



# The Lab Report

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## In This Issue....

**The Nebraska State Patrol Crime Laboratory is pleased to announce upcoming opportunities for free training on Footwear/Tire Impression evidence collection and DNA collection topics!! We will be hosting day long training dates in various locations across the state beginning with the first training in Lincoln, NE on July 26 (see page 2 for more information)!**

**Other topics featured in this edition of The Lab Report include: current case backlogs, collecting legible palm prints, touch DNA, some helpful hints regarding lab notification of case adjudication, and our analyst Spotlight on Forensics!**

**If you have any questions/concerns regarding the topics related to this issue (or any other issue) of The Lab Report, please do not hesitate to contact us (laboratory staff contact information - pg. 10).**

**Enjoy!**

**Amy Weber (Firearm/Tool Mark Section Analyst - editor, The Lab Report)**

## The Backlog Corner

**Biology Unit: 151 assignments (approx. 6 month turnaround time)**

**Physical Sciences Unit:**

**Firearm/Toolmark cases: 54 assignments (approx. 6 month turnaround time)**

**NIBIN: 155 assignments (approx. 6 month turnaround time)**

**Latent Fingerprints Section: 29 assignments (approx. 3 week turnaround time)**

**Chemistry Unit:**

**Controlled Substances: 674 assignments (approx. 12 week turnaround time)**

**Toxicology: 33 assignments (approx. 8 week turnaround time)**

**Trace: 4 assignments (approx. 8 week turnaround time)**



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## NSP Crime Lab Road Show: Coming Soon to A City Near You!

The Nebraska State Patrol Crime Laboratory will soon be hosting **FREE training opportunities** across the state!

### Training Topics:

**DNA** - “Touch” DNA, tiered approach to DNA evidence submission, how to fill out submission forms, CODIS, and more!!

**Footwear/Tire Evidence** - investigative importance of footwear/tire evidence, proper crime scene collection techniques (hands-on training to include photography, casting, lifting, etc)!!

**Where?** The first training opportunity will be held in Lincoln, NE on JULY 26 from 0900-1600 at Southeast Community College. Additional training opportunities will be held at 5 locations throughout the state (training locations, dates, and times TBD).

**Who Can Attend?** Any law enforcement officer in Nebraska!

**Cost?** FREE!!!! Class sizes will be limited (25-30 people)

If you or someone you know is interested in attending, please contact **Pam Zilly** or **Jason Linder** for more information and to register for class! (402) 471-8950



## Collecting Legible Palm Print Impressions

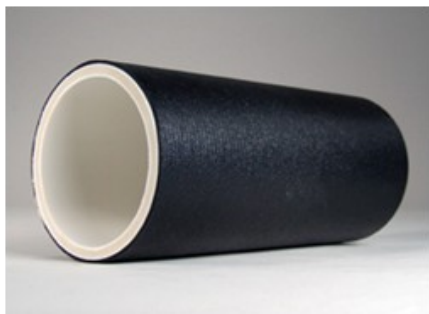
As with the collection of legible fingerprints, the collection of legible palm prints for comparison purposes is extremely important for the success of identifying latent impressions, which often contain minimal ridge detail.

### Obtaining Palm Prints

As with collecting fingerprints, palm prints can be collected either using a palm print card with ink or on a Livescan. When submitting palm print impressions, be sure to send the corresponding Tenprint card as well. The Tenprint card is needed to enter the palm print cards into AFIS.

Be sure that the friction ridge skin is clean and ink the palm fully. When rolling palm prints on a palm print card, the orientation of the palm must be the same as the palm illustration. The base of the wrist must be in line with edge of card and the fingertips oriented in the direction of the image.

Position the palm print card on the palm print roller and position the base of the palm (by the wrist) on the edge of the card. The card and hand should be simultaneously rolled, starting from the base of the palm towards the tips of the fingers (the roller will be rolled toward the individual being rolled).



Palm Print Roller



Fully Inked Palm

The writer's palm is the area on the side of the palm, on the little finger side. It's aptly called the writer's palm because it is the area that makes contact the surface while someone is writing (both writer's palms must be captured no matter what hand the individual writes with). The writer's palm is placed in a vertical, upright position with base of wrist in line with edge of card and fingertip oriented in direction of text within the capture block.

