP80404	$2498
			UNH Dept. Forensic Sciences	(1610.10)
			Total Requested	2453.00

REFERENCES

1. Pohorecky, L. A., & Brick, J. (1988). Pharmacology of ethanol. *Pharmacology & therapeutics, 36*(2-3), 335–427. Doi: 10.1016/0163-7258(88)90109-x
2. Powers, R. H., & Dean, D. E. (2016). Forensic Toxicology: Mechanisms and Pathology. Boca Raton, FL: CRC Press.
3. Lobo, I. A., & Harris, A. (2008). GABA-A receptors and alcohol. *Pharmacology Biochemistry and Behavior, 90(*1), 90-94. doi: 10.1016/j.pbb.2008.03.006
4. Allen, M. J., Sabir, S., & Sharma, S. (2022). GABA Receptor. In: StatPearls [Internet]. Treasure Islan (FL): StatPearls Publishing. Available from: htts://www.ncbi.nlm.nih.gov/books/NBK526124/?report=classic
5. Meldrum, B.S., Rogawski, M.A. Molecular targets for antiepileptic drug development. *Neurotherapeutics*, 4, 18–61 (2007). https://doi.org/10.1016/j.nurt.2006.11.010
6. Ravasz, D., Kacso, G., Fodor, V., Horvath, K., Adam-Vizi, V., & Chinopoulous, C. (2017). Catabolism of GABA, succinic semialdehyde or gamma-hydroxybutyrate through the GABA shunt impair mitochondrial substrate-level phosphorylation. *Neurochemistry International*, 109, 41-53.
7. Singh, R., & Carson, R. P. (2022). Vigabatrin. National Library of Medicine Bookshelf. [Internet] Accessed October 12, 2022. Available from: https://www.ncbi.nlm.nih.gov/books/NBK557579/
8. Walters, D. C., Arning, E., Bottiglieri, T., Jansen, E. E. W., Salomons, G. S., Brown, M. N., Schmidt, M. A., Ainslie, G. R., Roullet, J. B., & Gibson, K. M. (2019). Metabolomic analyses of vigabatrin (VGB)-treated mice: GABA-transaminase inhibition significantly alters amino acid profiles in murine neural and non-neural tissues. *Neurochem International*, 125, 151-162. doi: 10.1016/j.neuint.2019.02.015
9. Doumlele, K., Conway, E., Hedlund, J., Tolete, P., & Devinsky, O. (2016). A case report on the efficacy of vigabatrin analogue (1S, 3S)-3-amino-4-difluoromethylenyl-1-cyclopentanoic acid (CPP-115) in a patient with infantile spasms. *Epilepsy & behavior case reports*, 6, 67–69. doi: 10.1016/j.ebcr.2016.08.002
10. Morland, C., Frøland, A. S., Pettersen, M. N., Storm-Mathisen, J., Gundersen, V., Rise, F., & Hassel, B. (2018). Propionate enters GABAergic neurons, inhibits GABA transaminase, causes GABA accumulation and lethargy in a model of propionic acidemia. *Biochemical Journal*, 475, 749-758. doi: 10.1042/BCJ20170814
11. Tsukatani, T., Higuchi, T., & Matsumoto, K. (2005). Enzyme-based microtiter plate assay for y-aminobutyric acid: application to the screening of y-aminobutyric acid-producing lactic acid bacteria. *Analytica Chimica Acta, 540*(2), 293-297. Doi: 10.1016/j.aca.2005.03.056
12. Breslow, R. A., Dong, C., & White, A. (2015). Prevalence of alcohol-interactive prescription medication use among current drinkers: United States, 1999 to 2010. *Alcoholism, clinical and experimental research, 39*(2), 371–379. https://doi.org/10.1111/acer.12633
13. Weathermon, R., & Crabb, D. W. (1999). Alcohol and medication interactions. *Alcohol research & health : the journal of the National Institute on Alcohol Abuse and Alcoholism, 23*(1), 40–54.

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Yield of Touch DNA from Primary and Secondary Users on Common Burglary Tools Over Time

Skyler Williams B.S. – Cedar Crest College

Introduction, Background and Significance

The recovery of DNA at a crime scene is an essential tool to link a perpetrator to a crime; something as simple as touching an object can attribute DNA which is often referred to as "touch DNA" and is not derived from an obvious body fluid stain (1). The Locard Exchange Principle states that every contact leaves a trace (2). In the absence of large amounts of bodily fluids such as semen and blood left by the perpetrator, touch DNA could be the only way of connecting them to a crime. It is significant to prioritize objects of interest at the scene and understand the DNA profiles on them, as well as when they were deposited.

Sarah Boone was brutally murdered in the basement of her work establishment in 2006. Her death was due to blunt force trauma and sharp force as the result of being bludgeoned with a hammer, stabbed with a knife and scissors, and being stomped on. Semen was found in her vaginal cavity; however, it was her fiancés and not the person of interest. Sources of DNA from body fluids were not found so touch DNA on the hammer was analyzed. Jacuqin Byrd, was the handy man at Boones' workplace and subsequently found to be her murderer. Since Byrd was the handyman, using the hammer could have placed his DNA on the handle from when he was working (3). Byrd's defense fortunately did not argue when the DNA was deposited, and he was imprisoned because of the hammer and other incriminating evidence. It is possible however, for a perpetrator to try and claim in situations such as these that the DNA was "old".

