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UNDER THE SCOPE

WISCONSIN CRIME LABORATORY BUREAU QUARTERLY NEWSLETTER

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We've Arrived!

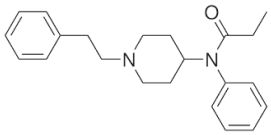
One Common Purpose; One Accreditation Document.

By: Casey Collins, Bureau Quality Assurance Coordinator

For the first time the Wisconsin Crime Laboratory Bureau has been accredited for what it is- a laboratory system. Laboratory systems consist of multiple locations operating under the same policies and procedures. Previously we had three scope documents, three accreditation numbers and three contact individuals. Now we have one scope document, one accreditation number and one contact person (Director Champion). Each facility (address) is listed on the new scope document showing the accredited categories of testing performed at that location. This system accreditation reinforces a common commitment to high quality forensic analysis among all our laboratories. We are stronger together.

We should also congratulate the AFIS team for achieving accreditation for the first time in the Latent Print discipline / 10-print comparison category of testing. Congrats AFIS Team!

FACING FENTANYL



The emergence of fentanyl and fentanyl analogs have definitely changed the way the CS unit treats drug evidence. Although basic PPE has always been an integral part of opening drug evidence, CS analysts have had to take additional protective measures in analyzing fentanyl compounds and drug evidence in general. This has included double gloving, wearing masks, working with samples in ventilated hoods, and changing the analytical scheme to minimize exposure. An updated safety protocol is forthcoming for all lab personnel. This has included fit testing individuals most likely to handle fentanyl compounds for 100N masks/respirators at each of the three laboratories. Safety protocols will continually need to be evaluated and updated for effectiveness.

The last two years have seen a great increase of non-pharmaceutical/illicit fentanyl and fentanyl analogs at each of the labs. This has included one of the most potent fentanyl analogs, carfentanil which has also been seen at each of the labs within the last couple of months.

Carfentanil, used as an elephant tranquilizer, is reported to be 100 times more potent than fentanyl. Fentanyl can be lethal at just a couple milligrams. See images below of lethal doses of heroin, fentanyl, and carfentanil. Most cases involving fentanyl compounds analyzed by the CS unit, so far, have been mixtures at low concentrations.

[redacted] Pure carfentanil has not previously been seen at the laboratory.

"Tough times never last, *but tough people do.*"

-Robert Schuller

Although there have been many reported incidents in the law enforcement community related to accidental exposure to fentanyl compounds, fortunately to date, the CLB has not experienced any incidents. This is a result of analysts taking necessary precautions in working drug evidence as well as the controlled nature of evidence submission. Additionally, LE agencies have been doing a good job of alerting lab personnel to suspected fentanyl compounds at the time of submission and using appropriate packaging. As stated previously, the lab will need to continually evaluate our safety procedures involving these substances. This may also include consideration of using technology such as ion mobility spectroscopy (IMS) and direct analysis in real time mass spectrometry (DART-MS) which are making great strides in the forensic community for use with fentanyl compounds.

-Sandy Koresch, Controlled Substances TUL

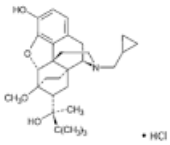
(New Hampshire State Police Forensic Laboratory)

Comparing the size of lethal doses of heroin, fentanyl, and carfentanil. The vials here contain an artificial sweetener for illustration.

