Palm Bay, Florida Application for the

2011 J. Robert Havlick and Thomas H. Muehlenbeck Awards

Submitted by
Maj. John Blackledge
Investigations Division
Palm Bay (FL) Police Department
130 Malabar Rd SE, Palm Bay, FL 32907
(321) 952-3459 • Fax (321) 953-8939 • blackj@palmbayflorida.org

Summary

In January 2007 the Palm Bay, FL Police Department and DNA:SI LABS℠ started collaborating in an ongoing effort to develop a unique and practical DNA based investigative tool for all police departments to use in investigating everyday crime. This partnership created LODIS™ (Local DNA Index System). Created as an innovative integration of disparate disciplines, human identification by DNA and advanced computer database science, LODIS brings the power of DNA identification directly to the desktops and vehicles of detectives and patrol officers. LODIS is the only application of its kind existing in law enforcement today. It brings readily usable DNA information quickly to investigators at their desks or in their cars. LODIS establishes new standards for timeliness and utility of DNA information. Palm Bay Police Department and DNA:SI LABS created processes that deliver readily usable data directly to investigators in less than two weeks.

Jurisdiction & History of the Situation

The City of Palm Bay is a 104 square mile suburban community primarily consisting of residential neighborhoods. The City has experienced rapid growth in the last three years with our population exceeding 100,000 residents in 2007 and currently standing at 105,089. Although this growth has been welcome in our community, it has brought with it an alarming increase in drug trafficking and related property crimes.

Like much of the nation, we suffer increasing property crime. Most of this crime is committed by a small number of multiple offenders. The primary goal in employing LODIS is to identify offenders, prosecute them, and remove them from the community. LODIS enabled our Police Department to more quickly identify offenders and link them to their multiple crimes. The indisputable nature of DNA evidence created more guilty pleas. This resulted in more incarceration resulting from arrests, achieving our ultimate goal of removing the offenders from our community.

Innovation's Importance, Internal Impact, and Community Benefits.

Palm Bay Police Department has 168 sworn officers and 4 civilian crime scene investigators. LODIS successfully demonstrated that a police department of less than 200 sworn officers, properly trained, working with an accredited laboratory, could directly deploy and utilize a local DNA database to benefit their community. Previously no law enforcement agency without their own DNA laboratory had collected, preserved, recorded, and submitted DNA evidence to establish their own DNA identification database. None had developed computer tools to make results immediately usable by patrol officers and detectives. LODIS proved that a DNA databasing system, designed to provide "forensic intelligence," was a viable investigative tool for these police departments that serve the majority of the nation. The essence of LODIS is that it allows for the widespread use of DNA evidence by all officers to investigate more crimes. This changes the role of DNA from confirming evidence to being an investigative tool that identifies offenders early in an investigation.

Palm Bay is enjoying the benefits below already. These will increase as LODIS continues to operate.

Overall Crime Reduction • Identification of previously "invisible" offenders removes them from the community more quickly, reducing overall crime. Multiple offenders and career criminals are more effectively and more promptly removed from the community. Palm Bay enjoyed a 14% decrease in property crime comparing 2007 to 2008. [1]

[1] During that period there were no other significant changes in procedure or process except the implementation of LODIS.

More Cost Effective Policing & Improved Closure Rate • All officers and investigators can collect effective evidence without costly CSI support. Arrests for multiple crimes linked by LODIS are clearly more cost effective and quickly improve closure rate. Suspects faced with DNA evidence of their crime confess more often and sooner than when DNA evidence does not exist. (See example on the following page)

Access to Powerful Real-time Tools • Palm Bay officers and investigators use LODIS daily, accessing the database from their desks and cars. Collaborative features of the LODIS software leverage the efforts of investigators when DNA links a suspect to cases worked by different investigators.

Improved Conviction Rate • There has been an increase in guilty pleas, to full charges, without trial. No cases aided by LODIS have yet been fully adjudicated.

Resource Allocation • LODIS allowed the department to spend more time focusing on quality of life issues further improving the city's overall good.

Who has benefited from the innovation?

LODIS has benefited the entire community of Palm Bay. Residents and businesses have enjoyed a reduction in property crime. Palm Bay Police crime reports show that from 2007 to 2009, value of thefts from residents and businesses decreased by half, compared to previous years, saving nearly $18 million. Palm Bay Police Department has benefited by leveraging their limited resources. LODIS identifies suspects for investigators more quickly, often tying together several crimes committed by the same person. Increased guilty pleas allow prosecutors to reduce costs by trying fewer cases.

How was the innovation initiated and implemented?

In the fall of 2006 Palm Bay Police Department, through their Chief's Chairmanship of the IACP Forensic Science Committee, learned of a pilot project planned by DNA:SI LABS. DNA:SI planned to bring widespread DNA based intelligence to smaller police departments. The lab was seeking a partner law enforcement agency to help take their concept to reality. They would supply the testing and programming while the agency brought their policing expertise and real world feedback to the project. DNA:SI entertained applications from like sized cities. After several rounds of discussion with finalists, Palm Bay Police Department was selected by DNA:SI as their partner for the pilot project. Phase one testing was initiated in January 2007. After a brief pause 1n 2009 for evaluation ad software updates, the refined system continues to operate today.

What risks were associated with planning and developing the innovation?

The primary risks faced while planning and developing LODIS involved doubt or reticence on the part of related entities. Genetic science continues to evolve. Public perceptions of its

capabilities and limitations are often incorrect. Risks relating to state law regarding evidence collection, especially DNA evidence were identified in the early planning. Counsel for Palm Bay, counsel for DNA:SI LABS, along with the Police Chief and Major of Investigations, modified planned processes to insure compliance with existing law.

Civil liberty and civil rights organizations expressed concern. The department briefed them on the benefits of LODIS early in the planning. Based on this, they withheld opposition and agreed to a wait and see position. Benefits of the system and careful operation allayed their concern.

What was the environment in which the innovation was created and sustained?

Increasing citizen concern over property crimes created the need for an effective method to reduce these crimes. PBPD has collaborated in the past with developers of innovative policing technologies. The decision to invest our resources in the LODIS program was based on its promise to help reduce the incidence of property crime in the City.

Promising results from the outset made sustainability easy to justify despite a challenging budget environment.

What were execution costs and savings?

Because this program was executed as a collaborative effort with a commercial entity many start-up costs were borne by the lab. A feature of the LODIS system is affordability. DNA samples are processed for a fraction of the cost required under traditional case-model DNA analysis. List price for the system, as currently operating in Palm Bay is $225K annually.