The anatomy of touch DNA could include cell free DNA, fragment-associated residual DNA, transferred exogenous nucleated cells, endogenous nucleated cells, and anucleate corneocytes (1). The cells coming from touch are not just from the upper layer of the skin cells, other fluids from the body such as saliva, nasal or eye fluid could be transferred to the hand (1). To further explain, the anucleate corneocytes consist of the outermost layer of epidermis, skin, and will not contribute to significant touch DNA because they have undergone keratinization and lost their nuclei (4,5). However, the degraded cells and free nuclei remain on the hand post-cell death subsequent to keratinization occurring. People with drier hands could contribute more of this type of cell residue (1-7). Endogenous nucleated cells would be present on the hand and coming from the hand as opposed to coming from other bodily fluids. Exogenous nucleated cells can come from other places on the body, either their own or non-self-DNA (1, 8, 9). Cell-free DNA could also contribute to touch DNA and is present in sweat, saliva, semen, and urine (1,10-16). Cell-free DNA is synonymous with extracellular DNA and according to Stanciu *et al.* makes up the nuclear DNA that is associated with touch DNA (17).

Touch DNA recovered is partly dependent on the person who made the deposit; some people leave more recoverable traces than others making them "good" and "bad" shedders. Johannessen *et al.* identified a set of participants as "high shedders" who had at least two DNA profiles with relative fluorescence units (RFU) that were above average, and their profiles had to be strong with at least 20 of the 24 full loci. However, when comparing different methods to measure, this researcher found that shedder status were different depending on the method used. Overall, cells that are detected do not provide information about DNA quality as it is difficult to know what stage of keratinization they are in (18). Identifying shedder status can oversimplify the complexity of touch DNA because there are so many variables that impact the deposit made. Phipps *et al*. found that if hands of participants were washed then the non-dominant hand yields better results where unwashed hands yield better results with the dominant hand (19) where Stanciu *et al.* found that hand dominance and the amount of DNA salvaged were not correlated with or without handwashing (20). Personal habits can contribute to their deposit as well. For instance, if a person touches their face and hair over a long duration, they could leave a stronger touch deposit (19, 21). The amount of touch DNA left behind could also be related to the surface that it was deposited on.

A surface that is smooth and non-porous could be arguably less sensitive to touch DNA retention as opposed to a porous and rough surface. The rough surfaces could grip touch DNA and essentially pull-out cells encapsulating them in its grooves (21, 22). However, there has been evidence that smooth and non-porous surfaces

are better for touch DNA retention. A study by Pesaresi *et al.* felt that this was because of the handler's perspiration when in contact with surfaces such as glass (23).

The methods used to extract touch DNA are surface dependent. Different methods for extraction include mini taping, swabbing with cotton, polyester, or nylon, and cutting the region of interest which is more applicable to fabrics. An analyst should be familiar with all methods because some work better than others on different surface types. More than one person could handle an object and the DNA transfer could be impacted.

There are different types of DNA transfer, namely direct and indirect. Direct is when the person deposits their DNA onto a surface. In contrast, indirect is when the DNA deposited is transferred again (24). For example, if person A and B were to shake hands then person B was to pick up a pen, an indirect transfer of person A's DNA occurred. Their profile could be seen on the pen even though they did not touch it themselves. This is important when analysts are looking at DNA profiles and need to determine the people of interest. Surfaces could also contain background DNA which is when there is DNA present on the surface prior to a significant deposit being made (24). During research, this is accounted for by sterilization of the objects being analyzed prior to being used. The persistence of the deposit with more than one user is what this study is concerned with.

Research looking at DNA persistence after continued use with various users on different porous and non-porous objects has been reported. However, studies have only been conducted with periods of time between users ranging from seconds to several days with objects such as tools. This current study had a primary handler touching common burglary tools, such as screwdrivers, and crowbars. A secondary handler then touched the tools ranging from one week up to two months after the primary handler followed swabbing with MicroFLOQ® Direct swabs (Copan Italia S.p.A.) and direct amplification. As the time frame between the primary and secondary user handling a tool widens, the primary user's DNA is hypothesized to degrade over time thus making the DNA from the secondary user the likely major source of the DNA present. Elongating the period between users is beneficial to seeing how long a primary and secondary users profile lasts on an object and to determine if, over time, the percentage of the primary user changes significantly and if different substrates factor into DNA from the primary user.

Materials and Methods

a. Materials

DNA from human subjects, n= 11, were analyzed in this study (informed consent was granted by the institution's Interval Review Board). Ten sets of three tools with different handled materials- a carbon steel crowbar (Harbor freight, 69035, 92675, 9701), a crystalline handled screwdriver designated as smooth (Harbor Freight, 92193), and a thermoplastic rubber (TPR) texture handled screwdriver designated as rough (Harbor Freight, 94707, 41269) were assigned to the participants. COPAN generously donated 100 new MicroFLOQ® devices for this study.

b. Preparation of Samples and Controls

Ten biologically female participants were designated as secondary users (A-J). A biological male user was designated as the control primary user (K). Each secondary user had three-time intervals to touch their tools in a time frame of one week, one month, and two months after the primary user has touched the tools. The secondary user was assigned to touch a new batch of the three tools (rough, smooth, and carbon steel crowbar) for every time slot that had been initially touched by the primary user. This nets 9 tools per 10 secondary users, totaling 90 tools. Each tool was sterilized first by being cleaned with 10% bleach, distilled H_20, and 70% ethanol and dried before being placed into the consolidated autoclave (SSR-3A-PB) for a 30 minute cycle including a 15 minute hold at 120°C prior to being handled by the primary user. Tools were then individually placed into brown paper bags and stored in containers which were then transported to an isolated room until sample deposition. In order to save resources, substrate controls were not obtained. To mitigate the risk of external DNA being introduced, all users were instructed to wash their hands with soap one hour prior to touching the tools. They were then instructed to not have physical contact with anyone and to minimize touching common surfaces prior to their designated touch time intervals. The primary user was instructed to rub his hands together followed by rubbing his forehead and behind his ears before he handled each tool for the designated time interval (one week, one month, two months). The tools were handled with both his dominant and non-dominant hand with moderate grip, totaling two minutes of contact per tool, with hand rubbing, and forehead and behind the ear touching in between.