To verify the fingerprint card to the palm print card, there is an area on the front of the palm print card to capture the index finger of the palm being rolled and on the back of the card there are areas for the capture of all five fingers of that hand to be rolled. **See the example of the front and back of a palm print card on the next page.**



### Latent Fingerprint

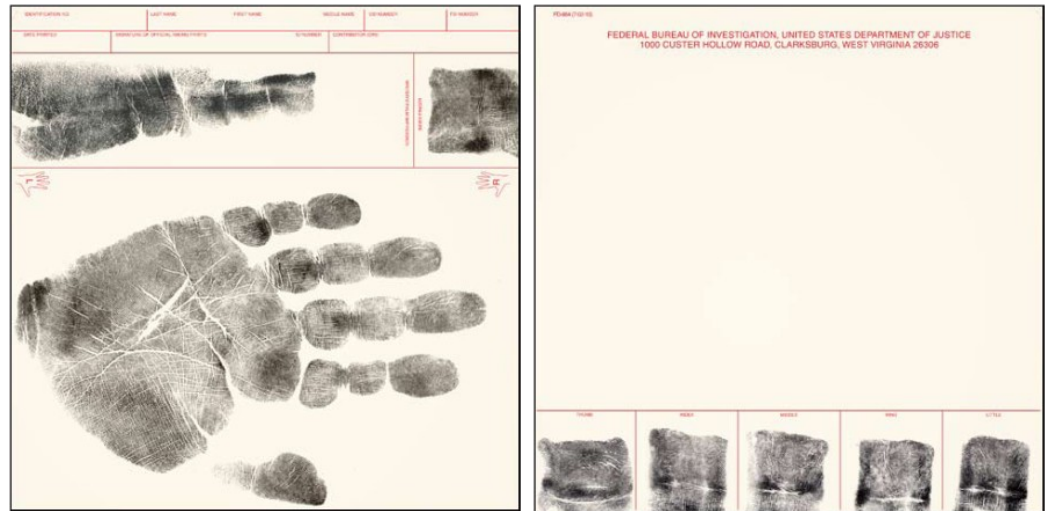
#### Section

*Mariana Ward (sup.)*

*Steve Burke*

*Bridget Driver*

## Collecting Legible Palm Print Impressions (continued)



**Example of Front and Back of a Properly Collected Palm Print Card**

When printing palm prints on a Livescan, follow the prompts given as to what sequence to roll the palm print in (i.e. upper palm, lower palm, writer's palm). **You will not have to re-roll the fingerprints since they will have already been digitally captured.**

There are some benefits of taking ink rolled palm prints over Livescan impressions. Since the hand has natural curves in some areas, not all areas of the palm print are routinely captured on a Livescan palm print.



Although the third impression has captured most of the friction ridge detail of the palm, there are still areas that are more easily obtained by rolling the palm print with ink.

**Fingerprint, palm print and major case print cards can be obtained from the FBI at no charge. Contact the Fingerprint Supply Center at 304-625-3983 or visit their website: [www.fbi.gov/hq/cjisd/forms/orderingfps.htm](http://www.fbi.gov/hq/cjisd/forms/orderingfps.htm)**

**Palm Print card: FD-884 (7-02-10)**

**If you have any questions regarding the capture or submission of exemplar prints, please feel free to contact the NSP Crime Lab Latent Print section.**



## “Touch” DNA—To Submit or Not Submit?

### What is Touch DNA?

- ◆ “Touch” DNA refers to DNA/skin cells collected from handled objects, touched surfaces, or worn clothes.
- ◆ “Touch” DNA typically has less DNA yields than when compared other types of body fluids or biological materials.



### Nebraska State Patrol Crime Laboratory Biology Unit Touch DNA Study

#### Introduction:

The Nebraska State Patrol Crime Laboratory (NSPCL) Biology Unit has seen an increase in the submission of ‘touch’ DNA samples over the recent years. The results of ‘touch’ DNA samples are **highly variable**, so a retrospective study was conducted to determine the success rate of ‘touch’ DNA samples. Please see the “Quick Facts” below for some study information.

#### Quick Facts:

Study Time Frame	July 2009 – July 2011
Number of ‘touch’ cases	149
Number of ‘touch’ samples	500
Percentage increase in samples over course of study	300%
Top offense type	Property Crimes (58%), followed by gun related crimes (13%)
Collection (who collected the item)	NSPCL – 54% Law Enforcement – 46%

The study also looked at different item categories to see if certain ones yielded better DNA profiles. Refer to the chart on the following page for the item categories analyzed in the study.







## “Touch” DNA—To Submit or Not Submit?

### Item Categories:

Category	# Samples
Objects	139
Firearms	108
Car Swabs	74
Clothing	37
Fired Casings/Bullet	28
Building Structures	23
Gloves	21
Weapons	19
Hats	18
Cartridges (unfired)	11
Shoes	11
Tools	11

### Results:

The samples in the study were evaluated by the quantity of DNA present and the type of DNA profile obtained. The item categories were given a ranking of High, Medium, or Low based on these parameters. See the chart below for the results for each category.

Category	Ranking
Clothing	High
Gloves	High
Hats	High
Car Swabs	Medium
Firearms	Medium
Objects	Medium
Weapons	Medium
Building Structures	Low
Cartridges (unfired)	Low
Fired cartridge cases/fired bullets	Low
Shoes	Low
Tools	Low



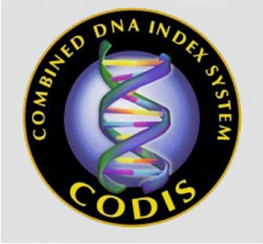
## “Touch” DNA—To Submit or Not Submit?

