



# THE LAB REPORT



VOLUME 1 NO. 2

FALL 2015

WEST VIRGINIA  
STATE POLICE  
FORENSIC  
LABORATORY

## SPECIAL POINTS OF INTEREST:

- Myth / Fact
- Employee Spotlight
- Road Show!

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## BACKLOG CORNER

### INCOMPLETE CASES PER SECTION:

Biochemistry: 554  
 Central Evidence Processing: 359  
 Drug Identification: 2345  
 Firearm/Toolmark Identification: 54  
 Latent Prints: 57  
 Questioned Documents: 6  
 Toxicology: 679  
 Trace Evidence: 12  
**Total: 4066**

### TOTAL TURNAROUND TIME:

This details the time from when a case enters the lab to when a case is returned to the officer. **Time in days.**

Biochemistry: 129  
 Central Evidence Processing: 219  
 Drug Identification: 246  
 Firearm/Toolmark Identification: 167  
 Latent Prints: 30  
 Questioned Documents: 56  
 Toxicology: 236  
 Trace Evidence: 49



## ASSIST IN REDUCING THE BACKLOG

We wanted to provide a friendly reminder to all our submitting agencies that when cases are submitted the analyst does not typically know the details of the investigation. Often the case can sit unworked in our backlog

and said case has been dismissed for one reason or another without the knowledge of the lab. These cases that no longer need analysis can greatly reduce our backlog number, if that information is

reported to us. We ask you be mindful of those with active cases who are waiting to be worked behind cases that may be inactive. Please notify the laboratory when a case no longer needs analysis!

# FORENSIC MYTH / FACT

**Contributing Author, Section:**

- Dave Miller, Central Evidence Processing**
- Rebecca Harrison, Drug Identification**
- Calissa Carper, Firearm/Toolmark Identification**
- Steve King, Latent Prints**
- Staci Taylor, Questioned Documents**
- Erin Spearen, Toxicology**
- Korri Powers, Trace Evidence**
- Meredith Chambers, Biochemistry**

**Central Evidence Processing Section:**

**Myth:** There must be a suspect in order to submit biological evidence for DNA analysis.

**Fact:** Cases without suspects should be submitted.

The items will be processed and DNA profiles from questioned items will be entered into CODIS. (See below, not all questioned item DNA profiles are eligible for CODIS entry)

**Myth:** All questioned samples may be entered into CODIS

**Fact:** Samples must be CODIS eligible before DNA profiles may be entered

Biological samples must be confirmed in writing to be crime related prior to CODIS entry.

The Central Evidence Processing Section will request in writing documentation showing that the investigating officer believes items are crime related prior to forwarding them to the Biochemistry Section for DNA analysis. The

investigator must believe that the perpetrator of the crime is the source of the DNA profile that is to be entered into CODIS. If there is a question as to the source of the DNA then elimination knowns from other likely contributors

(victims, residents, witnesses, others) will be requested and in some cases required before the profile is entered into CODIS (i.e. touch DNA in a property crime).

**Myth:** There is a “Standard” examination.

Many officers will request the

“Standard” examination when submitting evidence for DNA analysis, without providing the analyst with sufficient details to complete the request.

**Fact:** Each item of evidence should be submitted with a specific request for analysis.

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*“The investigator must believe that the perpetrator of the crime is the source of the DNA profile that is to be entered into CODIS.”*

List Section(s) and Examinations(s) Requested:  
 Semen, blood, saliva

(use additional sheets if necessary)

DOB: \_\_\_ / \_\_\_ / \_\_\_ SSN: \_\_\_ - \_\_\_ - \_\_\_

**Provide specific examinations needed on the DPS-53 form.**

## CONT: MYTH / FACT

### CER Continued:

Let's consider two cases: a shirt worn by the suspect in a malicious assault/robbery and a fitted sheet from the bed where a sexual assault took place. Both are submitted to the laboratory with a request for "Standard" examinations.