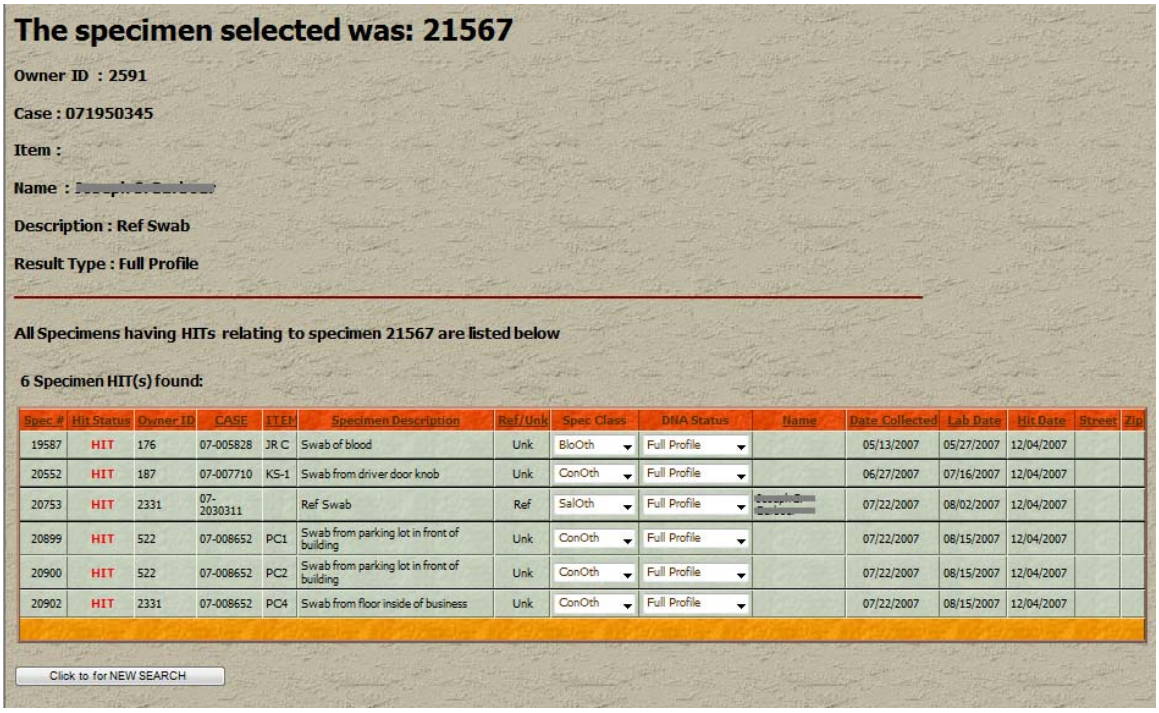
The largest identifiable savings is reduced theft in the community. Palm Bay Police crime reports show that residents and businesses are spared $6.2 million in theft losses. As LODIS makes policing in Palm Bay more efficient incalculable savings have accrued to police investigators as suspects are identified earlier and multiple crimes are often closed with a single arrest. Cases made using DNA evidence are contested less frequently, creating savings for prosecutors, judiciary, and police.

What lessons were learned that could be shared with other local governments?

Local DNA indices can aid any community. They can be deployed quickly and easily. They allow working cops, patrol and investigation, to utilize DNA proactively for earlier identification of offenders.

Using DNA identification for crimes throughout the community frequently ties petty criminals to felonies with no known suspects. DNA linkage to these crimes and criminals will lead to a decrease in property crime and a decrease in losses from property crimes.

LODIS has proven effective in identifying the local criminals who commit local crime. It has linked these local offenders to many more crimes they committed than ever before. Because of LODIS, single arrests now often close multiple open cases. The following case illustrates how this works.



The specimen selected was: 21567

Owner ID : 2591

Case : 071950345

Item :

Name : [redacted]

Description : Ref Swab

Result Type : Full Profile

All Specimens having HITs relating to specimen 21567 are listed below

6 Specimen HIT(s) found:

Spec #	Hit Status	Owner ID	CASE	ITEM	Specimen Description	Ref/Unk	Spec Class	DNA Status	Name	Date Collected	Lab Date	Hit Date	Street	Zip
19587	HIT	176	07-005828	JR C	Swab of blood	Unk	BloOth	Full Profile		05/13/2007	05/27/2007	12/04/2007		
20552	HIT	187	07-007710	KS-1	Swab from driver door knob	Unk	ConOth	Full Profile		06/27/2007	07/16/2007	12/04/2007		
20753	HIT	2331	07-2030311		Ref Swab	Ref	SalOth	Full Profile	[redacted]	07/22/2007	08/02/2007	12/04/2007		
20899	HIT	522	07-008652	PC1	Swab from parking lot in front of building	Unk	ConOth	Full Profile		07/22/2007	08/15/2007	12/04/2007		
20900	HIT	522	07-008652	PC2	Swab from parking lot in front of building	Unk	ConOth	Full Profile		07/22/2007	08/15/2007	12/04/2007		
20902	HIT	2331	07-008652	PC4	Swab from floor inside of business	Unk	ConOth	Full Profile		07/22/2007	08/15/2007	12/04/2007		

Click to for NEW SEARCH

This screen summarizes the LODIS results that tied one criminal to seven crimes he committed in our City. This search screen shows the HITS (matches) to two unsolved auto burglaries when a reference sample from the victim of an unrelated crime was entered in the system. This thief first came to our attention as the victim of an assault. He was injured during an altercation at a convenience store. This victim was asked to provide a reference DNA sample. He agreed and provided a sample. His sample was analyzed and entered into our LODIS database. Two HITS were generated linking this individual to auto burglaries committed earlier. When our investigator confronted the suspect (victim of the store fight) with our DNA evidence, he quickly confessed to the vehicle burglaries and two residential burglaries. LODIS was exclusively responsible for the identification of a suspect, and the subsequent questioning, confession, and arrest of that suspect. Without our LODIS program this suspect would not have been identified. Instead of being free, unknown to us, and continuing his criminal career, he is now jailed, not only for two vehicle burglaries, but also two residential burglaries, a grand theft, a petty theft, and the fraudulent use of a credit card stolen during one of the residential burglaries.

The LODIS DNA database functions much like the AFIS system does with fingerprints. We have learned that DNA identification can be employed with the same, perhaps greater, ease than AFIS. Collection is no more difficult. Interpretations are immediate and unassailable. Database matching is fast and accurate.

Which department and/or individuals championed the innovation?

The LODIS DNA system was championed by the Police Department. Chief Berger and Major Blackledge worked tirelessly to insure a successful launch. Major Blackledge and Lieutenant Eakins, of the Investigations Division, were the internal leaders, working closely with their own personnel and with DNA:SI.

Attachments

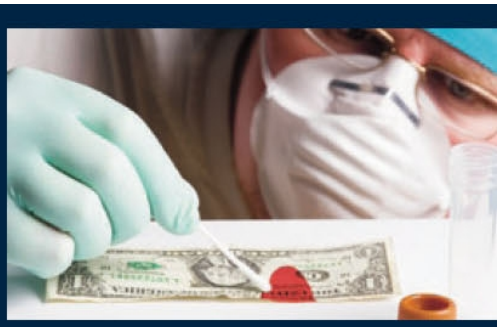
IACP *Police Chief* Article, April 2008

Press Clippings

Video: *LODIS – DNA Delivering Investigative Leads at Palm Bay Police Department*
Please view this video at
http://palmbay.granicus.com/MediaPlayer.php?view_id=8&clip_id=262&publish_id=&event_id=

LODIS, a New Investigative Tool:
DNA Is Not Just Court Evidence Anymore

By Bill Berger, Chief of Police, Palm Bay, Florida; Joe Chimera, General Manager and Laboratory Director, DNA Security, Inc., Burlington, North Carolina; and Major John Blackledge, Investigations Division, Palm Bay, Florida, Police Department



In December 2006, the Palm Bay, Florida, Police Department (PBPD) and DNA Security, Inc. (DNA:SI LABS), collaborated to develop a local agency databank of forensic DNA evidence for use on most crimes. The project was established to determine if mass collection of DNA from common crimes and subject reference samples, placed into a database, could be developed into an effective investigative evidence tool, identifying criminals and connecting seemingly unrelated crime scenes. The process had to be cost-effective, and the results from the laboratory had to be expedient. The results would also have to be accessible by the average road officer or detective in an easily understood format.