The secondary users handled the tools the same way at the designated touch time intervals. All users provided a self-collected buccal swab which served as their reference DNA profile.

c. Genotyping workflow

Immediately after the secondary users touched their three tools, the microFLOQ® devices (Copan Italia S.p.A.), were moistened with 1µL of amplification grade water using a micropipette as per the manufactures "microFLOQ™ WET OR DRY TRACES collection procedure" (copy supplied by the manufacture) and the handles were swabbed. If noticeable skin-like material was observed on the handle that location would be prioritized. The device tips were transferred to PCR tubes and 10µL of GenePrint®10 System (Promega, B9510) master mix was added as well as 15µL of amplification grade water making the final reaction volume 25µL. Amplification was performed on a Veriti™ 96-Well Thermal Cycler (Applied Biosystems) using the *GenePrint®10 System guide for Use on the Applied Biosystems® Genetic Analyzers* (25). After amplification samples were subjected to post-PCR cleanup using MinElute® PCR purification kit (Qiagen, 28004) as per *the Quick-Start Protocol MinElute® PCR Purification Kit* with modifications by adding 125µL of Buffer PB and an 11µL elution. Fragment analysis was performed by capillary electrophoresis using an Applied Biosystems® 3130xl Genetic Analyzer (ThermoFisher Scientific, Ser. No. 19242-003) and then genotyped using GeneMapper® ID-X software (version 1.5, A27884; ThermoFisher Scientific). The injection time was set to 10 seconds and the analytical threshold was set to 50 relative fluorescence units (RFU) based on internal validation.

Results

Percentage calculations were obtained to determine the percent of the sample profile belonging to the primary and secondary user in mixed profile samples. Results that were at least twenty percent of what was expected (alleles observed/alleles expected) allowed that samples primary and secondary user percentages to be used for analysis. The median percent values were obtained for every time interval and can be seen in *Figure 1*.

Figure 1: Graph of Median Value from Mixture Profiles

Percentages of allele contribution per tool per time interval were then calculated from samples that had an allele observed/allele expected value of twenty percent or higher (*Figure 2*).

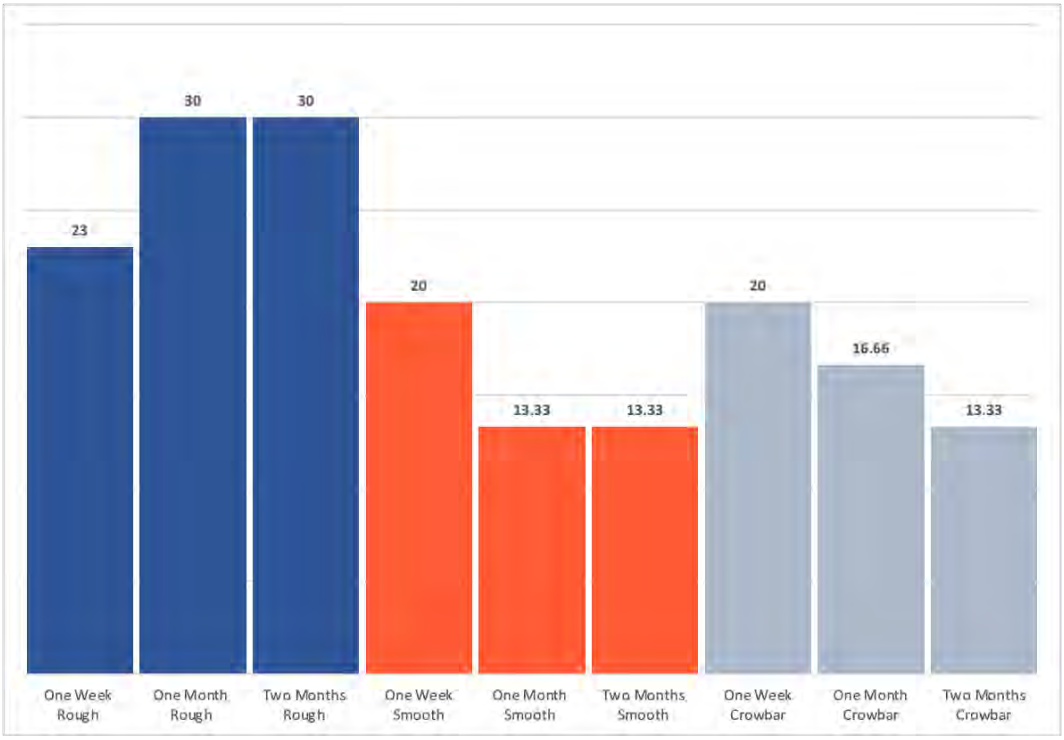

Figure 2: Allele Contribution of Each Tool Type per Time Interval

Percentages of mixed and single source profiles were then calculated for each tool type per time interval (*Figure 3*).