A shirt, worn by the assailant during the assault/robbery, is bloodstained and has hairs on it. The victim was stabbed. What is the "Standard" examination? If the shirt was being worn by the suspect when it was collected, then performing DNA analysis on only one area of blood is likely to connect the suspect to the victim. If, however, the shirt was discarded and found beside the road, the laboratory would also collect samples from the collar or armpits, to show who has been wearing the shirt. Now add to the scenario that the suspect was bleeding. If so, more samples need to be collected and tested.

A fitted sheet is submitted in a sexual assault investigation. The sheet is from the bed where the assault took place, with a request for "standard" examination. It may seem obvious to look for seminal fluid of the suspect, and this may be the case if the sheet is from the bed of the victim. Now add that the sheet is from the bed of the sex-

ually active male suspect and multiple semen stains are identified. In this case, it may be much more difficult, but more important to find the victim's DNA on the sheet as opposed to seminal fluid.

The context of the evidence to the crime may dictate where on the item should be tested, or what tests are performed. By asking "What question will be answered by performing DNA analysis?" you may be able to provide a more informed request for analysis.

**Myth: All items need to be submitted. All submitted items need to be tested.**

**Fact: WVSP Forensic Laboratory does not have limitless resources.**

You only have one chance to collect evidence in most cases. Collect all that you can. But when it comes to submitting those items to the lab, consider what is needed. In complex cases, it may be necessary to coordinate testing between the investigating agency, the prosecuting or  
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A bloody shirt is properly packaged for transport to the lab.

# CONT: MYTH / FACT



Marihuana

*Chemical color tests react with certain classifications of drugs, but cannot differentiate between different types of drugs in those classifications.*



Heroin

## CER Continued:

defense attorneys, the Evidence Processing lab, and the Biochemistry lab.

In the above example of the malicious assault/robbery, if the suspect was wearing the

bloody clothing and was not bleeding, do you need to submit his shirt, jeans, shoes, and hat?

Or will one item be sufficient? If you know

that one area is sufficient for your needs, let

the laboratory know, so that time and re-

sources can be spent on other cases. In the

sexual assault case, if the sex crime kit is pos-

itive for semen, does the sheet need to be ex-

amined at all. Whether yes or no, communi-

cate those needs to lab when possible.

## Drug Identification:

**Myth: Chemical color tests, sometimes**

**known as Field Tests, give an accurate**

**identification for specific drugs.**

**Fact:** Chemical color tests are an important

part of the identification process, but cannot

be used as a positive identification for a drug.

Chemical color tests react with certain classi-

fications of drugs (i.e. amphetamines, opiates,

etc.), but cannot differentiate between the

different types of drugs in those classifica-

tions. Chemical color tests can also give false

positives with some compounds giving a posi-

tive result for a classification in which they do

not belong. Color tests are helpful for getting

an understanding of what the unknown sub-

stance may be, but substances should be run

on a confirmatory instrument (like a gas chro-

matograph/mass spectrometer) for positive

identification.

**Myth: Forensic Analysts understand and can testify to the effects drugs take on the body.**

**Fact:** While Forensic Analysts are trained in

many identification methods and can identify

a multitude of drugs, they are not trained to

testify to the effects drugs have on the body.

A pharmacologist has the appropriate school-

ing and training to testify to the effect of

drugs on the body and is an invaluable re-

source in this regard.

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# CONT: MYTH / FACT

## **Firearm / Toolmark Identification:**

**Myth: The Firearm/Toolmark Section is also known as the Ballistics Section.**

**Fact:** While this is a common misnomer for our discipline, our science is called Firearm and Toolmark Identification in which our primary concern is to determine whether or not a fired bullet, fired cartridge case, fired shotshell, or other ammunition component was fired from one particular firearm. Ballistics is the study of a projectile in flight.

**Myth: The Firearm/Toolmark Section cannot do anything with fired/damaged bullets.**

**Fact:** Contrary to popular belief, fired and damaged bullets can be very useful pieces of forensic evidence given their condition. A fired bullet or even a fired bullet/jacket fragment can actually tell the analyst and the investigating officer more about the make/model of firearm used than a fired cartridge case (with a few exceptions for some firearms). Fired bullets can also display clues about the path they have taken at a crime scene, such as adhering foreign substances, hol-

low-point cavities filled with wood fibrous material, glass, etc., abrasions or flattened sides indicating impact with objects, etc. Please submit all of your fired bullet evidence so that the section's analysts can examine and decide whether a fired bullet is too damaged beyond recognition or not – it may look completely useless to you, but it may be a wealth of information for us!