Although there have been several DNA projects and programs aimed at the local or regional agency level, these projects have been undertaken at large metropolitan agencies or regions with unique resources and atypical demographics.1 Most projects have focused on specific crimes, such as burglaries or violent crimes. Considering real-world conditions, where more than 80 percent of law enforcement agencies cover jurisdictions having populations of less than 250,000, these projects are not representative of the average police jurisdiction. Moreover, the bulk of crime that affects most communities is property related. It is common knowledge and an accepted criminology statistic that a small number of criminals commit more than 80 percent of crimes. Many of the offenders who commit violent crimes today have a history of petty crimes. The general premise of a localized forensic DNA database is predicated on these facts. In Palm Bay, juveniles commit more than 75 percent of the crime activity. The purpose of the Local DNA Index System (LODIS) is to bring forensic DNA technology down to the average city or county level.

The city of Palm Bay is approximately 100 square miles of suburban community consisting mostly of residential neighborhoods; about half are residential single-family neighborhoods, and the rest can be defined as rural residential and sparsely populated wooded areas. The PBPD has 166 sworn officers and 4 civilian crime scene investigation specialists. Recently, the city has experienced rapid growth, and with a population exceeding 107,000, police staffing has been a challenge. Despite the growing trend of violent crime in the Orlando region and across the United States, Palm Bay has thus far experienced few violent crimes. The bulk of the criminal activity there consists of burglary and theft cases, mostly committed by local offenders and tied to drug activity or juvenile delinquency.

DNA:SI LABS is a privately owned forensic DNA laboratory located in Burlington, North Carolina, that provides DNA processing services to prosecuting attorneys, defense lawyers, and agency and private investigators. The laboratory is accredited by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB). DNA:SI LABS noted that there was a need to provide law enforcement agencies covering smaller jurisdictions with access to forensic DNA testing for investigating crimes that are more common.

In the Palm Bay LODIS project, DNA processing was made an option for virtually every crime scene, except for murders and rapes due to issues with access to the U.S. Federal Bureau of Investigation (FBI) national database, the Combined DNA Index System (CODIS). For six months, every officer, crime scene technician, and detective was encouraged to submit any number of swabs collected from any type of crime processed. Officers obtained "known" reference samples limited only by stated legal parameters.

Figure 1. Officer Jeff Reardon processes an auto burglary for DNA evidence.
Photo by Yvonne Martinez, PBPD

The project has three phases. Phase 1 of this project, completed in November 2007, had as its primary goal the training of patrol officers in DNA collection. Officers were encouraged to collect samples at all crime scenes (see figure 1) to obtain six months' worth of data, which could be used to determine the value of such evidence and refine the collection and analysis process for the local level. The PBPD is currently in phase 2, working with DNA:SI LABS to refine the automation portion that will allow officers to review DNA test results from a car computer over an encrypted, secure network (see figure 2). Another aspect of phase 2 is to automate the processing and tracking of submissions from the officer to the laboratory, reducing the time and cost even further. Phase 3 will assess the overall results in impact on crime and determine if the process is affordable for the average agency.

DNA evidence is not unlike fingerprint evidence in that it may be used both as an investigative tool and as evidence in court against a suspect. Palm Bay LODIS focuses on the value of DNA at the investigative stage as a method of early identification of suspects. One difference between DNA and fingerprints, however, is that when automated fingerprint identification systems (AFIS) were started, millions of fingerprints were available for input into its database; by contrast, for the foundation of a DNA database, reference samples—the "known" or identifiable suspect DNA profiles—must be acquired in sufficient numbers before the system can be useful.

Currently, many of the state-funded crime laboratories are not capable of processing the high volume of DNA evidence that can result from collecting evidence material from virtually all crimes. The state laboratory offers the benefit of submission and comparison of DNA profiles with State DNA Index Systems (SDISs) and the National DNA Index System (NDIS), both components of the CODIS hierarchical system of databases. This is beneficial for determining DNA matches of suspects previously convicted of crimes over a broad geographic region.

Furthermore, for the most part, CODIS does not include the profiles of the common property crimes offender and has almost no juvenile offenders. Therefore, CODIS databases, in their current state of implementation and funding, are not effective as an investigative tool for local agencies to identify the criminals committing most of the crimes in their communities.

LODIS was designed specifically to provide local agencies with a system to create local DNA databases, which are flexible to meet the unique investigative needs of local law enforcement agencies. LODIS gives local, average-sized agencies the ability to deploy CODIS at their agencies and to be used in conjunction with other investigative techniques on more commonly committed crimes. As such, it provides an approach for implementing the local DNA index system (LDIS) component of CODIS on a broad scale and independent of any limitations in DNA testing capacity at the state laboratory level. As more LODIS-type systems are deployed, more law enforcement agencies will benefit from the CODIS hierarchical design, which provides state and local agencies with the flexibility to configure CODIS to meet their specific investigative and legislative needs.

Formulating the Project

In the Palm Bay project, PBPD and DNA:SI LABS jointly developed the procedures and put into place the methodology for collecting and handling both evidence and subject reference samples. DNA:SI LABS created the database and underlying programming necessary to determine if there was a match or "hit" worthy of further investigative effort. All PBPD uniformed officers, investigative staff members, crime scene personnel, and property and evidence staff members were trained in the proper techniques of collecting and packaging DNA evidence. The department also provided training regarding legal aspects of collecting reference samples from possible suspects and victim/witness elimination samples.

Figure 2. Sergeant John Resh uses his mobile data terminal to check LODIS interface for results of submissions to the laboratory.
Photo by Dennis Brands, PBPD

DNA:SI LABS committed to processing samples in 10 days or less after receiving them. The agreement was that the DNA profile data in the system are the property of the PBPD. This provided an option for future input into other databases, including state-level CODIS databases. Meetings were held with the local state attorney's office, where the two partners discussed the use of the private laboratory for prosecutorial decisions and issues relating to court testimony.

DNA Databases and the Law

The case law on the collection and retention of individual DNA profiles from criminal suspects is almost nonexistent, because until now no one had created such an extensive database. Until recently, CODIS has been limited to a reference sample base primarily of convicted offenders and known profiles of those having committed very serious crimes. (The enabling federal law for CODIS also allows for local DNA databases.) Many of these offenders have been incarcerated; therefore, they are not free to commit crimes in the community.

