



THE
CRIMESCENE
NEWSLETTER OF THE LAKE COUNTY CRIME LABORATORY

Linda Erdei: MVP

BY ROBERT SBERNA

In 1992, when Linda Erdei joined the Lake County Crime Laboratory, she brought her passion for forensic science. She also brought a keen awareness that cutting-edge technology and procedures could play a powerful role in solving crimes.

Over the past 23 years, Erdei has spearheaded a wide range of new methodologies, services and enhancements that have helped make the Crime Laboratory one of the premier forensic labs in Ohio.

Accomplishments during her tenure include adding a DNA unit, gaining accreditation for the Crime Laboratory, and obtaining federal funding for special projects and new equipment.

Erdei, who has served as director of the Crime Laboratory since 2000, was initially hired as a serologist, with responsibility for analyzing blood and other body fluids.

Before coming to the Crime Laboratory, Erdei was employed as a medical technologist at Lake County Memorial Hospital in (CONTINUED ON PAGE 3)



Linda Erdei, M.S.

O'Brien: Murder in Reverse

BY ROBERT SBERNA

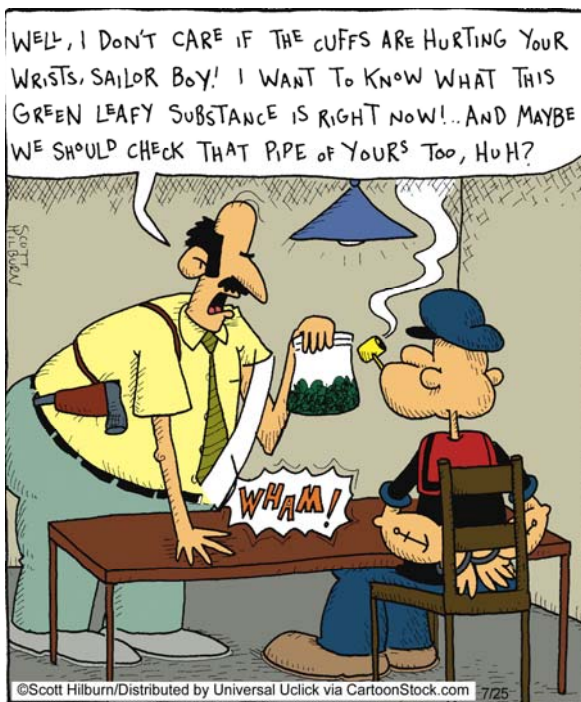
"I need to be arrested. I just ran over my girlfriend."

Todd O'Brien, 24, spoke those words to an Ohio State Highway Patrol dispatcher on the afternoon of June 15, 2010.

Minutes earlier, O'Brien had fled from a condominium complex in Painesville Township, where he had backed his car over Kayelee, 23, his ex-girlfriend and the mother of his child.

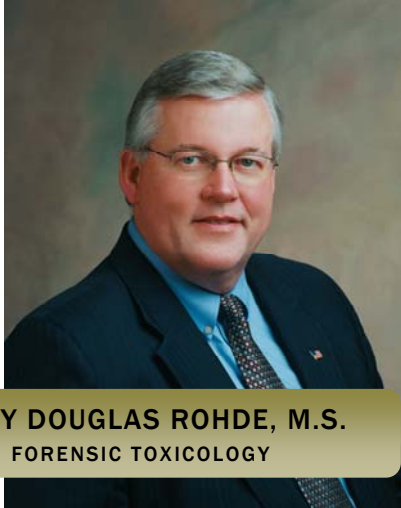
Relatives of O'Brien and Kayelee told investigators that the couple had a tumultuous relationship that had become increasingly contentious. Kayelee, a nursing student, had received a protection order against O'Brien, accusing him of stalking her.

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Frequently Asked Questions

This Column
Answers
Questions
Commonly
Asked of our
Scientists



ANSWERED BY DOUGLAS ROHDE, M.S.
EXPERT IN FORENSIC TOXICOLOGY

Q: Why do toxicology results take so long?

A: Because they do...

Toxicology cases that make the news, such as the investigation into the death of Michael Jackson or Whitney Houston, or the impaired driving cases of Justin Bieber or Lindsay Lohan, seem to go on forever. Even in high profile cases toxicology testing requires significant time and technology to complete.

Toxicology cases that we receive include impaired driving, drug facilitated sexual assault, adult probation and submissions from the Lake County Coroner. Toxicology testing in Ohio for impairment must be performed in a forensic laboratory whose methods are approved and whose scientists are certified by the Ohio Department of Health (ODH). The Lake County Crime Laboratory meets the ODH qualifications for alcohol testing and drug screening.