**Myth: Toolmark comparisons can be performed using a submitted photograph of the evidence toolmark to the suspected tool.**



**Fact:** The only comparisons in the Firearm/Toolmark Section that can be performed using submitted photographs involve footwear and tire track evidence. Toolmark comparisons must have the original toolmark evidence OR a cast of the toolmark if the evidence cannot be

removed from the scene. Analysts must have the evidence toolmark or cast to put on their comparison microscopes in order to compare them directly to test toolmarks made in the lab with the suspected tool. Casts of toolmarks (i.e. on a window sill or on a door frame) can be made using silicone based materials including Mikrosil, Forensic Sil, Accutrans, etc. that can be bought online and easily applied at the scene.

**Myth: Photographs of footwear and tire track impressions without the presence of a scale will not be examined for comparison purposes.**

**Fact:** While the absence of a scale does limit the results of footwear/tire evidence comparisons, there are still conclusions that can be rendered depending on the quality of the evidence itself and the quality of the photograph taken. In order to maximize the outcome of footwear/tire comparisons using photographs, the images must be of EXAM QUALITY – (CONTINUED ON NEXT PAGE)

# CONT: MYTH / FACT

## Firearm / Toolmark Continued:

camera lens parallel to the impression (level, not tilted in any way), include a scale that should be directly next to the length of impression and on the same plane as the bottom of the impression (especially in deep soil, mud, snow), IN FOCUS!, use low oblique angles of light, and include the evidence impression's identifier/number. If the original evidence can be collected, SUBMIT IT to the Lab and we will photograph and process/enhance the impression evidence. Also, you can always call our office if advice is needed on how to collect certain types of impression evidence.

## Latent Prints:

Fingerprints have been used to identify criminals since the late 19th century making fingerprint identification the oldest of the forensic disciplines. Naturally, with that kind of longevity, certain myths have become associated with fingerprint work, such as the first myth we will address:

**Myth: Latent "fingerprint" examiners only examine fingerprints.**

**Fact:** I remain surprised that this myth still has legs and appears to be quite resilient. While fingerprints make up the majority of impressions recovered at crime scenes and while some laboratories add to the confusion by naming their print units Latent "Fingerprint" Sections and their analysts Latent "Fingerprint" Examiners or Specialists, the truth is those of us examining the prints see much more than fingerprints.

If we are discussing the forensic use of biological impression evidence, then we are referring to friction ridge skin impressions. Friction ridge skin covers the underside of the hands and feet and anywhere friction ridge skin makes contact, a latent print (meaning present, but not necessarily visible) can be deposited.

Latent print examiners are fully trained to examine all friction ridge skin: fingers (including all finger joints), palms, and the underside of toes and feet. And a palm print, a toe print, and a sole print

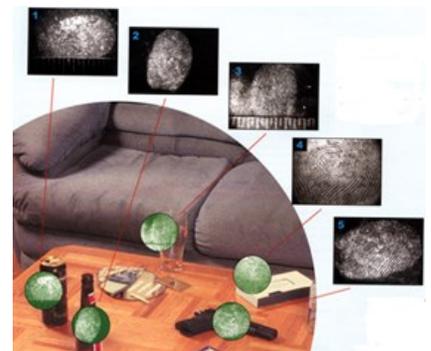
can be identified with the same reliability as a fingerprint.

**Myth: Latent prints can be recovered from any surface.**

**Fact:** While television shows like CSI, NCIS, and Law & Order imbed this myth deep into the public consciousness, the truth is much less plot driven.

The average latent print examiner will see in the course of a normal year's worth of evidence, just about every material and surface that is manufactured from plastic, metal, and wood in its various incarnations, all in the form of objects recovered from crime scenes and determined relevant to a criminal investigation. We will also see items that began their existence in the natural world – rocks, fruits, vegetables – but now are evidence.