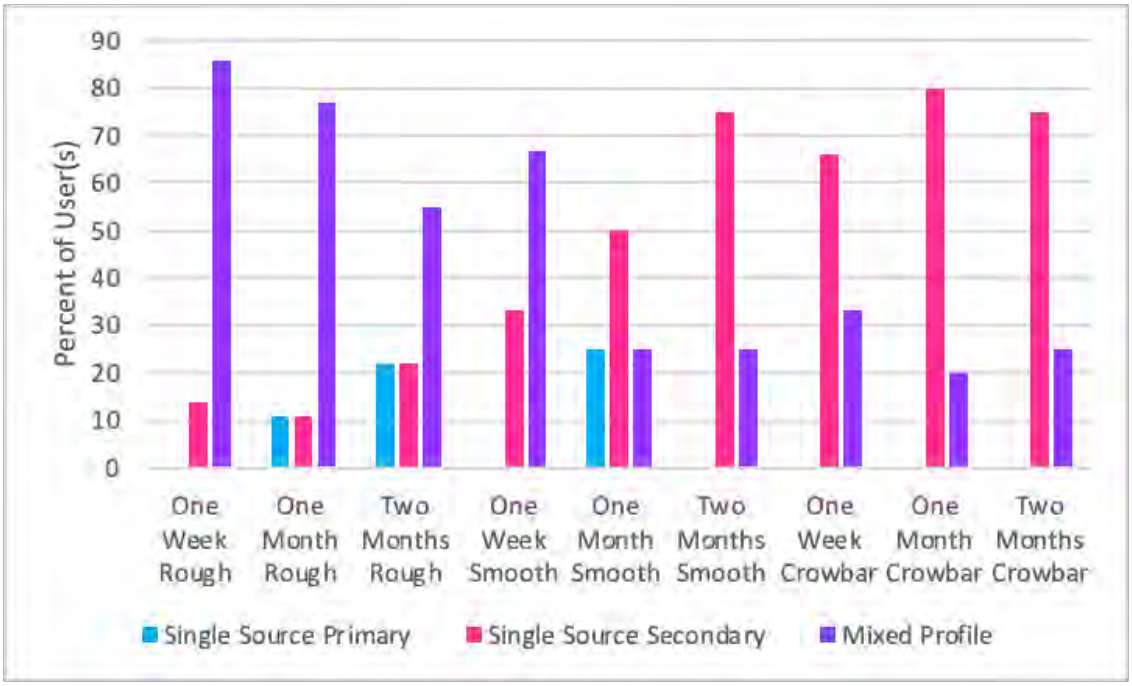

Figure 1: Percentage of Users Yielding Either Mixed or Single Source Profiles.

Conclusion and Future Considerations

The data demonstrates that the time interval or tool type studied does not impact the ability to detect the primary users DNA in a mixture profile. Results show that a primary users DNA can be found on a surface two months after being deposited and subsequently touched by a secondary user.

References

1. Burrill J, Daniel B, Frascione N. A review of trace "Touch DNA" deposits: Variability factors and an exploration of cellular composition. Forensic Sci Int: Genet. 2019 Mar 1;39:8-18.
2. Locard E. The analysis of dust traces. Am J Political Sci 1930;1(Pt 1):276-98.
3. Commonwealth of Pennsylvania V. Jacquin Jaron Byrd [Internet]. 6 Years later, Ardmore Murder Victim's Family Speaks Out. 2006 [cited 2022Apr1]. Available from: https://patch.com/pennsylvania/ardmore/6-years-later-murder-victims-family-speaks-out
4. Kierszenbaum AL, Tres L. Histology and Cell Biology: an introduction to pathology E-Book. Elsevier Health Sciences; 2015.
5. Bragulla HH, Homberger DG. Structure and functions of keratin proteins in simple, stratified, keratinized and cornified epithelia. J Anat 2009 Apr;214(4):516-59.
6. Pfeifer C, Miltner E, Wiegand P. Analysis of skin contact traces in forensic genetics with special consideration of their formation and trace extraction. Forensic Med 2016 Aug 3;5(26):453-70.
7. Kanokwongnuwut P, Kirkbride KP, Linacre A. Detection of latent DNA. Forensic Sci Int: Genet 2018 Nov 1;37:95-101.
8. Zoppis S, Muciaccia B, D'Alessio A, Ziparo E, Vecchiotti C, Filippini A. DNA fingerprinting secondary transfer from different skin areas: morphological and genetic studies. Forensic Sci Int: Genet 2014 Jul 1;11:137-43.
9. Quinque D, Kittler R, Kayser M, Stoneking M, Nasidze I. Evaluation of saliva as a source of human DNA for population and association studies. Anal Biochem 2006 Jun 15;353(2):272-7.
10. Devonshire AS, Whale AS, Gutteridge A, Jones G, Cowen S, Foy CA, Huggett JF. Towards standardisation of cell-free DNA measurement in plasma: controls for extraction efficiency, fragment size bias and quantification. Anal Bioanal Chem 2014 Oct;406:6499-512.
11. Breitbach S, Tug S, Simon P. Circulating cell-free DNA: an up-coming molecular marker in exercise physiology. Sports Med 2012 Jul;42:565-86.
12. Fatouros IG, Destouni A, Margonis K, Jamurtas AZ, Vrettou C, Kouretas D, Mastorakos G, Mitrakou A, Taxildaris K, Kanavakis E, Papassotiriou I. Cell-free plasma DNA as a novel marker of aseptic inflammation severity related to exercise overtraining. Clin Chem 2006 Sep 1;52(9):1820-4.
13. Quinones I, Daniel B. Cell free DNA as a component of forensic evidence recovered from touched surfaces. Forensic Sci Int: Genet 2012 Jan 1;6(1):26-30.
14. Taki T, Kibayashi K. Characterization of cellular and extracellular DNA in saliva. Leg Med 2015 Nov 1;17(6):471-4.
15. Chou JS, Jacobson JD, Patton WC, King A, Chan PJ. Modified isocratic capillary electrophoresis detection of cell-free DNA in semen. J Assist Reprod Genet 2004 Nov;21:397-400.
16. Bryzgunova OE, Skvortsova TE, Kolesnikova EV, Starikov AV, Rykova EY, Vlassov VV, Laktionov PP. Isolation and comparative study of cell-free nucleic acids from human urine. Ann NY Acad Sci 2006 Sep;1075(1):334-40.
17. Stanciu CE, Philpott MK, Kwon YJ, Bustamante, EE, Ehrhardt CJ. Optical characterization of epidermal cells and their relationship to DNA recovery from touch samples. F1000Research 2015;4.
18. Johannessen H, Gill P, Roseth A, Fonneløp AE. Determination of shedder status: A comparison of two methods involving cell counting in fingerprints and the DNA analysis of handheld tubes. Forensic Sci Int: Genet 2021 Jul 1;53:102541.
19. Phipps M, Petricevic S. The tendency of individuals to transfer DNA to handled items. Forensic Sci Int 2007 May 24;168(2-3):162-8.
20. Stanciu CE, Philpott MK, Kwon YJ, Bustamante, EE, Ehrhardt CJ. Optical characterization of epidermal cells and their relationship to DNA recovery from touch samples. F1000Research 2015;4.
21. Alketbi SK. The affecting factors of touch DNA. J Forensic Research 2018 Aug 3;9(3):1-4.
22. Wickenheiser RA. Trace DNA: a review, discussion of theory, and application of the transfer of trace quantities of DNA through skin contact. J Forensic Sci 2002 May 1;47(3):442-50.
23. Pesaresi M, Buscemi L, Alessandrini F, Cecati M, Tagliabracci A. Qualitative and quantitative analysis of DNA recovered from fingerprints. Int Congr Ser 2003 Jan;1239: 947-51.
24. van Oorschot RA, Szkuta B, Meakin GE, Kokshoorn B, Goray M. DNA transfer in forensic science: a review. Forensic Sci Int: Genet 2019 Jan 1;38:140-66.
25. Promega Corporation. (2022). GenePrint® 10 System for Use on the Applied Biosystems® Genetic Analyzers [Technical manual]. https://www.promega.com/-/media/files/resources/protocols/technical-manuals/101/geneprint-10-system-protocol.pdf?la=en