The New Gold Standard in Toxicology

Jennifer Greene, Toxicology TUL

The Milwaukee Toxicology Unit has completed the first phase of the validation study for a new instrument – Liquid Chromatograph/Mass Spectrometer/Mass Spectrometer (LC/MS/MS). This instrument differs from the Unit's current technology, Gas Chromatography/Mass Spectrometry (GC/MS), which has been the "gold standard" of forensic toxicology for years. This LC/MS/MS is a nice complement to GC/MS for several different reasons, including:



- ✓Run times will be shorter
- ✓Limits of detection will be lower
- ✓Analytes that are not amenable to analysis by GC/MS can be analyzed

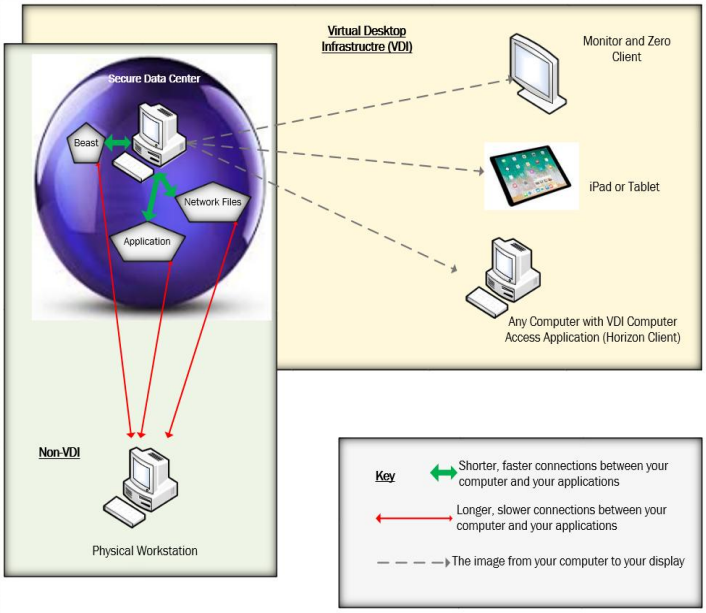
In this first phase of the instrument's validation, the Unit has demonstrated the ability of the instrument to identify buprenorphine (the active component in Suboxone®) and its metabolite, norbuprenorphine, in urine samples. Suboxone® is a drug that is used to help individuals who are recovering from an opioid addiction to maintain abstinence. The Unit is currently working to validate the method to identify and quantitate the same substances in blood samples. As this is a drug for which the Unit currently does not analyze, the Unit is excited to be able to add this analysis to its repertoire.

A truly happy person is one who can enjoy the scenery on a detour.

MidWest Toxicology Collaborative

The Milwaukee Toxicology and Controlled Substances Units have been invited to participate in the regular meetings of the Midwest Toxicology Collaborative. Although the meetings began in 2016, the formal charter was established in March 2017. According to the scope of the Collaborative, it is comprised of multidisciplinary experts from the Medical College of Wisconsin, Wisconsin Diagnostic Laboratories, Wisconsin Poison Center, Milwaukee County Medical Examiner's Office, and Wisconsin Department of Justice State Crime Laboratory.

The mission of the Collaborative is to "enhance the lives of those in our region through collaboratively improving our understanding of toxicological mechanisms, of methods to assess toxicity, and by optimizing the recognition and treatment of poisoning, thereby gaining a greater understanding of toxicity and of the epidemiology of poisoning." In particular, some of the goals of the Collaborative include serving as a resource for experts in public health and criminal investigative efforts; driving innovation in toxicological services through improving testing capability and capacity; educating the medical community; developing infrastructure in clinical care; and creating and sustaining toxicological efforts in clinical care in the region. Thus far, this Collaborative has fostered communication between the entities involved, and it has begun to increase the understanding of each entity's contribution to the mission. Monthly rounds are held at the Medical College of Wisconsin, and the Toxicology and Controlled Substances Units are invited to attend.



"…the biggest thing that we can all do to make this a success is to keep an open mind and work together…" -AJ

We can all think of plenty of projects the CLB has with BCS- and one of the most interesting is right at our doorstep. Maria Gibbs recently conducted an interview with Bethany Phillips the Project Manager for the VDI project and Alli Jerger, the Technology Adoption Specialist.

What is VDI and why is it being implemented throughout DOJ?