First, the blood or urine is analyzed for alcohol content. This test can be completed within a week and will result in a final, confirmed result that can be used in court.

The second step is a screening test that can detect illicit and prescription drugs, such as methamphetamine, cocaine, marijuana, sedatives, opiates, and PCP. If the screening test indicates that a particular drug may be present in the sample, additional confirmatory testing is required.

Confirmatory testing is the most involved and time consuming, as it tests for one drug or drug class at a time. A confirmatory test is more sensitive and specific than the screening test, requiring expensive instrumentation, and a team of ODH certified scientists. Each con-

firmary test can take several days to perform due to the difficulty of separating and detecting small amounts of a drug. Confirmatory testing will take about 6 weeks to complete, longer if more than one drug is found. The results of a confirmatory test can be used in court. Due to the expense of instrumentation, lack of laboratory space, and the number of additional scientists that would be required to complete confirmatory testing, this level of testing is not offered by the Crime Laboratory at this time.

The Crime Laboratory currently sends samples for confirmatory testing to the Hamilton County Coroner's Office in Cincinnati, which is an ASCLD/LAB-International accredited facility that employs toxicology personnel who are certified by the ODH to perform confirmatory testing.

Once all toxicology testing in a case has been completed, I will review the alcohol concentration, the drug screening results and subsequent confirmation results. I will also review the case narrative, standardized field sobriety tests and medical history (if available) in order to provide an expert opinion regarding impairment. If testimony is required, I can provide this service as well, as one of the few toxicologists in the State of Ohio whose impairment testimony has been accepted in numerous courts.

Toxicology will usually take more time than other testing performed at the laboratory. The toxicology staff at the Crime Laboratory provides accurate and thorough results as timely as possible, even if you aren't Lindsay Lohan. Law enforcement personnel are encouraged to call Doug Rohde whenever they have a question regarding toxicology testing or interpretation at 440-350-2793. 📞



Linda Erdei: MVP

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HIGHLIGHTS

- Fellow - American Board of Criminalistics (ABC)
- Certified DNA Auditor - Federal Bureau of Investigation (FBI)
- Certified Crime Scene Analyst - International Association for Identification (IAI)
- ASCLD/LAB - *International* Certified Technical Assessor - American Society of Crime Laboratory Directors/Laboratory Accreditation Board - *International* (ASCLD/LAB)
- Board Certified Medical Technologist and Specialist in Chemistry - American Society for Clinical Pathology (ASCP)

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Painesville. While working in the hospital's laboratory, she saw a great number of serious injury and illness cases, which would later help her to acclimate to her forensic science career.

"I once saw an individual come into the hospital who had tried to commit suicide by shooting himself with a shotgun," recalls Erdei. "It was ugly, but I still needed to do my job of drawing blood from his arm for testing. I think my experiences at the hospital really prepared me for what I would see at crime scenes."

After working nine years at the hospital, she spent several years on a research project at Cleveland Clinic. When the research project was nearing its end, Erdei saw a job listing in a local newspaper for a serologist at the Crime Laboratory.

"I was intrigued," recalls Erdei. "I needed to find another job and I had always been fascinated by local crimes in the news, such as the Beverly Potts disappearance, the Sam Sheppard case, and the Beverly Jarosz homicide. When I interviewed for the serologist position, I knew that forensic science was what I wanted to do."

Erdei found her new position rewarding, but realized that DNA analysis—still a relatively new technology—would allow for better discrimination of blood and body fluids than conventional serological testing, which could only determine blood type and enzymes.

She successfully lobbied the administrators of the Crime Laboratory to allocate resources for a DNA unit. After an expenditure of \$25,000 and several months of challenging set-up work, the Crime Laboratory had its DNA unit, becoming only the third such DNA facility in the State of Ohio.

Erdei quickly began using her new DNA profiling capabilities in all types of cases, including homicides, sexual assaults, burglaries and break-ins.

Lake County law enforcement agencies now had a powerful tool to link individuals to crime scene evidence, while also eliminating people as suspects. Even tiny amounts of blood, bodily fluids, hair follicles and skin could yield a usable DNA sample through the use of PCR (polymerase chain reaction), which replicated the DNA sample millions of times into a quantity large enough to analyze.

During her career, Erdei has visited many crime scenes. A certified Crime Scene Analyst and Bloodstain Pattern Analyst, she has used her expertise to search for evidence, study bloodstains, and collect items for DNA analysis to determine the donor of blood samples.

She has encountered shocking sights, including an individual ripped to pieces by a train and another who was stabbed more than 100 times and nearly decapitated. Saying she is unfazed by the horrific scenes, she explains, "I'm there to do a job."