In the Palm Bay LODIS project, DNA profiles are obtained from a wide variety of subjects: persons developed as suspects during stop-and-frisk scenarios, arrested subjects, and victims and witnesses for the purposes of eliminating them as suspects in the case of a mixed sample. Most samples were obtained from persons who had given consent. In some cases, where there was a solid criminal suspect or a person was under arrest, samples were taken through normal booking processes or from discarded items, such as drink bottles or cigarette butts. Although the option was available to officers, no samples were taken by court order during the first phase of the project.

One concern raised about the project was the issue of personal privacy. The DNA profile laboratory process used by DNA:SI LABS for this project (Identifiler) does not reveal any aspect of a person's medical history or condition. The only specific identifier that is readily apparent is gender. The profile allows only for statistically conclusive identification and does not jeopardize any personal information. Florida Statute 760.40 prohibits the use of DNA without a person's informed consent. This statute is designed to protect against the malicious

and unlawful use of a person's DNA profile and provides criminal penalties for violations. (However, there is an exemption specifically for the purposes of criminal prosecution.) While the purpose of the project was to focus exclusively on the prosecution of suspects, the statute prompted the PBPD to adopt a conservative approach in the collection of known reference samples. Officers were made aware of the statute to prevent any abuse of the process. Before known subject reference samples were submitted to the laboratory and processed for inclusion into the database, the project manager reviewed the circumstances surrounding the collection of each sample.

Project Procedures

Phase 1 of the project was conducted considering the "real-world" environment. Officers were provided approximately five hours of monthly in-service training on the project. While officers were strongly encouraged to participate in the collection process, participation was not mandatory, nor did the agency keep track of how many specimens an individual officer submitted; the agency was interested primarily in officer reaction to the process. Some officers were enthusiastic and actively participated in the project, while others collected no DNA. Officers, including crime scene unit personnel, also received in-depth training at the Palm Bay facility from DNA:SI LABS forensic scientists.

Employees, officers, and civilians were asked to submit their own DNA reference samples for elimination purposes in the advent of inadvertent contamination; over 85 percent complied, the first being the chief of police. A random number was issued to each employee so that the profiles were anonymous.

Evaluation of Evidence Collection and Crime Scene Training

In phase 1, officers obtained 832 DNA reference swabs from suspects, victims, and witnesses. Virtually all of the reference samples produced a profile. Additionally, 635 DNA profiles were obtained from over 1,648 swabs and evidence items collected from crime scenes. Most of the evidence submissions were in the form of swabs of evidence items officers collected while processing crime scenes; however, some evidence found at crime scenes was sent directly to the laboratory without an intermediate swabbing of the item. One of the most unique cases involved a 10-pound chunk of asphalt (from a pothole) used to break a window and gain entry in a car burglary.

The ability to obtain a DNA profile is highly dependent on the collection or swabbing technique as well as the target evidence item and its surface. This is especially relevant when attempting to collect DNA profiles from evidentiary items that have been handled or touched by a suspect but do not have any visual indication of a body fluid, such as blood or semen. The DNA sample collected in this situation is sometimes referred to as "touch" or "contact" DNA and includes evidence generated by actions likely to cause skin cells to abrade and be retained on the evidence (see figure 3). The LODIS evidence training program focused intentionally on the collection of touch DNA, so that many officers can work with victims to identify virtually everything that a suspect may have touched or with which the subject may have come into contact.

During phase 1 of the project, many DNA profiles were obtained from contact DNA collected from swabs of such items as automobile steering wheels, bags containing illicit drugs, entry points to residential and commercial buildings, gun grips, light switches, doorknobs, and handheld electronic devices such as cell phones. These items were submitted for analysis; such items often yielded a good DNA profile. In addition, items with dried saliva, such as beverage containers, drug paraphernalia, and tobacco or marijuana cigarette butts are even more likely to yield a good DNA profile.

Figure 3. Crime scene technician Phil Clendenin processes a Glock pistol and knife for touch/contact DNA evidence.
Photo by Yvonne Martinez, PBPD

On the other hand, other items that did not contain any visible signs of body fluids or were not likely to cause skin abrasion did not yield adequate amounts of DNA to produce a profile. These items included such things as wall light switches, which occasionally yielded DNA, and driver's licenses and credit cards, which rarely produce DNA since they are unlikely to abrade skin cells when handled.

Overall, the results indicate that the training and techniques for patrol officers and others processing scenes through swabbing and handling of evidence was adequate for capturing DNA from typical items found at the scene. In an effort to evaluate the effectiveness of the evidence training program and to improve the cost-effectiveness of the project, an evaluation was conducted to determine if evidence items can be accurately culled based on the likelihood that they will provide a DNA profile.

In a blind evaluation, expert DNA analysts at DNA:SI LABS ranked 1,648 evidence collections by Palm Bay officers with a high (H), medium (M), or low (L) likelihood of producing a positive DNA profile using only evidence item descriptions. The expert opinion ranking for each item was compared with the actual result for each item yielding a DNA profile. The blinded comparison revealed that 80 percent of items ranked H by the expert were positive for DNA; 50 percent of the items classified as M were positive for DNA; and only 15 percent of evidence items classified as L were positive for DNA. Thus, Palm Bay officers were successful in triaging and collecting DNA profiles from the most appropriate evidence items, and the training program was effective.

Based on these results, culling of evidence items prior to submission for DNA analysis can be an effective means of maximizing the number of usable DNA profiles. Culling also will improve the cost-effectiveness of the project by reducing unnecessary evidence item processing without significantly affecting the benefits of LODIS. The project also revealed that it is possible to obtain DNA profiles from contact DNA, collected from items likely to cause abrasion, and possible but less likely from items that do not cause abrasion. Many items ranked L

(not likely to yield sufficient DNA for a profile) did contain sufficient DNA to obtain a profile, and some of these matched suspect profiles. Therefore, the culling of evidence for DNA processing based upon likelihood ranking should be considered by the officer performing the collection when submitting evidence items to the laboratory, and items ranked H should be processed first. The primary point is that officers should be encouraged to swab aggressively for contact DNA (in addition to such likely DNA sources as blood stains, items containing dried saliva, and cigarette butts) and allow the culling process to focus on the samples most likely to produce a profile, while allowing other samples to be available should those swabs assessed H or M not produce a profile.

Evidence-to-Suspect Matches

The DNA profiles of 41 suspects were matched to the DNA profiles taken from items collected at the crime scenes. A high percentage of these were primary (one-to-one) matches between a suspect and the evidence. A few of these were extended matches (matches between suspects and multiple evidence items) from one or more crime scenes. These extended matches are particularly interesting because they often allow reconstruction of separate criminal episodes.

Evidence-to-Evidence Matches

Some evidence items yielded matching DNA profiles that tied together otherwise unrelated crimes. When the same DNA profile is present at multiple scenes, it indicates that the same individual was present at each scene. In some cases, the evidence matches did not yet have a suspect or reference match. When a suspect profile is eventually linked by LODIS to the evidence profile, it will connect that suspect to all of the crimes. This scenario is illustrated in the first sample case provided.

In these cases, profiles from multiple crime scenes were positively matched to each other before the suspect was positively identified. The value of matches from otherwise unrelated criminal episodes where a suspect has not yet been developed could allow officers or detectives to draw the cases together and view the "totality" of the collective information to see if this perspective of the cases reveals leads or even identifies the criminal, even when there is no suspect profile match.