### Conclusions:

After evaluating the item categories **there were several factors that contributed to the success of getting a DNA profile.**

- ◆ **Prolonged contact** – The longer someone had contact with an item, the higher the likelihood of getting a good DNA profile. Examples of these items are hats, clothing, gloves, and steering wheels.
- ◆ **Items that a perpetrator picked up and moved during the course of a burglary DID NOT give good DNA profiles.** Other ‘quick touch’ items such as doorknobs, external car door handles, window latches, and light switches also did not yield successful DNA results.
- ◆ **Surface area/type** – **Small non-porous objects were NOT successful.** These include keys, lighters, safe dials, cash boxes, money, latches, buttons, etc.
- ◆ **Car swabs** – **Steering wheels and gear shifts gave the BEST DNA results.** External car door handles and small surface areas were not successful (such as keys, radio buttons, rearview mirrors, seat belt buckles, etc.).
- ◆ **Firearms** – **Swab the entire firearm using ONE SWAB.** This study, as well as a recent journal article, concluded that **better DNA profiles are obtained when one swab is used, rather than breaking up the firearm into sections (grip, trigger, slide, etc.)**
- ◆ **Property Crimes** – **ANY personal item left by the perpetrator at a property crime is probative ‘touch’ DNA evidence,** even if it is in the medium or low category.





## “Touch” DNA—To Submit or Not Submit?

### Touch DNA Submission Notes

- ◆ Remember! “Touch” DNA is the **least successful type of DNA analysis**. If you have other items in the case that contain body fluids, prioritize those **FIRST**.
- ◆ **Collection** – For small objects, do **not** break up the item into quadrants. We would like all the potential DNA collected on **ONE SWAB**.
- ◆ **Consumption** – We will use the entire swab for DNA testing. **We need permission to do so**. There is a checkbox on the NSP 750A (Biology Supplemental Submission Form). Please check this box and initial next to it in the space provided. Failing to do so can delay your case.
- ◆ **Elimination samples** – Be sure to send in elimination samples from other people who may have touched/handled the item. The sample cannot go into the CODIS database until we have those samples. Elimination samples also aid in the interpretation of DNA profiles. Not sending them in can delay your case.
- ◆ **Use caution when submitting items from public use areas** such as bank counters, door knobs, ATMs, doors to businesses, etc. These items have a large number of potential contributors and the DNA success rate is low.
- ◆ **Felon in Possession of a Firearm** – These samples are **NOT** eligible for entry into the CODIS database. Please submit reference samples for comparison when submitting this type of case. Failure to do so may delay your case.

### NSPCL Biology Section Policies

- ◆ Policies regarding certain types of ‘touch’ DNA items are in progress. You will be notified when these policies take effect.
- ◆ Tiered/Layering Policy (effective 9/23/11) – This policy uses a ‘layered’ approach to item submission by case type. Please adhere to this policy when submitting ALL NSPCL Biology cases.
  - ◆ Homicides – 10 items
  - ◆ Sexual assaults (with kit) – Kit +1 additional intimate item
  - ◆ Sexual assaults (no kit) – 5 items
  - ◆ Assaults/other felonies – 5 items
  - ◆ Property crimes – 3 items



**If you have any questions about the ‘Touch’ DNA study or would like a ‘Touch’ DNA brochure, please contact Melissa Kreikemeier (Forensic Scientist – Biology). [Melissa.Kreikemeier@nebraska.gov](mailto:Melissa.Kreikemeier@nebraska.gov) or call (402) 471-8950**



### Helpful Hints: Just a Reminder...

As case backlogs in laboratories across the nation increase, it is **very important** for investigating officers and attorneys to **notify the laboratory** when a case has been settled prior to the submitted evidence being tested!

Notification of case settlement will **greatly** assist with laboratory backlog and turnaround times - if analysts are actively working cases without knowledge that the case has already been adjudicated through the court system, they are hindered from working those cases that **are** open and active. Notification is not only helpful to the analysts, but is advantageous to you, the submitting agency!

If your agency has a case that has been settled prior to evidence analysis/reporting, please take the time to contact the laboratory and notify the appropriate unit/section that the case will not require analysis.



### Spotlight on Forensics - Brad Rutledge (Chemistry Unit)



**Name:** Brad Rutledge

**Hometown:** Lincoln, NE

**Education:** B.S. Chemistry (University of Nebraska-Lincoln)

#### Work Experience:

Harris Laboratories, Inc (Water Chemist), Lincoln, NE (4 years)

Nebraska State Health Laboratory (Analytical Chemist), Lincoln, NE (3 years)

Nebraska State Patrol Crime Laboratory (Forensic Scientist - Toxicology), Lincoln, NE (25 years)

**Hobbies:** I like to spend my free time gardening and playing the banjo in a band called Toxic Polka.

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8am—5pm

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Monday-Friday  
9am-4pm

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with general laboratory  
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