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OF THE CURRENT YEAR

APPLICATION REQUIREMENTS

The Northeastern Association of Forensic Scientists(NEAFS) is proud to offer its members a Training Scholarship Fund (TSF). Members in good standing are eligible to receive up to $400 towards training, workshop or non-NEAFS meeting registration and travel expenses. Individuals will only be allowed reimbursement once per application period. Any NEAFS Annual Meeting expenses are ineligible to receive funding. Reimbursement will occur upon receipt of a certificate showing successful attendance and completion of the course along with an article summarizing the course for the NEAFS newsletter.

APPLICATION INSTRUCTIONS

Applicants must submit a Pre-Approval Application prior to attending the training for which they wish to obtain funding. For additional instructions, requirements and forms visit the NEAFS website.

https://www.neafs.org/trainingscholarshipfund

TRAINING OPPORTUNITIES

Rhode Island State Crime Lab
Courtroom Testimony for Forensic Science Professional
Through Tri-Tech Forensics Training Division
January 22-24, 2024

The Rhode Island State Crime Lab is hosting a courtroom testimony class January 22-24, 2024. The class will be taught and facilitated by the Tri-Tech Forensics Training division. The RI State Crime Lab will serve as the host and is located at the University of Rhode Island in Kingston, RI.

This Courtroom Testimony for the Forensic Science Professional's course is designed to instruct proper testimony techniques to forensic science professionals, such as those employed in the fields of crime scene investigations, fingerprint analysis, and laboratory analysis.

Practitioners in these disciplines are frequently called upon to testify in court regarding the techniques, observations, and conclusions undertaken in their work. Often, they are requested to express opinions in their courtroom testimony, which is only possible when they are accepted by the court as expert witnesses. The goal of this course is to provide the students with the knowledge and practical experience necessary to successfully testify in a court of law as a forensic expert witness.

The first step in being accepted as a forensic expert witness is to survive the “voir dire.” Students will learn how to prepare themselves and the concerned attorney(s) for this important initial step. The course will continue by covering techniques the witness can employ to more effectively explain scientific evidence to the judge and jury.

Concepts covered in the course will be reinforced by practical exercises in which the students will participate.

Registration link: https://www.tritechtraining.com/012224-ctfsp.html

TRAINING OPPORTUNITIES

EMPLOYMENT OPPORTUNITIES

Department of Forensic Sciences (DFS), Washington, DC
Validation Coordinator (DNA)
CS-0401-13, Starting Salary $103,651

This position is located in the District of Columbia Government, Department of Forensic Sciences (DFS). The mission of the DFS is to provide high-quality, timely, accurate, and reliable forensic science services using best practices and best available technology, focusing on unbiased science and transparency, to enhance public safety and health.

The Validation Coordinator (DNA) ensures the technical aspects of the DNA Analysis program(s) are in compliance with ISO 17025 accreditation standards and the Quality Assurance Standards (QAS) for Forensic DNA Testing Laboratories established by the Federal Bureau of Investigation (FBI) and is responsible organizing, directing and performing the validations of technical methodologies, instruments, software, kits/reagents related to forensic DNA laboratory processes.