Suspect-to-Suspect Matches

Nineteen reference specimens were submitted more than once. On some of these duplicate submissions, the names of the individuals from whom the specimens were obtained were slightly altered. These differences involved slight variations in spelling of the names, inclusion or exclusion of a middle name, and/or the use of a nickname. These may have been the result of suspect deception or officer error in recording on the label. One person provided two reference specimens using different names. Florida Statute 901.36 provides for a specific criminal charge when a suspect of a reasonable suspicion stop or an arrested person gives a false name to an officer.

Conclusion

Phase 1 of the Palm Bay LODIS project has demonstrated that widespread forensic DNA analysis through the support of local DNA databases can be a highly effective investigative tool, not only to identify criminals but also to connect otherwise unknown related cases.

In phase 1, test results were provided primarily to the agency in a paper format, which then had to be reviewed, deciphered, and discussed with submitting officers. This caused a notable delay in the investigation's progress. Phase 2 changes were incorporated to include the implementation of a Web-based automated interface that began in January 2008. Phase 2 will also include a front-end interface with the PBPD's property and evidence software that will allow electronic uploading to the laboratory. This will reduce cost, typographical errors, and the time involved to obtain profile results. The system will be preloaded with the e-mail addresses of the officers, detectives, and technicians and will notify the appropriate personnel of a LODIS match. The notified personnel can then access the secure site and review the LODIS results.

One key factor that must be considered in starting such a database is the acceptance that finding matches and solving cases will take time as the reference foundation is established. Another option that an agency should consider is to start the collection of reference samples from known criminal suspects in advance and provide those reference specimens at the initiation of the program. Collection of reference samples should follow rigidly set agency procedures that consider the current law. Many violent crimes including rape, homicide, and battery contain multiple evidence items that are excellent candidates for DNA analysis. Palm Bay LODIS initially excluded both evidence and reference DNA items in homicides and sexual battery cases from the project, as private laboratories cannot directly upload DNA results that they produce to state-level CODIS databases. Because of this policy, phase 2 of Palm Bay's LODIS implementation will include the collection of duplicate samples to allow for both processes until the matter of open access to CODIS by private DNA laboratories is resolved.

Phase 1 allowed the PBPD to examine procedures and refine processes in an attempt to improve the success rate and reduce costs. As a result, phase 2 will proceed with the collection of DNA evidence at virtually all crime scenes, regardless of the type of crime. The collection of DNA must be allowed all the way down the investigative process to the first-responder level, where appropriate. Phase 1 clearly determined that the training of officers on both collection techniques and selection of evidence or surfaces to swab is critical to the success of obtaining profiles and improving cost-effectiveness. Additional video training is currently in production to further help officers rank evidence to help the laboratory determine which items are likely to produce the needed profile. By combining DNA analysis for all crime scene processing with a locally focused database, the connection between items of evidence and otherwise unrelated criminal incidents can be established. In addition, there have been numerous links among crimes, suspects, and evidence that can be established based on DNA profiles alone.

This project has shown that a large quantity of crime scene evidence submitted for DNA analysis can be processed within days and compared with the DNA profiles of known suspects. Subsequent to the primary investigation, the evidence can be forwarded to the state crime laboratory to determine a possible link to crimes at the state and national level. This approach will allow the PBPD to maximize the benefits of DNA analysis as an investigative tool for combating crime. The following phases of the project

will evaluate the impact of "forensic informatics" and computer reporting systems on managing the process of collecting and evaluating DNA evidence from large numbers of commonly committed crimes, demonstrating just how much benefit the law enforcement community stands to gain from this new approach. ❖

Bill Berger is chief of police of the PBPD, a past president of the IACP, and the current chair of the IACP Forensics Committee.

Dr. Joe Chimera is the general manager and laboratory director for DNA Security, Inc., an ASCLD/ AB-accredited private laboratory, and has over 20 years of experience in the medicolegal laboratory services industry.

John Blackledge is the major of the Investigations Division at the PBPD and serves as the agency project manager for the LODIS project.

Note:

[1]See, for example, National Institute of Justice, "DNA in 'Minor' Crimes Yields Major Benefits in Public Safety," In Short: Toward Criminal Justice Solutions series, November 2004, NCJ 207203, http://www.ncjrs.gov/pdffiles1/nij/207203.pdf (accessed March 6, 2008).

LODIS Case Examples

Case Example 1: In early 2007, the PBPD received a report of a burglary to the screened pool enclosure of a private residence in an upscale, gated community. The only item stolen was a child's pool float. Entry was made by pushing through the screen and reaching inside to release the locking lever and opening the screen door. A police canine tracked and found the float discarded in a wooded area a distance from the burglarized home. Both the entry point and the float were processed using simple but aggressive swabbing techniques. The residents provided reference profiles for elimination purposes. Other homes in the area had been similarly burglarized, and minor items had been stolen. These initially appeared to be nuisance crimes—more vandalism than true burglary. However, the presence of slash marks on the stolen floats was cause for concern. Intuitive investigative thought led to the belief that the offender was likely a juvenile who was upset with the community or someone in it, acting out in anger. Within two weeks, LODIS reported that there were sufficient profile characteristics to make them valuable for identification. The profiles did not match the residents, but there was a match between the profiles from the point of entry and the float.

On February 6, 2007, there was a second burglary of the same residence, resulting in a second theft of an alligator-shaped float from the same screened enclosure. In all, there were four burglaries with similar MOs in a two-block area. Then, on February 12, 2007, an officer responded to a shoplifting case at a local discount store. The subject was detained by store security and requested that a trespass warning be issued but refused to prosecute the theft. The 22-year-old male detainee consented and provided a DNA reference swab. This swab was processed by DNA:SI LABS within days, resulting in a profile and a perfect match to the evidence profiles from the burglary of the pool enclosure.

A warrant was obtained, and the subject was arrested. During the resulting interrogation, the suspect confessed to additional crimes. Time lapse, mental state, and drug abuse negatively affected his ability to recall all of the events in which he was involved. In less than eight months, the subject was convicted and sentenced for these crimes.

Case Example 2: DNA evidence was collected from two vehicle burglaries committed at two distant locations in Palm Bay about 30 days apart. Both cases were closed without any solvability factors. A short time later, LODIS reported a match between the two incidents. A few weeks later, a reference sample was obtained voluntarily from a victim of a violent crime at a third location. When this sample was processed and entered into the database, LODIS showed that the two DNA evidence profiles from the vehicle burglaries matched the victim's profile. This identified the victim of the violent crime as having been inside the burglarized vehicles. A detective and the investigating officer reviewed the results and approached the victim (who was now seen as a suspect) for an interview. The subject was subsequently arrested and confessed to those and several other more serious crimes.