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# CONT: MYTH / FACT

## Latent Prints Continued:

Though the modern laboratory has at its disposal technological advances of the highest order, many of the same obstacles confronting latent print examiners at the beginning of the 20th century still confront us in the second decade of the 21st. Rough and textured surfaces; dirt, grease, grime; blood and other biological matter; rain, snow, fire, and heat; the way evidence is recovered and packaged for transport – just to name a few – often still serve as inhibitors of recovering latent print deposits. There's also the possibility that a perpetrator wore gloves (a surprisingly rare occurrence). Of course, thousands of usable latent prints are developed over the course of a year— some even on surfaces that surprise the latent examiner – and are helpful to police investigations. But investigators also get a large share of negative reports, often leading to self-blame for not knowing what they're doing, or accusations aimed at the laboratory for not knowing what *they* are doing. Neither reaction is useful and almost always misses the mark of the truth: recovering latent prints in real life is just not television.

**Myth: People can alter their fingerprints.**

**Fact:** This one depends on your definition of alter. If your definition includes being able to make your fingerprints undetectable by craftily having a skilled surgeon manipu-

late your skin, well, then the answer is a resounding NO.

However, if you define alter to include turning your fingertips into painful bloody pulps that will heal into mounds of insensitive scar tissue, then I guess it's not a myth.

Since fingerprints became a reliable form of human identification, individuals – usually for nefarious reasons – have tried to alter their fingerprints. Occasionally, these individuals were already well known for their criminal activities before their attempt at dermatological skull-duggery – the Depression era Public Enemy Number One John Dillinger comes to mind.

Some, however, would not be well-known if not for their attempt at altering nature. Here we turn to Roscoe Pitts. Mr. Pitts was well-traveled through the criminal justice system, but primarily for petty and nuisance crimes. Nonetheless,

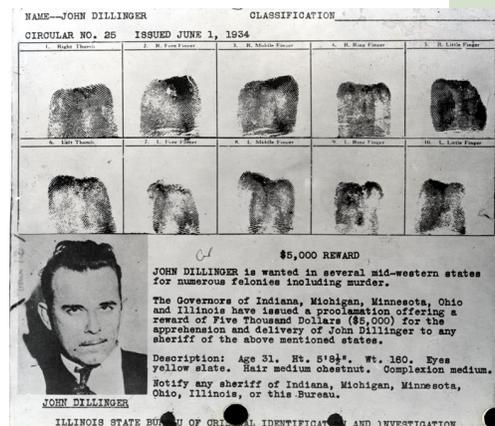
he felt that, in order to reduce his time as a guest of the state, he would mess with his fingerprints and foil any future attempt to apprehend him.

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PAGE)

*“...thousands of usable latent prints are developed over the course of a year...and are helpful to police investigations.”*



# CONT: MYTH / FACT

**“Questioned handwriting, hand printing, and even numbers can be examined and compared to known writing...”**

**Questioned Documents still does work involving suspected fraud!**

**Latent Prints Continued:**

Mr. Pitts had wounds opened on each of his digits and had his hands secured to his sides where grafting would render his fingerprints unusable. By and large, as operations go – very painful operations, I might add – it was successful. All ten fingers were soundly scarred. What Mr. Pitts did not reckon with was that more than the first joint of our fingers can be used for identification (see Myth 1). All future criminal attempts and subsequent arrests – and there were more – included the recording of the second joint of each finger, which insured that Mr. Pitts’ rap sheet was kept up-to-date. Gloves, man, why not gloves.

**Questioned Documents:**

**Myth: The WVSPFL no longer has a Questioned Documents Section.**

**Fact:** The Questioned Documents Section is open and examining approximately 65-70 cases per year involving suspected forgery, suspected fraud, threats, assaults, child

abuse, extortions, and various other investigations.

**Myth: Only signatures and/or cursive handwriting can be examined to determine the author of the writing.**

**Fact:** Questioned handwriting (“cursive”), hand printing (non-cursive), and even numbers can be examined and compared to known writing to determine the author of the questioned writing.