The incumbent oversees the daily operations pertaining to validations and writes all validation plans for new technologies to be implemented within the unit. The incumbent monitors and reports on the status and progress of validations checking to ensure that the Unit Manager's instructions, priorities, methods, and deadlines are being met. Evaluates existing DNA methods and proposes new analytical procedures for improved operations: and ensures that all associated quality standards pertaining to ISO 17025 and FBI QAS based accreditation status are being performed and met. May serve as a floating scientist to assist with laboratory casework to include serology/DNA analyses on physical evidence; interprets and reviews test results and develops conclusions and prepares final reports.

To Apply: To be considered for this employment opportunity, you will be required to submit a formal application. Please visit the DC Careers website at: https://careers.dc.gov (reference Job ID #24582). We look forward to reviewing your application!

Closing Date: 1/20/2024

Department of Forensic Sciences (DFS), Washington, DC
Forensic Scientist III (Latent Print Analyst)
CS-0401-13, Starting Salary $103,651

This position is located in the District of Columbia Government, Department of Forensic Sciences (DFS). The position is responsible for latent print analysis, which includes aspects of casework, accreditation, quality assurance and control programs within the Forensic Science Laboratory (FSL). The position ensures the technical aspects of the latent print analysis program are in compliance with ISO 17025 accreditation standards and is responsible for carrying out all aspects of latent print casework operations from evidence intake through reporting of results and communication with customers.

Conducts routine to complex examination of latent print evidence in the laboratory. Performs evaluations of latent impressions to determine suitability for entry into the Automated Fingerprint Identification System (AFIS). Compares suitable latent impressions to known standards, submitted through requests, or retrieved from AFIS candidate list, to render conclusion decisions.

Makes necessary recommendations to improve techniques in the laboratory and keeps up to date with friction ridge literature and the latest developments, techniques, and methods. Provides technical guidance to other latent print examiners and lower-level examiners on a continuing basis to ensure quality control.

Supports quality control and quality assurance for the latent print unit, which involves participation in a Proficiency Testing Program. May be required to testify in courtroom exclusively as an expert witness.

To Apply: To be considered for this employment opportunity, you will be required to submit a formal application. Please visit the DC Careers website at: https://careers.dc.gov (reference Job ID #24536). We look forward to reviewing your application!

Closing Date: 1/18/2024

Prince George's County Police Department, Palmer Park, MD
Forensic Science Division Manager

The Police Department is currently seeking a highly qualified applicant to fill an Administrative Specialist III (Forensic Science Division Manager) position, grade G-33 within the Forensic Science Division. This is advanced executive-level work performed within the Bureau of Investigation Forensic Science in the Police Department. The incumbent in this position will use extensive analytical, policy planning, and coordination skills to direct the Forensic Science Division. Work requires a comprehensive knowledge of Departmental goals and objectives and the approved principles, practices, and procedures of modern law enforcement administration. Due to the level of work and assignments, extensive coordinative and/or supervisory skills are required. The incumbent will report to the Deputy Chief, and performance will be evaluated based on accuracy, timeliness, and compliance with established guidelines and procedures.

Closing Date: 1/9/2024

Link: https://www.governmentjobs.com/careers/pgc/jobs/4320177/forensic-science-division-manager

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Clinton Health Access Initiative, Boston, Massachusetts, 02127, United States
Administrative Coordinator, IT
Salary: $40,000 - $50,000 / Yearly Salary
Posting ID# 234129404

The Clinton Health Access Initiative, Inc. (CHAI) is a global health organization committed to our mission of saving lives and reducing the burden of disease in low-and middle-income countries. CHAI is an Equal Opportunity Employer, and is committed to providing an environment of fairness, and mutual respect where all applicants have access to equal employment opportunities. CHAI values diversity and inclusion and recognizes that our mission is best advanced by the leadership and contributions of people with diverse experience, backgrounds, and culture.

Responsibilities

- Support the procurement of computer hardware and software based on pre-existing vendor agreements.
- Methodically track IT hardware and software assets from purchase to disposal across our offices spanning over 30 countries.
- Maintain and update the IT asset inventory for accurate allocation and tracking.
- Collaborate with the supervisory team to align on work priorities.

Qualifications

- A Bachelor's Degree is preferred. Alternatively, a Secondary School diploma or equivalent with 3 years of professional experience, or an equivalent amalgamation of education and work experience.
- Adeptness in working both autonomously and collaboratively, coupled with a high degree of accuracy and initiatives.

Apply Here: https://www.click2apply.net/jXObP6tV7ZDQnuL86iJMAk

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District Attorney's Laboratory of Forensic Services, Sacramento County, California
Director
Approximate Monthly Salary: $15,245.88 - $18,531.00

DESCRIPTION
This position directs and manages the operations of the District Attorney's Laboratory of Forensic Services.

MINIMUM QUALIFICATIONS
Eleven (11) years full-time paid crime laboratory experience, two of which must have been as a supervisor in a crime laboratory setting. *And* Graduation from an accredited four-year college or university with a major in chemistry, biochemistry, physics, pharmacology, biology, microbiology, criminalistics (with emphasis in chemistry), or a closely

related field. Coursework must have included successful completion of 8 semester / 12 quarter units of general chemistry and 3 semester / 4.5 quarter units of quantitative analysis.
Note: A Master's degree in criminalistics, chemistry, biology, or a closely related scientific field may be substituted for one year of the non-supervisory experience.

Final cut-off is at 5:00 PM on January 23, 2024

Please see job announcement for important testing information. This communication is a courtesy announcement only and is not meant to replace the full job announcement. Please view the official job announcement for all requirements and testing information. The full job announcement and online application is available for viewing on our website at www.saccountyjobs.net.