After serving for many years as the DNA analyst/DNA technical leader, Erdei realized that accreditation would be necessary for the continued success and prestige of (CONTINUED ON PAGE 4)



Linda Erdei: MVP

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the Crime Laboratory. She began to implement more than 400 guidelines that were required for accreditation.

In 2000, the year that Erdei was named director, the Crime Laboratory was accredited for the first time by the American Society for Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB). Accreditation is a seal of approval for forensic laboratories that strengthens the credibility of evidence presented in criminal proceedings. Laboratories must undergo an evaluation every five years to maintain accreditation.

At the same time that she was implementing the policies and procedures for accreditation, she had decided to pursue her graduate degree. Erdei had already earned an associate's degree from Lakeland Community College and a bachelor of science in biology from Lake Erie College. She was also certified by the American Society for Clinical Pathology as a medical laboratory technician, medical technologist and a specialist in chemistry. In December 2002, she was awarded her master's degree in forensic science from Florida International University.

The Crime Laboratory was again accredited in 2005, but Erdei set her sights on a new goal—international accreditation, which is the most stringent accreditation program for forensic laboratories. In 2009, the Crime Laboratory received its international accreditation, an accomplishment that Erdei calls “very meaningful.”

In addition to achieving her objectives for the Crime Laboratory, Erdei has accomplished numerous professional goals. She has earned certification from the American Board of Criminalistics, the International Association for Identification, and is a member of the International Association of Bloodstain Pattern Analysts.

“Certification of individuals working at crime laboratories is extremely important to establish the validity of the scientist's credentials,” she explains, adding that her certifications required testing of her knowledge, skills and abilities.

Erdei has served as a board member of the American Society for Crime Laboratory Directors. She is a certified technical assessor for the ASCLD/LAB—for both DNA and crime scene disciplines—traveling to laboratories to assess them for compliance with the required



Erdei pointing out the location of blood on Murderer's shoe to the Prosecuting Attorney.

international guidelines.

“I always learn something when I do assessments,” says Erdei. “Sometimes I learn what a good laboratory does, and sometimes I learn what a not-so-good laboratory does. I always try to bring back the best practices for my laboratory.”

Erdei has also been instrumental in obtaining more than \$1.5 million in federal funds that have been used to acquire new instrumentation, scientist training, and crime scene equipment.

“Purchasing new equipment is a huge expense, so any funding we can obtain from the federal government is a big help,” she says. “We can then have state of the art equipment, as needed.”

In her spare time, the Concord resident enjoys traveling, walking her dog, and making jewelry. Erdei's one-of-a-kind jewelry has won awards at local shows.

While Erdei says she is focused on maintaining the excellence of the Crime Laboratory, she says she looks forward to her eventual retirement and having more time for her hobbies. 🐾

O'Brien: Murder in Reverse

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On the day of the fatal incident, O'Brien had continually texted and called Kayelee, claiming that he was upset that she would not let him see their 4-year-old son. In the early afternoon, O'Brien spotted Kayelee driving in Mentor with their son and Sean, her new boyfriend and O'Brien's former friend.

Enraged that Kayelee was with Sean, O'Brien drove head-on at their car, veering away at the last second. After they had returned to the Cambridge Condominiums, Kayelee and her son were taking a walk in the parking lot with Sean when they saw O'Brien's car racing toward them. Sean grabbed the boy and they all jumped out of O'Brien's path.

Kayelee sent her son inside and she called 911 on her cell phone to report the incident. While she was speaking with the dispatcher, O'Brien drove towards the couple again. Sean said he took a canister of pepper spray from Kayelee's purse and sprayed it at O'Brien through the open window of his car.

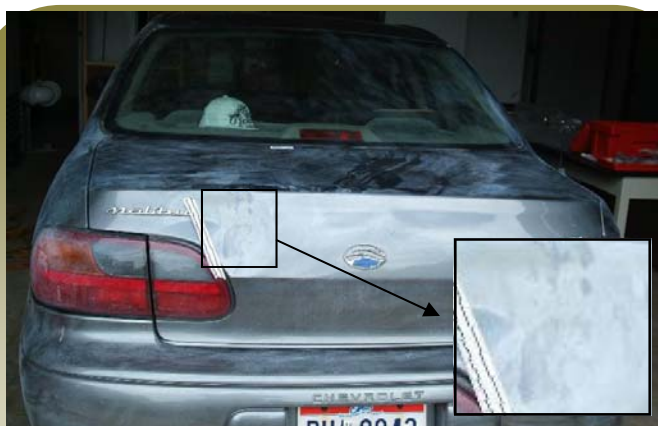
O'Brien stopped his vehicle and drove quickly in reverse, striking Kayelee. He continued in reverse, dragging her about 35 feet before she cleared the undercarriage of his car. O'Brien then put the vehicle in drive, swerved around Kayelee's body, and sped away. Witnesses reported that O'Brien seemed to be smirking as he drove off.