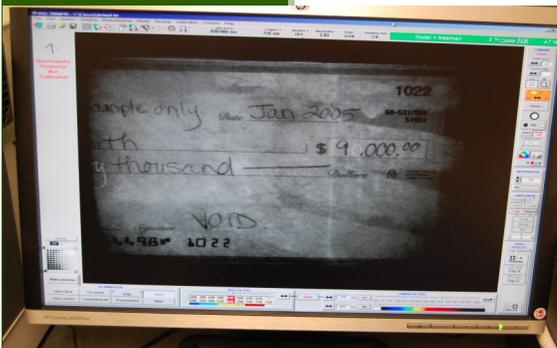
**Myth: The Questioned Documents Section never identifies the writer of a questioned writing.**

**Fact:** An identification is often possible given sufficient amount of known handwriting to compare using the original or best copy of a questioned document.

**Toxicology Section:**

**Myth: I have to do a conversion/calculation on the result I receive from the Forensic Laboratory to determine the correct Blood Alcohol Concentration.**

**Fact:** When you receive a report from the (CONTINUED ON NEXT PAGE)





## CONT: MYTH / FACT

### Trace Evidence Section:

**Myth: Gunshot Residue (GSR) analysis can be used for distance determinations.**

**Fact:** GSR analysis in our laboratory refers to the analysis of particles formed from the primer components during discharge. These particles are typically inorganic in nature and are invisible to the naked eye. Distance determinations rely on the propellant or powder portion of the ammunition. These are organic substances and can often be visualized or enhanced using chemicals. Distance determinations are performed by the Firearm/Toolmark Section, while GSR analysis is performed in the Trace Evidence Section of the laboratory.

**Myth: An item of evidence that requires ignitable liquid analysis cannot be submitted to more than one section of the laboratory.**

**Fact:** In many cases, items, such as Molotov cocktails, can be submitted for ignitable liquid analysis as well as latent print detection and/or DNA analysis.

It must be clearly noted on the Case Submission Form that multiple examinations are requested. The item will first be processed for ignitable liquids using alternative methods that do not destroy latent prints or DNA evidence, and then forwarded to the other section(s) of the laboratory as necessary.

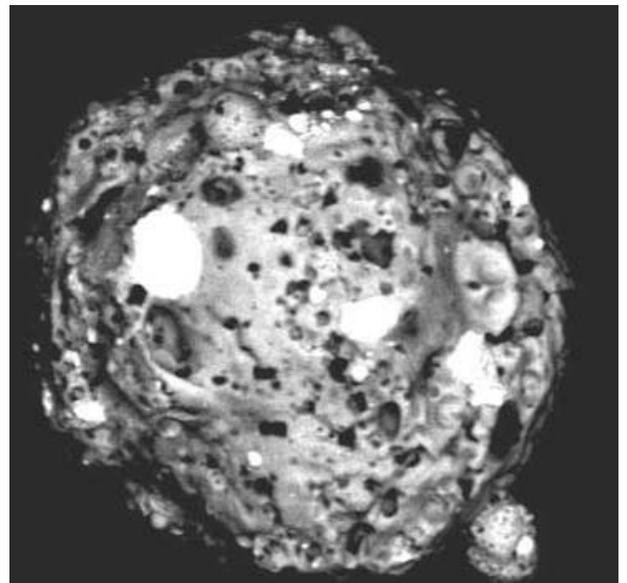
### Biochemistry Section:

**Myth: A DNA profile in the CODIS database can be used as a known reference standard for comparison purposes.**

**Fact:** If a match occurs in the CODIS database to a convicted offender, a known reference sample is still required for comparison purposes. The CODIS database is used for investigative leads, therefore, a confirmation known is required.

**Myth: Performing DNA analysis on samples of evidentiary material can be completed in one day.**

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## CONT: MYTH / FACT

**Fact:** Samples are submitted to the laboratory and first have to be screened for the presence of biological material by the Central Evidence Processing Section, then are transferred to the Biochemistry Section to perform DNA analysis. The DNA testing process with advanced technologies can be performed in one week. However, we require a ten work day notice to complete the testing.