To learn more about LODIS™ or to inquire about deploying the system in your community, contact:

Mike Burrows, Vice President, Development
DNA:SI Labs
(301) 933-7200 Phone • (301) 942-1290 Fax
burrowsm@dnasi.com

LODIS™
Local DNA Index System
COLLECT • SUBMIT • INVESTIGATE

Published on *Forensic Magazine* (http://www.forensicmag.com)

Local Databases

By *Forensic*
Created *2010-04-01 04:00*

Local Databases

By Chris Asplen

Chris Asplen

In 2008 the Palm Bay Police Department, under the leadership of Chief William Berger, received the prestigious August Vollmer Award for Excellence in Forensic Science from the International Association of Chiefs of Police.The award was for leveraging the power of DNA and DNA databases in the way it was envisioned but has not yet been achieved—to solve crime quickly and efficiently enough to actually prevent future crime. By turning DNA profiles around quickly and by putting hit information into the hands of all officers immediately, the Palm Bay Police Department, with its local DNA databasing system (LODIS), has effectively implemented DNA technology and databasing as an investigative tool. It's an impressive system that has driven crime down in Palm Bay and saved its residents $6 million in property loss; a 50% reduction in one year.What's unfortunate is that this program is considered innovative.

So what's so different about the Palm Bay program? Most important, this database is local. Chief Berger is acting on a basic tenant of crime, particularly property crime—most criminals don't make the effort to travel far. One hundred profiles in his local database are more likely to solve a case than five thousand profiles in California, Pennsylvania, or any other state.

They also take DNA voluntarily from suspects, a lot of suspects. And as more departments understand the potential here and begin to actually investigate cases with DNA—not through a CODIS based NDIS system, but through a local system with quick turnaround times—there will be challenges and fear mongering about "rogue" databases. Let it come. Most of the objections will be rather hypocritical. Last month, as I read a CNN article on ACLU lawsuits about wrongful arrests in Denver and elsewhere, I could not escape the irony. This is the same group filing class action lawsuits in several states challenging arrestee databasing. By its very nature, a DNA database exonerates more people than it will ever implicate. This isn't complex calculus. It's really pretty simple, more effective and efficient investigations lead to fewer wrongful arrests. And the faster the testing, the faster the exoneration.

Thus, the key component to this program is a commitment to quick turnaround time. Their laboratory has results tested and in the database in thirty days. And as a result, police have a piece of evidence that actually helps them solve a case rather than simply confirming an investigation they have already solved after six or eight months of traditional—and more expensive—investigation based on evidence less reliable thanDNA.This isn't CODIS and the data isn't uploaded to CODIS. And the project manager, John Blackledge, Major of the Investigations Unit, doesn't really care. It is more important to be local and fast.

For all its successes, its hits, investigations aided, cases solved, even unexpected exonerations, CODIS has yet to reach its potential as a time and resource saving investigative tool. Any process that involves investigators waiting for six months to a year for forensic test results is not an investigative tool. It hasn't saved police any time. It hasn't saved themanymoney. And common, everyday property crimes, the bulk of most police departments'work,will be closed out "unsolved" to make room for next month's onslaught.

From a law enforcement perspective, let's look at what CODIS has generated and what it hasn't. Importantly, the explosion of "cold case" units, institutes, programs, and protocols are primarily the result of CODIS. The DNA database has given police a reason to go back to old cases with a renewed sense of purpose and optimism. Thousands of cold cases have been solved and in doing so, future crimes prevented. But here's a tough question: How many cases were active when evidence was sent to the laboratory but went cold waiting for results from the state crime lab or waiting for technical review of private lab profiles?

What hasn't developed in the wake of CODIS? Rapid response teams that show up to the station in the morning, check the list of database generated hits, and move out to find criminals—before they burglarize one more house, steal one more car, or worse. In fact, one of the biggest problems cited with the current system is the failure of police to follow-up on hits.

But not in Palm Bay. Officers get an e-mail when the lab gets a hit in their local database. The hit also shows up on their cruiser laptop. You know who else gets notified? Major Blackledge. Woe to the officer in Palm Bay who doesn't follow-up on his hit within two days let alone two months or longer.

I'm not over simplifying here. I understand that there isn't a person in the system who wouldn't like to see faster turnaround times and greater effectiveness of DNA databases. I also understand the complexity of the relationships between the FBI, state crime labs, and the police: The FBI has the responsibility to ensure the quality and security of a very large and very complex system. State laboratories are overburdened and under funded—with guys like me advocating for even more database expansion. But the bottom line is that one Police Department (with several more on the way) has found a "workaround." This Chief has taken ownership.

We need to recognize that there is a significant conceptual issue here that has affected our ability to maximize the potential of CODIS. We have lost the idea that this is law enforcement's evidence. These are law enforcement's leads. It's not the laboratory's evidence. It's not the FBI's evidence. It is the property of those tasked with protecting, on a daily basis, their friends, their family, and their neighbors from the home invasion that may become a rape, that may become a murder—and that just may happen tonight.

Chris Asplen *consults with local, state, and foreign governments and law enforcement agencies on the use of forensic DNA technology. Chris is also a member of the Crime Victim*

Bar Association.

Related Topics:

Source URL: http://www.forensicmag.com/article/local-databases

floridatoday.com

February 1, 2007

Palm Bay police plan own DNA database

Program would be 1st in Florida

BY J.D. GALLOP
FLORIDA TODAY

The Palm Bay Police Department will become the first law enforcement agency in the state to create its own in-house DNA database to link suspects to -- or clear them of -- crimes.

"With this we could quickly eliminate suspects," said Chief William Berger, who will announce the evidence-gathering program at a 1 p.m. news conference today at the police department, 130 Malabar Road SE.

The department's DNA database has been operating for several weeks already and primarily gets its samples from evidence recovered at crime scenes. DNA, or deoxyribonucleic acid, represents a person's unique genetic code. It can be found in hair, skin and bodily fluids. The Florida Department of Law Enforcement already catalogues genetic samples from state inmates, as well as blood or skin cells found at crime scenes.

The database can be used to tie suspects to crimes while freeing others convicted on flawed evidence. Berger's agency of 164 sworn officers is developing its own DNA database to avoid delays it currently encounters with state forensics lab results.

"The biggest problem is that the FDLE lab is so behind," Berger said. "We've been getting some results back six to eight months later."

Berger said his department will partner with DNA Security Inc. of Burlington, N.C., the same laboratory where genetic specimens from Duke University lacrosse players were tested in the case of a woman claiming she was raped by team members.

Brevard County Public Defender J.R. Russo said he wasn't familiar with the details of the Palm Bay project but lauded the positive possibilities for criminal defendants.

"Certainly, DNA can make a conviction easier to obtain, but it's also resulted in many, many people having been proved wrongly convicted," Russo said. "I think if (Palm Bay) has obtained the DNA legally then it's probably a worthwhile project to pursue."

Civil libertarians, concerned the database could be misused, questioned how the system would operate. "The big question is, will they have any controls on this information?" asked Brandon Hensler, spokesman for the American Civil Liberties Union of Florida.

Berger said officers have been undergoing training for DNA evidence collection for weeks.

"The DNA will strictly be taken from crime scenes," he said. "It's on a case-by-case basis."

Contact Gallop at 409-1422 or jdgallop@flatoday.net.

Publication:BUR;**Date:** Friday, February 02, 2007 ;**Section:**Region;**Page:**13

DNA Security partners with police force in Florida

Burlington company develops a crime scene database

Times-News

Burlington's DNA Security Inc.