Kayelee died at the scene. Autopsy results showed that she sustained fractures of her arm, pelvis, jaw and hip, as well as broken ribs and internal injuries.

After leaving the condominium complex, O'Brien drove to the Highway Patrol post in Chardon to turn himself in. During his conversation with the Highway Patrol, O'Brien did not indicate whether he had struck Kayelee intentionally or accidentally. Witnesses who saw the incident said it appeared that he had purposely steered his Chevrolet Malibu into Kayelee as she walked with Sean in the parking lot of the Cambridge Condominiums, where she lived.

Lake County Sheriff's deputies were called to take custody of O'Brien. O'Brien later told Lake County Sheriff's deputies that he had been temporarily blinded by pepper spray shot at him by Sean, and had then unknowingly backed over Kayelee while trying to escape from Sean.

O'Brien told the deputies that he had splashed Gatorade on his face in an effort to remove the pepper spray. They noted that O'Brien didn't appear to have been pepper-sprayed and also that he had managed to



Victim's handprint found on rear of Murderer's vehicle.

drive the nine miles from the Cambridge Condominiums to the Highway Patrol post.

The deputies swabbed O'Brien's eyes to collect any evidence of pepper spray. They also preserved the suspected pepper spray residue that was spattered on the driver's side of his car.

The facial swab and O'Brien's car were turned over to the Lake County Crime Laboratory. Now, it was up to Crime Laboratory's scientists to analyze the evidence and determine if pepper spray had indeed entered the driver's compartment.

Dave Green, a criminalist at the Crime Laboratory, recovered fibers and blood from the undercarriage of O'Brien's car. Green determined that the fibers were consistent with the clothing worn by Kayelee when she was struck. The Crime Laboratory confirmed, through DNA analysis, that the blood from the undercarriage—and also chewing gum found on the car's rear window—were Kayelee's.

Green then analyzed O'Brien's car to confirm the presence of pepper spray residue. He first dusted the driver's side of the car with fingerprint powder, which easily adheres to capsaicin, the oily substance that is the active ingredient in pepper spray. Because pepper spray commonly contains invisible fluorescent dye (in order to aid police investigations), Green examined the dusted areas under an ultraviolet light.

Green then swabbed the steering wheel, seat, dashboard, and other interior areas of the car. He utilized gas chromatography/mass spectrometry to analyze the swabs from the car interior and the swabs taken from O'Brien's face and the hat that he was wearing when he drove into Kayelee. (CONTINUED ON PAGE 6)

O'Brien: Murder in Reverse

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After being found guilty of Murder, Aggravated Vehicular Homicide and several other counts, O'Brien was sentenced to serve a prison term of 35 years to life.

On Dec. 2, 2010, Green testified at O'Brien's trial, telling the jury: "I detected pepper spray on the outside of the vehicle—not on the inside."

Green also stated that he did not find pepper spray residue on O'Brien's facial swab or his hat.

The work of Green and the Lake County Crime Laboratory was a critical factor in O'Brien's conviction for murder, aggravated vehicular homicide, and several

other counts. He is now serving a life sentence with parole eligibility after 35 years.

Recalling the case, Green said one of the most striking moments was seeing Kayelee's palm prints on the rear of O'Brien's car. "She had placed her hands on the trunk as he was backing over her," Green said. "We put fingerprint powder on the prints and they just stood out. We preserved those prints for jury view. That evidence was very dramatic and very telling." 📌



Pepper spray found only on the exterior of Murderer's vehicle.

Forensic Analyst Graduates From Exclusive National Academy

BY ROBERT SBERNA

A Lake County Crime Laboratory scientist has joined the select group of forensic professionals who have graduated from the prestigious National Firearms Examiner Academy (NFEA).

This past October, Rebecca Silverstein, a Forensic Analyst, completed the NFEA's year-long course in firearm and toolmark examination.

The comprehensive training program, which is overseen by the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), takes place at various locations, including 17 weeks at the ATF's National Laboratory Center in Maryland. Silverstein and her fellow students received instruction on firearms identification, bullet path analysis, wound effects, bullet examination and comparison, toolmark examination, gunshot residue, serial number restoration, and other topics.