**Myth: There must be a suspect in order to submit biological evidence for DNA analysis.**

**Fact:** Cases without suspects should be submitted. The items will be processed and a CODIS eligible DNA profile from questioned items will be entered into the CODIS database for a potential investigative lead.



**A reference sample is needed for comparison purposes with CODIS matches.**

## EMPLOYEE SPOTLIGHT: MEREDITH CHAMBERS

**Hometown:** Winfield, WV

**Education:** B.S. in Biology, M.S. in Forensic Science

**Work Experience:** WVSP Forensic Laboratory, Biochemistry Section, since 2000

**Role at the WVSP Forensic Laboratory:** As the DNA Technical Leader, Meredith is responsible for the technical operations of the DNA laboratory, overseeing the proficiency program, implementation and supervision of the quality control and safety programs, and the validation program. In addition to the above, Meredith is also a case working analyst.

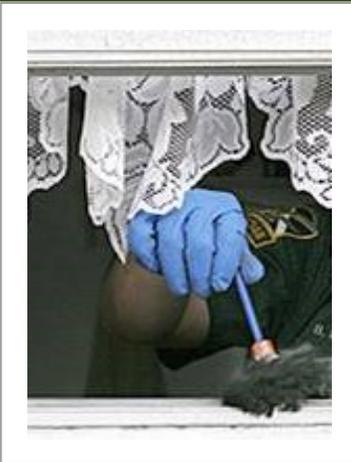
**Favorite part of job:** Meredith enjoys many aspects of her job. One in particular is the fact that DNA technology changes so rapidly that she is constantly learning and evolving the testing process used to test evidence.



# The Crime Lab Road Show

The West Virginia State Police Forensic Laboratory is starting to provide training opportunities for law enforcement, attorneys, and judges! To help us do this we need volunteer agencies to host a one day training opportunity. If you are an interested party please contact Blake N. Reta. (contact information below)

- One day training opportunity for any law enforcement agencies, attorneys, and judges.
- Maximum of 30 attendees.
- Training will feature 1 to 2 sections of the forensic laboratory for lecture and hands on experience with evidence collection.
- The sections that will be providing training will be agreed upon by the forensic laboratory and the volunteer host.



**Note: The training provided will be free to the attendees!**

**What we are asking of the host agency:**

- Provide an area (local school, department complex, etc) for training to occur
- Provide material needed for the training

**West Virginia State Police Forensic Laboratory**

Blake N. Reta  
Email: [blake.n.reta@wvosp.gov](mailto:blake.n.reta@wvosp.gov)  
Phone: 304-746-2171

**Sections of the West Virginia State Police Forensic Laboratory that can provide lecture / training include:**

- |                        |                       |                       |
|------------------------|-----------------------|-----------------------|
| - Biochemistry         | - Drug Identification | - Evidence Processing |
| - Firearm/Toolmark     | - Footwear/Tire Track | - Latent Prints       |
| - Questioned Documents | - Toxicology          | - Trace Evidence      |

## LABORATORY STAFF:

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## FEEDBACK

We always welcome feedback for the upcoming newsletter!

Have comments or suggestion?

Want to know how we do something?

Need to know how we recommend to collect a specific type of evidence?

Feel free to contact the editors and suggest topics and provide us with any comments or feedback.

Your Editors,

Blake N. Reta — [blake.n.reta@wvsp.gov](mailto:blake.n.reta@wvsp.gov)

Stephen C. King — [stephen.c.king@wvsp.gov](mailto:stephen.c.king@wvsp.gov)



## Laboratory Mission and Goal

### Mission:

It is the mission of the West Virginia State Police Forensic Laboratory to provide accurate and impartial scientific support services to all criminal justice agencies operating in the State of West Virginia.

### Goal:

The goal of the West Virginia State Police Forensic Laboratory is to generate accurate, impartial, and timely scientific examinations and opinions for the criminal justice system of the State in the interest of public safety. Establish and maintain a database of convicted felons, sex offenders, case work profiles, and missing persons.

# LABORATORY STAFF:

## Lab Director / Quality Assurance Manager:

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