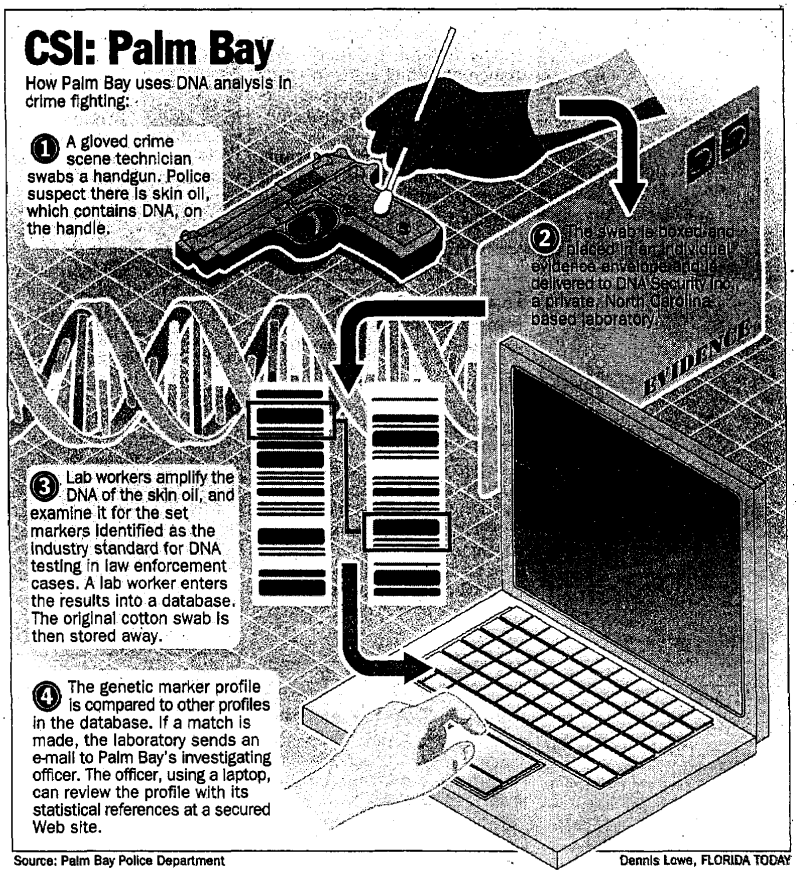
announced Thursday its launch of a local DNA database for a police force in Palm Bay, Fla.

Investigators typically use DNA evidence in violent felony crimes such as murder, rape and aggravated assault. As a result, a nationwide DNA database is limited to very serious crimes and it's not directly available to local law enforcement officers.

"The technology has evolved, and the costs have come down to the point where it is time to make available forensic DNA identification as a tool for local police on all crimes," Mike Burrows, DNA Security's director of development, stated in a press release.

"We are making a significant investment in training and services to Palm Bay because we believe that this will be the model for the use of forensic DNA analysis for most crime in the real-world law enforcement environment. Our computer database will make the science of forensic DNA officer-friendly and within the reach of the street cop where it belongs." For six months, Palm Bay Police will collect DNA evidence on almost every crime in the city for the pilot project. DNA Security's lab will process the samples and put DNA profiles into a database. This database can be used to compare DNA evidence from the scene of crimes with available DNA profiles of known criminals.

"There is DNA evidence left at almost all crime scenes," said DNA Security's Lab Director, Brian Meehan. "If the police are able to capture it, we can turn it into meaningful data for them. Even if the database does not initially identify an offender, DNA evidence can show police if multiple crimes are committed by the same individual, and that can solve more crimes."



DNA database holds clues crucial to cases

Palm Bay chief hopes to expand local collection

BY J.D. GALLOP
FLORIDA TODAY

PALM BAY — The break-ins occurred over several weeks with a prowler creeping into homes, groping women in their beds and raising fears about a predator roaming city streets.

Then Palm Bay detectives got lucky.

They happened upon an unlikely clue they believe confirmed 19-year-old David Jerome Dean's involvement in a string of burglaries and the rape of a 54-year-old grandmother at knifepoint in late 2006. The link: a bad case of acne.

"He was wiping his face and dabbing . . . a pimple with tissue," said Maj. John Blackledge of the Palm Bay Police Department's Investigations Division.

The case highlighted the importance of DNA evidence and came two months before Palm Bay Police Chief William Berger acted on a private lab proposal to establish the department's own DNA database apart from the state's crime lab.

In Dean's case, the benefit of using science to back up gumshoe-style detective work came when the construction crewman left the tissue behind during police questioning, giving detectives a potentially incriminating DNA link that led to his arrest on a sexual battery charge in connection with the rape.

"We didn't have enough in the rape to pin that case on him without the DNA. That's what carried the case," Blackledge said.

A year later, Palm Bay police are routinely collecting blood, skin flakes and even sweat droplets from all of their crime scenes to find potential suspects.

Since its start in February 2007, the department's database has grown to include 5,143 samples, with 331 "hits" linking unidentified genetic evidence collected at break-ins, car burglaries and other

See DNA, 3A

By the numbers

Statistics from FDLE, Palm Bay Police Department for evidence evaluation and DNA samples processed in 2007:

85,706
Evidence evaluation requests for FDLE crime labs

3,867
Evidence evaluation requests from Brevard

500
Statewide biology/DNA processed

5,143
DNA samples collected by Palm Bay police

436,836
Number of genetic profiles in state database

DRAGNET. Civil liberties groups are concerned about how DNA is being collected in Daytona, **3A**

ONLINE. Find a link to learn more about the processing of a DNA sample at FLORIDATODAY.com

DNA can free innocent

DNA, from 1A

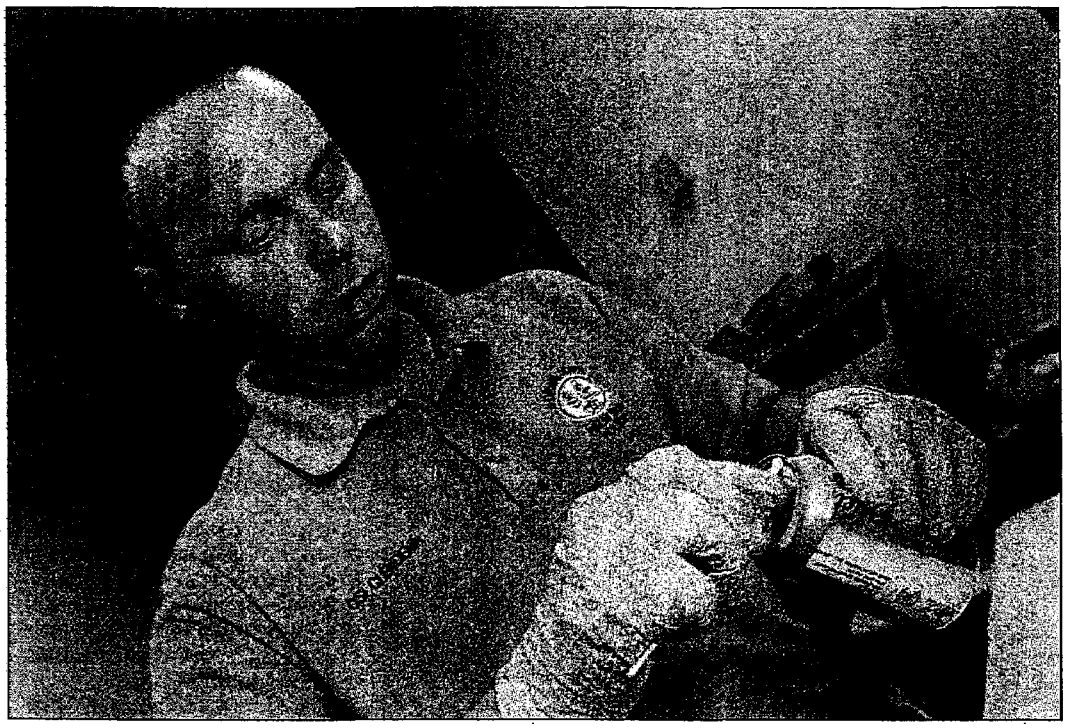
crimes to new cases and even suspects, police said.