Please refer to job announcement for cut-off dates. Direct link to the job posting:
Director, District Attorney's Laboratory of Forensic Services | Job Details tab | Career Pages (governmentjobs.com)

Raleigh/Wake City-County Bureau of Identification (CCBI), Raleigh, NC
DNA Analyst
Open until filled

The Raleigh/Wake City-County Bureau of Identification (CCBI) is adding DNA analysis to the forensic services provided by the CCBI Laboratory and is seeking applicants for the position of DNA Analyst. With the addition of a DNA unit, **the current role of the DNA Analyst will include participation in the validation of a laboratory information management system (LIMS), validation of instrumentation and probabilistic genotyping software and analysis of validation data in order to achieve accreditation**.

This role will involve working with DNA unit team members to meet this challenging goal.

https://ewaketalent.csod.com/ux/ats/careersite/3/home/requisition/6694?c=ewaketalent

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New York State Police Mid-Hudson Regional Crime Laboratory, New Windsor, New York 12553
Forensic Scientist – Seized Drugs
Starting Salary: $50,678.00
Salary Grade: varies (14 -20)

DUTIES

- Entry level for scientists with no previous forensic lab experience. Must successfully complete training in Seized Drugs under the guidance of the Supervisor of Forensic Services and/or Technical Coordinator. Appropriate training with competency and/or proficiency tests will be completed before assuming any casework.
- Analyzes submitted evidence using instrumentation and required techniques, adhering to security protocols and policies; interprets results and findings for use in court; prepares data for interpretation by higher level State Police Forensic Scientists; uses automated systems to record results; and maintains and enhances expertise and technical proficiency in the field of forensics. Will inform the appropriate supervisor of any unusual or unexpected developments that may occur during his/her analysis.
- Be familiar with, and aware of work completed and analyses performed in other laboratory sections

MINIMUM QUALIFICATIONS
A Bachelor's Degree in the natural sciences, physical sciences, or forensic science. A degree in forensic science must include a concentration in biology or chemistry and include laboratory work with an emphasis on upper-level coursework in chemistry, biology or other natural/physical sciences. All transcripts will be reviewed to determine eligibility.

Resumes will be evaluated to determine whether candidates will proceed to the interview phase of the process. This position does not require that the candidate has taken and passed a NYS Civil Service examination, or currently holds a qualifying position within the NYS Civil Service System. This position will be filled through a resume review and interview process.

HOW TO APPLY
Kindly send a letter of intent, complete resume and transcripts to: Email: personnelresumes@troopers.ny.gov. Place in the Subject line: Forensic Scientist.

APPLICATION DUE BY: 01/01/2024

https://troopers.ny.gov/civilian-employment

Department of Forensic Sciences (DFS), Washington, DC
Forensic Scientist Manager (Latent Fingerprint)
Grade/Salary: MS-0401-14, Starting Salary $114,441

Leads latent print program operations, casework management, program coordination and grant administration. Responsible for tracking and reporting operational performance trends and metrics pertaining to casework operations and services rendered to stakeholders and customers.

Oversees latent print operations and assists the LFU Technical Leader in the evaluation of existing scientific methods and implementation of new analytical procedures. Works with the LFU Technical Leader in ensuring that the methodologies and procedures used in performing casework are in compliance with established standards and accreditation requirements and remain appropriate and relevant in the context of emerging technologies.

To be considered for this employment opportunity, you will be required to submit a formal application. Please visit the DC Careers website at: https://careers.dc.gov (reference Job ID #24435).

The closing date for this position is 1/12/24.

Suffolk County Crime Laboratory, New York
Forensic Scientist I (Firearms)

Under general supervision, an employee in this class identifies and analyzes various types of firearms, ammunition, tools and tool marks to determine such facts as the type and operability of weapons, projectile velocity and the origin of tool marks. The work involves the use and routine maintenance of sophisticated modern laboratory equipment. The incumbent may be required to issue reports and give sworn testimony in legal proceedings. The incumbent may be assigned to a team which responds to crime scenes. Routine work is performed with some independence, but more complex assignments may be performed under direct supervision, depending on the level of difficulty. Work is reviewed by a technical or administrative supervisor through conferences and a review of reports issued. Does related work as required.

For job description visit apps2.suffolkcountyny.gov/civilservice/specs/2266spe.html

Visit the civil service website at Suffolk County Civil Service Exam e-FILING (suffolkcountyny.gov)

For further information, please contact Sean Hopkins, Suffolk County Crime Lab, Firearms Section at 631-853-5541.

RI State Crime Laboratory/University of Rhode Island
Information Technologist (Evidence, LIMS & NIBIN)

The RI State Crime Laboratory located at the University of Rhode Island's Kingston, RI Campus, has an opening for an Information Technologist responsible for the Laboratory's IT needs to include its Laboratory Information Management System (LIMS), related computers hardware and software, IT infrastructure, evidence intake, storage & return, and the ATF NIBIN system.

All applications must be submitted through the University's Jobs Portal. The details for the position including any supplementary documentation and questions you should review before applying for the opening. The direct link to the position is: https://jobs.uri.edu/postings/12662 To apply for the position, please click the Apply for this Job link/button

The search will remain open until the position has been filled. First consideration will be given to applications received by December 29, 2023. Applications received after December 29, 2023, may be reviewed depending on search progress and needs, but are not guaranteed full consideration.