Alli: VDI stands for virtual desktop infrastructure and is actually the whole kit and caboodle that makes virtual desktops possible. Virtual desktops are computers that basically run on servers in our data centers. They are for most extents and purposes just like the traditional physical computers that you are used to working on. Except you can access your virtual desktop from anywhere you have an Internet connection. There are many reasons that we are implementing virtual desktops including better security, increased performance, and improving access to essential tools for those who need access while on the go.

Bethany: Including a graphic (above) that I think helps depict virtual desktop infrastructure at a high level.

CLB and BCS

Creating a Culture of Innovation

By: Maria Gibbs, Forensic Scientist Supervisor

What makes you excited to work on this project?

Alli: Everything! I know that is an easy answer but it is true! I love introducing people to new technology that has the ability to help them do what they do in new and improved ways. It is just plain cool to run into people in the halls or elevator and have them tell us how great their virtual desktop is.

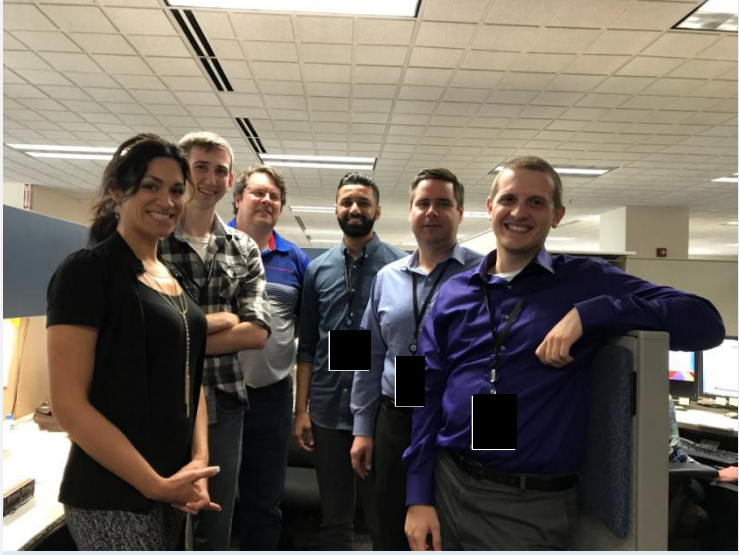
Bethany: The ability to positively impact every person at WI DOJ. I'm mindful of the important work that each division does for the people of Wisconsin, and while I can't be a lawyer and a special agent and a scientist and a victim advocate (just to name a few); I CAN help everyone with the tools needed to do that work by connecting the dots between business needs and technical solutions. And, the VDI team is phenomenal. We're a fun and passionate group (maybe that shines through in our photo).

What positive impacts do you anticipate it will have on the CLB?

Alli: That is an excellent question. I am not as plugged into how everyone works in the CLBs but overall, virtual desktops have provided a quicker and more stable computer to work on. Additionally, everyone will receive Office 2013 and updated versions of Adobe Acrobat Pro if they are a current licensed user. Also, one of the things that really makes virtual desktops great to work on is that it is that you connect to the same desktop no matter where you are. Let me give you an example, I run a lot of meetings. When I am getting ready for meetings I set everything up while I am at my desk, then I go to my conference room, login to my virtual desktop and everything is right there waiting for me. This may translate to the CLBs for meetings but also when working in the labs.

Bethany: Beast will perform faster in VDI for those with virtual desktops. This is also true for other applications that will live in the data center near the virtual desktops. There's also an improvement over other remote access options, such as Citrix. You can access your computer from anywhere through the Horizon client, an application that lets you connect to your virtual desktop, or anywhere at WI DOJ or crime labs where there's a zero client (small box that talks to virtual desktops at the data center. The graphic helps show these.

We also have organizational benefits for all of WI DOJ, such as improved security posture, increased efficiency in responding to performance issues, and the ability to more quickly upgrade everyone.