The curriculum also included coursework in laboratory protocol, safety and ethics, as well as standards that

govern the admissibility of expert testimony in court. Not only did the students increase their knowledge of physical evidence related to firearms and toolmarks, but they also gained expertise in providing courtroom testimony about their conclusions.

Only 12 students are admitted into the program each year. As a requirement for acceptance, each applicant must have at least a bachelor's degree, be (CONTINUED ON PAGE 8)



Silverstein firing a Thompson Center Hawken 50 Caliber Black Powder Rifle.

Service, Integrity and Truth: The Evolution of the Lake County Crime Laboratory

Part Three of Three Parts

BY ROBERT SBERNA

"The Lake County Crime Laboratory is the most important crime-fighting tool we have in our county," says Lake County Prosecutor Charles Coulson. "Because of the Crime Laboratory, we solve cases that would go unsolved otherwise. We can analyze the evidence so quickly. The quicker you can analyze evidence and get a suspect, the better chance you have of solving a crime."

The lab's quick response and its personal service distinguish it from other crime laboratories, says Erdei.

"We are somewhat unique in that our crime scene team is made up of examiners and forensic scientists and we go out to the scene and gather evidence," she says. "We process evidence and get results quickly to local law enforcement, which is often helpful to their initial investigations. We have a good relationship with the local police. They know they can call us anytime and talk to us about their cases."

Despite their initial resistance to the establishment of the Crime Laboratory, Lake County law enforcement agencies are now "very happy" to have a local laboratory, says Erdei. She adds that the makeup of the Laboratory's staff has also undergone a change over its history. When Erdei was hired, she was the Laboratory's only female scientist. Now, she's one of five female scientists.

Erdei spends a good deal of her day overseeing the Laboratory's quality control, which is critical to its accreditation. The Crime Laboratory has been accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) since

2000.

In 2009, the Crime Laboratory achieved the ASCLD/LAB International accreditation, the most stringent standard in the world for crime laboratories. Every five years, laboratories must earn re-accreditation from ASCLD/LAB. The Crime Laboratory was granted re-accreditation in 2014 after a rigorous assessment.

"To earn accreditation and re-accreditation, a team of inspectors from all over the country, and sometimes other countries, spend an entire week at the Laboratory assessing all our disciplines," says Coulson. "They check everything, and I mean everything—our procedures, our personnel, our records, our equipment, and our supplies."

The Crime Laboratory is funded by a countywide tax levy. Lake County law enforcement agencies receive laboratory services at no cost, while out-of-county police agencies are charged a fee.

Looking to the future, Erdei says she is continually assessing new instrumentation and procedures to learn what would be most beneficial for the laboratory and its clients.

"Mr. Coulson has been very supportive of the Crime Laboratory," she says. "He's always wanted the best and the newest technology for us, so that we can solve as many cases as possible. We are a great crime laboratory because of our highly skilled staff and the services we offer. And we will continue to be the best crime laboratory possible." 🐾

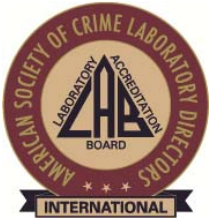


Lake County Crime Laboratory team.



LAKE COUNTY CRIME LABORATORY

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An ASCLD/LAB-International Accredited Laboratory since 2009

An ASCLD/LAB-Legacy Accredited Laboratory 2000-2009

Forensic Analyst Graduates From Exclusive National Academy

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employed as a firearm and toolmark examiner trainee, and have a senior examiner provide guidance throughout the course.

Silverstein is the first member of the Crime Laboratory to attend the NFEA program. A graduate of Ohio Northern University, where she majored in Forensic Biology and minored in Chemistry, Silverstein joined the Laboratory in 2012. She was recommended for admission to the NFEA program by her supervisor, Ray Jorz, the Crime Laboratory's Senior Forensic Fingerprint/Firearms Examiner.

Attending the NFEA program was a "once-in-a-lifetime" experience, says Silverstein, adding, "It was an opportunity to continue my education, strengthen my skills, work and network with examiners from across the country, and keep up with the ever-changing field of forensic science. The NFEA's superb training has given

me a great foundation for my career and allowed me the opportunity to build my knowledge of firearm and toolmark examination and improve as a forensic scientist."

Linda Erdei, Director of the Crime Laboratory, says the intensive training provided by the NFEA is invaluable, especially for smaller crime laboratories.

"There is a shortage of experienced firearms examiners across the country," says Erdei. "For a small lab like ours to provide this type of training would take years to accomplish. By allowing Rebecca to attend this training, she essentially obtained years of knowledge and experience in a shorter time period." ➔

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