New York State Division of Criminal Justice Services, Office of Forensic Services, Albany, NY
Laboratory Accreditation Specialist 1
Salary: $63,108 - $80,248

Position Description: The Laboratory Accreditation Specialist (LAS) 1, SG-18, will report to the Laboratory Accreditation Specialist 2, SG-23, and will provide support to the Office of Forensic Services (OFS) and the State Commission on Forensic Science. The duties of the LAS 1 will include assisting the LAS 2 in the review of accreditation documentation submitted by forensic laboratories; resolving issues with non-conforming work submitted by laboratories; promoting uniform methodologies by preparing summaries and spreadsheets using data from proficiency test providers; collecting and organizing documentation of proficiency test participation by laboratories to verify compliance; assisting in coordination of work group meetings; identifying host sites for training activities and organizing specialized forensic training courses across the State; and assisting in the development and administration of web based specialized forensic training. Approximately 5% travel is required.

Minimum Qualifications: A bachelor's degree and two years of appropriate experience either in an accredited forensic laboratory, a medical/health laboratory, or an office of forensic services. A master's degree in a natural science may substitute for one year of the required experience.

Appointment will be temporary pending finalization of non-competitive classification. A permanent non-competitive appointment will be made as soon as practicable.

Preferred Qualifications: Experience conducting internal and/or external audits/assessments and specific experience with FBI DNA Quality Assurance Standard audits, as well as American Board of Forensic Toxicology and/or ANSI National Accreditation Board ISO 17025 Forensic Testing program is preferred.

Notes on Applying: Please send your cover letter and resume to DCJSJobs@dcjs.ny.gov. Please reference Vacancy ID #145821 in your email and cover letter. Please see additional information at https://statejobs.ny.gov/public/vacancyDetailsView.cfm?id=145821.

Deadline: 1/7/2024

Sacramento County District Attorney's Laboratory of Forensic Services
Firearms Examiners

The Sacramento County District Attorney's Laboratory of Forensic Services is currently looking to hire 1 (maybe 2) experienced firearms examiners. This position(s) will fill at the Criminalist II, III, or IV position depending on the applicants experience level.

This is a limited-continuous filing exam. Next filing cut-offs are at 5:00 pm on: 1/8/2024, 2/9/2024 (final)

Level I - $5,543.64 - $6,737.25/month
Level II - $7,398.50 - $8,992.33/month
Level III - $9215.00 - $11,202.08/month
Level IV - $9688.33 - $11,774.58/month

A detailed job description including benefits can be found below. This is also the link to use to apply for the position.

https://www.governmentjobs.com/careers/sacramento/jobs/4246039/criminalist-i-iv-firearms-and-tool-mark-examiner?page=4&pagetype=jobOpportunitiesJobs

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Wake City-County Bureau of Identification (CCBI), Raleigh, NC
DNA Analyst

The Raleigh/Wake City-County Bureau of Identification (CCBI) is adding DNA analysis to the forensic services provided by the CCBI Laboratory and is seeking applicants for the position of DNA Analyst. With the addition of a DNA unit, the current role of the DNA Analyst will include participation in the validation of a laboratory information management system (LIMS), validation of instrumentation and probabilistic genotyping software and analysis of validation data in order to achieve accreditation.

For more information and to apply: https://ewaketalent.csod.com/ux/ats/careersite/3/home/requisition/6694?c=ewaketalent

Closing Date: Open until filled

St. Edward's University (Austin, TX)
Forensic Science Program Director and Full-Time Faculty (Open Rank)

St. Edward's University, a nationally ranked, independent Catholic university and Hispanic Serving Institution (HSI), invites applications for one or more full-time, 9-month faculty positions in forensic science, including a program director, beginning no later than August 2024. Rank and tenure eligibility will be determined based on candidate qualifications. St. Edward's is characterized by its commitment to the Holy Cross educational mission to educate the hearts and minds of a diverse student body that is deeply committed to social justice.

The successful candidate will develop and teach courses at the undergraduate level, maintain a program of scholarly activity that is conducive to mentoring student research, support student success and career development, and engage in professional service within and beyond the university. Courses assigned will depend on the needs of the program and the background of the candidate. In addition, the successful candidate for the program director position will provide leadership for an undergraduate program with approximately 70 majors and minors, including the opportunity to modernize and further develop the program's curriculum to support student success and job placement.

The full description and application instructions can be found at: https://stedwards.applicantpro.com/jobs/3140598

Closing date: 1/15/2024.

Kansas City Police Department Crime Laboratory
Firearms Examiner – Forensic Specialist III

We are seeking a firearms examiner to conduct testing on various types and calibers of firearms and ammunition components to include physical and microscopic analysis in a scientific and legally accepted manner. Prepare written reports of results and render credible expert witness testimony in depositions and in a court of law.

For more information and application instructions visit Forensic Spec III, Firearms & Toolmarks.11.2023.pdf (kcpd.org)

Suspects

Click each picutre for their person of interst form.


Sam Williams


Jerry Andersen


Martin Park

Tree Photo

Click on the image for a close up view.

UNSOLVED CASE FILES®
UnsolvedCaseFiles.com

Newspaper Article

Click here.

VICTIM: Jack Lumberski
Case #003-07222000

In the early morning hours of July 22, 2000, Hugganum Country Club greenskeeper Jack Lumberski was found beaten to death with a 5-iron in his backyard.

Mr. Lumberski was in a heated dispute with three of his neighbors, regarding a large tree he recently had cut down. All three neighbors were prime suspects, yet investigators were never able to find enough evidence to convict one of them.

Your job is to solve the murder by finding the evidence needed to prove which one of Mr. Lumberski's neighbors killed him.

911 Call Transcript

Click here.

Like This Case? You can purchase more involved cases at https://www.unsolvedcasefiles.com/

Want to see if you solved the case? Visit https://www.unsolvedcasefiles.com/jack-1.html

Victim

Click on the image for a close up view.

Letter from Lawyer

Click here.

Scene

Click on the image for a close up view.