From Left: Bethany Phillips, Jacob Perry, Tim Dempsey, Mubashir Ahmed, Will Lidwin, Brody Summerfield
Not Shown: Alli Jerger, James Corman, Jason Mielke

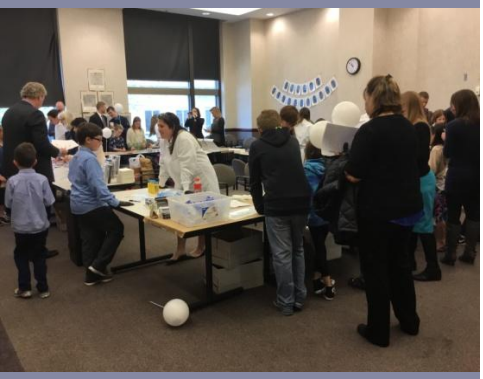
How can we (BCS and the CLB) work together to ensure this project is a success?

Alli: Honestly, the biggest thing that we can all do to make this a success is to keep an open mind and work together. I know that sounds like common sense but there is a lot of work that goes into setting virtual desktops up and testing is critical. We in BCS need to understand enough about your tools and processes to be sure that we are building the right solutions and for that we need your patience with what may seem like silly questions. I guess it all comes back down to open communication going both ways.

Bethany: Communication is important for any project and any relationship, and this effort is both. There are regular discussions between BCS and CLB teams, and if folks have questions or concerns then I encourage them to pass those along to management so they can be addressed at these meetings. The best thing is to be transparent and collaborative so that we can address things that come up and plan accordingly. We're grateful for the partnership and excited to roll out VDI to the Crime Labs!

MAKING CONNECTIONS: TYCTWD

- Jen Naugle, Forensic Scientist Supervisor



Take Your Child To Work Day (TYCTWD) was a huge success this year ! On Thursday, April 27th, in room 150A at the Risser Justice Center, twelve WSCLB staff from across multiple disciplines came together to educate the children (as well as some parents) from multiple divisions within the DOJ. There were 72 children, and the age range was four to 10+ years old. The majority of children were 10 to 13yrs old.

> "TYCTWD was a ton of fun for everyone involved. It was great seeing the kids' faces light up when their fingerprint on the balloon became "larger-than-life". I was also impressed that some of them figured out the pattern type when their DOJ parent got it wrong!" -Vanessa Styx

The demonstration times were scheduled for 9:15-10:15am and 10:20-11:20am and stations included: Latent Fingerprint Development-On balloons, Latent print development with AFIS, DNA Necklaces and Evidence packaging (candy).

The children also participated in mural decorations. As Barb Sylvester noted: "I just get a kick out of seeing not only the kids, but also the enthusiasm of the parents. It's a nice way to showcase what we do. People are eager to see it. And it's great to watch the kids with an interest in science. It's fun to encourage it."

> "It's always interesting to see what we do day-to-day through the eyes of someone who doesn't. It's a reminder of how interesting and (at times) how complex the analysis can get. Seeing the reaction of the kids and how excited they were to get to do some hands-on activities made me excited to be a part of what we do."
>
> -Kerrie Spitzer

Thanks to the staff for all their hard work: Roland Torres, Fran Lutz, Kerrie Spitzer, Nicole Archambeault, Jenna Scheidt, Vanessa Styx, Carol Winke, Kaitlyn Perry, Barbara Sylvester and Sara Thomas.

Getting to Know You…

Tim, if I gave you three more hours in a day, what would you do?

Outside of work, Tim, what makes you happy?

Do you belong to any associations (forensic or otherwise)?

Yes, I belong to IAI and am now finding I am getting drawn into WAI. I was recently invited to be on the Standards and Practices Committee for 10-Print.

Can you give us three words to describe yourself?

Tim Erlandson, AFIS Technical Unit Leader

"Can you tell us about the important people in your life?"

Adrianna Bast, AFIS Operations Manager

"Outside of work, Adrianna, what makes you happy?"

Adrianna, if I gave you three more hours in a day, what would you do?

What do you like about working cases?