Berger, whose program recently gained city council approval to use $47,000 in funding from assets seized in drug cases, wants more funding to allow other Brevard police departments to participate.

The locally run database — which costs about $7,500 a month — also has captured the eye of state forensics officials.

But in Volusia County, civil libertarians are concerned about how the local police department is using the science as a DNA dragnet in its hunt for a possible serial killer who has targeted prostitutes since 2005.

Groups such as the American Civil Liberties Union worry Daytona police may be overstepping the right to privacy by asking those arrested — possibly under duress — to voluntarily provide samples.



Christina Stuart, FLORIDA TODAY

Swabbing for evidence. Palm Bay Police crime scene investigator Phil Clendenin demonstrates how he uses a wet swab to collect saliva from a soda can for DNA collection.

A new tool

The scientific discovery of DNA — the genetic marker found in every cell of the human body — was made in 1953.

But forensic experts didn't herald the scientific breakthrough in criminal cases until the mid-1980s.

The Florida Department of Law Enforcement started its DNA database in 1990 and collects samples — costing about $30 to $50 apiece — from all convicted felons and those found guilty of misdemeanors involving exposure of genitalia and lascivious behavior.

There are 436,836 genetic profiles in the state's database, which freely assists police in trying to solve rapes, murders or other crimes, officials said.

In Brevard, DNA last month led to the sexual battery arrest of 19-year-old Terence Leon Merriel of Port St. John. Merriel already was in jail for robbery but was linked by FDLE to a 2003 rape in Titusville, officials reported.

"With our system, we're solving a lot of crime, exonerating a lot of people, and protecting the innocent," said Barry Funck, forensics service director for the FDLE's seven regional crime labs.

> "With our system, we're solving a lot of crime, exonerating a lot of people, and protecting the innocent."
>
> *Barry Funck, FDLE forensics service director*

One of the most widely noted cases in which DNA led to exoneration involved Wilton Dedge, convicted in 1982 of a Brevard County rape. He served 22 years in prison before tests failed to link him to semen recovered from the victim, records show.

Last year, FDLE handled 500 requests statewide for its DNA-testing services, Funck said. Funck said he and other FDLE officials — whose crime labs deal mostly with high-priority cases — will discuss Palm Bay's database with Berger and evaluate its collection and screening methods.

Berger believes using a private lab speeds up results, reducing the wait time from several months to two weeks.

"There are limitations to our system. For example, if an individual was from another state, then we wouldn't have direct access to those DNA profiles," Berger said, adding the Palm Bay system can only find matches in its own database.

The local tests only provide a snapshot of an individual's genetic profile, said Joe Chimera, the general manager and laboratory director of DNA Security, the North Carolina-based company partnering on the database with Palm Bay.

"They just look at enough to determine what makes the sample unique from one to another," Chimera said.

Benefits

Berger, chairman of the Forensics Committee for the International Chiefs of Police, said the database is simply another tool to catch criminals.

No one is forced or compelled to give samples, Berger said. The samples are specific to each case and are not taken in a sweeping manner similar to Daytona Beach's efforts to find a serial killer, Blackledge said.

"The only people we're trying to identify are the suspects of a crime. That's our focus. We're not doing any dragnets," Blackledge said.

Residents like James Nason believe the Palm Bay database can only do good in the long run. He has been burglarized twice in the last year, first at his business Appearance Plus, where burglars made off with $30,000 in car-detailing equipment.

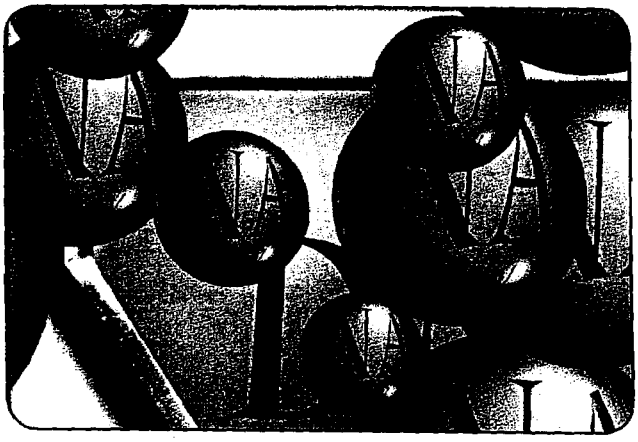
"It's not going to hurt anything. To get a criminal would be a plus if it works," said Nason, whose fishing boat was stolen Dec. 24. Palm Bay police found the vessel and swabbed several soda cans found onboard for DNA. No arrests have been made but Nason said he is not discouraged.

"It's just a good idea, especially if there's a better chance of getting whoever did it." ■

Contact Gallop at 409-1422 or e-mail jdgallop@floridatoday.com.

PALM BAY LODIS PROJECT MAKES MAJOR BREAKTHROUGH IN USE OF DNA

In a first of its kind test project to build a Local DNA Indexing System (LODIS), the Palm Bay Police Department has proven results that the database works. DNA samples taken from three separate and seemingly unrelated crime scenes led to the identity and subsequent arrest of a suspect that would otherwise have avoided capture.



"This case highlights the unprecedented use of DNA as a tool for police to solve everyday crime at the local level, not just a confirming process to be used in trial," said Major John Blackledge of the Criminal Investigations Division. "The creation of this database has resulted in more than 39 matches that have solved or confirmed the resolution of criminal cases in less than six months!"

The Palm Bay Police Department and DNA Securities, Inc. are currently awaiting approval of a federal grant to fund the experiment for an additional year. "We set out to demonstrate the ability for DNA analysis to track criminal activity and identify suspects at the community level during active crime scene investigations," said Dr. Brian Meehan of DNA Securities, Inc., the inventor of LODIS. "The time is right and the technology is right. By collecting DNA evidence from all crimes within a community we are able to create a web of criminal activity committed by suspects."

The LODIS project began February 2007 with DNA being obtained from virtually every crime scene. It has significantly sped up the process. Typically law enforcement relied on the Combined DNA Identification System, (CODIS) which is the national DNA database that is limited to the most serious offenders and not accessible to patrol officers and detectives working general crimes.

"This gives us the ability to solve more crimes that are affecting more people," Chief Berger said. "The results we are now seeing promise to make a huge impact on the safety of our community."