My favorite thing about working cases is processing evidence and lifting prints. I enjoy the challenge of trying to figure out how to lift off of weird surfaces or strange locations. A close second is getting a hit on a lower quality or complex latent print in AFIS. Even though I'm the AFIS Operations Manager and know how the system actually works, I'm still sometimes blown away by the level of accuracy the system has.

Do you belong to any associations (forensic or otherwise)?

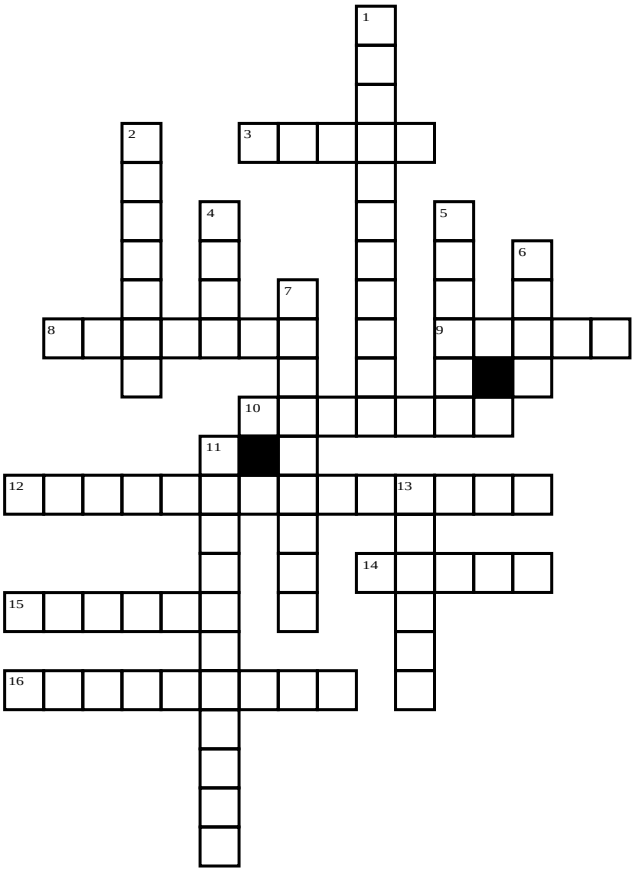
Yes, I belong to WAI (former Board member) and I am chair of the AFIS Committee.

Can you give us three words to describe yourself?

WSCLB Crossword Puzzle

Down:

1. Destruction of an offender DNA sample and/or deletion of a DNA profile from the DNA databank upon verification that the DNA record is not eligible for inclusion at SDIS.
2. Helical grooves in the bore of a firearm barrel to impart rotary motion to a projectile.
4. The acronym for the National Institute of Standards and Technology.
5. A form of a gene that is located at a specific location on a specific chromosome.
6. Acronym for Integrated Ballistics Identification System
7. A single unit of ammunition consisting of the case, primer, and propellant with one or more projectile(s).
11. The point at which one friction ridge divides into two friction ridges.
13. The____ of identification as it pertains to the comparison of toolmarks enables opinions of common origin to be made when the unique surface contours of two toolmarks are in "sufficient agreement.



Across:

3. The specific physical location of a gene on a chromosome. In forensic DNA analysis, it refers to the specific sites being tested (e.g., D3S1358, vWA, or D5S818).
8. The mathematical point that corresponds to ridge endings and bifurcations of a fingerprint or palmprint image.
9. A method used for screening biological or other samples for the presence of drugs or other substances of interest.
10. A minor peak typically observed one repeat unit smaller than a primary STR allele resulting from strand slippage during amplification.
12. ____ accentuates the detection of analytes at low levels by enhancing chromatographic peak shape which leads to a detector response that is easily distinguished from the background signal.
14. The point on a ridge at or nearest to the point of divergence of two lines, and located directly in front of the point of divergence.
15. Area of the palm associated with the thumb side, or radial side, of the palm.
16. In toxicology, solutions of analytes with known concentrations.