



# 5th LAGOS FORENSIC SYMPOSIUM

*All Virtual*



## **Organized by**

Lagos State Government, Lagos State Ministry of Justice, Lagos State DNA & Forensic Center & ITSI - Biosciences, Johnstown, PA, USA.



## **Supported by**

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AUGUST 10 - 11, 2021.

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**HIS EXCELLENCY MR. BABAJIDE OLUSOLA SANWO-OLU**  
GOVERNOR OF LAGOS STATE





**DR KADIRI OBAFEMI HAMZAT**  
DEPUTY GOVERNOR OF LAGOS STATE



**RT. HON. MUDASHIRU A. OBASA**  
SPEAKER, LAGOS STATE HOUSE OF ASSEMBLY



**HON. JUSTICE  
KAZEEM O. ALOGBA**  
CHIEF JUDGE OF LAGOS STATE



**MR. MOYOSORE ONIGBANJO, SAN**  
HON ATTORNEY GENERAL AND COMMISSIONER FOR JUSTICE, LAGOS STATE



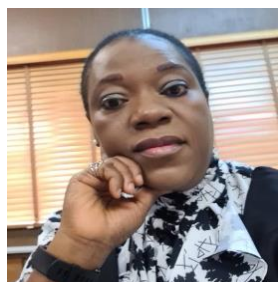


**MS. KHADIJAT TITILAYO SHITTA-BEY**  
Solicitor General & Permanent Secretary  
Lagos State

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# ***ORGANIZING COMMITTEE***



Kehinde Taiwo



Bola Akinsete



Oluseun Sogbesan



Iretiola Saseyi



Olamide Ibrahim



Ishaku Pennap



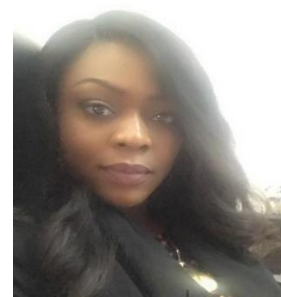
Dr Stella Somiari



Vivian Ehziem



Otonye Dago



Maureen Dakahap



Haoma Amadi



Ifeoluwa Komolafe



Olamide Adeyemo

# ***SPEAKERS***



Dr Richard I Somiari, Center Director, LSD&FC, Lagos, Nigeria.



Hon Justice Lateefa Abisola Okunnu, Lagos State High Court, Lagos, Nigeria.



Barry Fisher, Senior Forensic Science Advisor, Park Dietz and Associates, Los Angeles, CA, USA.



Hon Judge Ann Williams (Ret.), Jones Day, Chicago, IL, USA.



Hon Judge Marian F. Gaston, Assistant Presiding Judge, San Diego Superior Court, CA, USA.



Arthur Young, Forensic Specialist, Guardian Forensic Sciences, Abington, PA, USA.



Dr Ray Wickenheiser, Director, NYSP Crime Laboratory System, New York State Police, Forensic Investigation Center, Albany, New York, USA.



Dr Michael Coble, Associate Professor/Director, Center for Human Identification, UNTHSC, Fort Worth, TX, USA.



Chief of Police David Splain, Nether Providence Police Department, Delaware County, PA, USA.

# ***SPEAKERS***



Dr Ronald K. Wright MD JD  
FAAFS FNAME, Forensic  
Pathologist, Fort Lauderdale,  
FL, USA.



Dr Luchenga "Adam"  
Mucheleng'anga, Forensic  
Pathologist, ZMDIS, Lusaka,  
Zambia.



Shawn Dolan, Latent  
Fingerprint Examiner, Forensic  
Consulting Associates of New  
England, Belmont, MA, USA.



Adesola Onabanjo, MS,  
Forensic DNA Analyst,  
LSD&FC, Lagos, Nigeria.



Victoria Osidipe, Forensic  
DNA Analyst, LSD&FC,  
Lagos, Nigeria.



Dr Brandt Cassidy, President,  
Trace Helix Consulting LLC,  
Norman, OK, USA.



Afeez Akande, Forensic  
DNA Analyst, LSD&FC,  
Lagos, Nigeria.



Dane Plaza, Director of  
Federal Operation, Bode  
Technology, Lorton, VA, USA.



Damilola Esther Fagbohun,  
Forensic Program Assistant,  
ICRC, Nigeria.



Lieutenant Ayodeji Owoyomi,  
Special Investigator,  
Nigerian Army Corps of Military  
Police, Nigeria.

# ***WELCOME ADDRESS***

On behalf of the Governor of Lagos State, Mr. Babajide Olusola Sanwo-Olu and the Organizing Committee, I welcome you to the 5<sup>th</sup> annual Lagos Forensic Symposium (LFS) organized by the Lagos State Ministry of Justice, Lagos State DNA & Forensic Centre and ITSI-Biosciences, LLC, Johnstown, PA USA.

As we all know, Forensic Science is a very important part of the Criminal Justice System because it supports investigations, and it can facilitate speedy identification and conviction of perpetrators and the exoneration of the innocent.

The Lagos State Government recognizes the importance of forensic analysis, which is why the Lagos State DNA & Forensic Center (LSD&FC) was established to support investigations conducted by the Nigeria Police and other law enforcement agencies. The Center was commissioned in September 2017, and the Forensic Biology/DNA unit and the DNA Database and Matching system attained ISO 17025:2017 accreditation in February 2019.

With the ever changing and evolving crime patterns, the Lagos State Government must constantly innovate in order to make Lagos State a safer place to live, work and visit. LSD&FC has played a significant role and conducted 158 crime-scene investigations; including suspicious deaths, identification of exhumed human remains, disaster victim identifications, child trafficking, defilement of children, burglary and 437 cases involving paternity issues associated with child support and inheritance.

Given the protests that erupted in October 2020 wherein we suffered significant and colossal losses to a sizeable amount of State infrastructures, LSD&FC inclusive, it is indeed trite to mention that these losses may have set us back several years, but with the commitment of Mr. Governor to rebuild our dear State, the Centre remains top priority.

This is the first virtual symposium LSD&FC will organize, no thanks to the dreaded COVID-19. However, it is gratifying and heart-warming that we could still hold the 5<sup>th</sup> symposium featuring world-renowned faculty with cognate experience in forensic science. The target audience includes Judges, Magistrates, Lawyers and Legislators; Police, Investigators, Forensic pathologist/scientists, Medical practitioners, Emergency responders, investigative journalists, students, NGO, the press amongst others.

I thank you very much for attending what promises to be another outstanding event that will provide you with an up-to-date information on how forensic science is being applied in criminal investigations, law enforcement, judiciary, mass fatalities, sexual assault, wildlife trafficking and other matters of interest to the Lagos State Government.

**Mr. Moyosore Onigbanjo SAN,**  
Hon. Attorney General and Commissioner for Justice,  
Lagos State, Nigeria.

# PROGRAM SUMMARY

ALL TIMES ARE NIGERIAN - WEST AFRICAN TIME, WAT, UTC+1

DAY 1 - TUESDAY AUGUST 10, 2021

TIME	DURATION	ACTIVITY	SPEAKER
<b>SESSION 1: MODERATOR -</b>			
11.00AM	05 MIN	Welcome/House Keeping.	MC
11.05AM	15 MIN	Welcome Address.	-Mr. Moyosore Onigbanjo SAN, Hon Attorney General and Commissioner for Justice, Lagos State, Nigeria.
11.20AM	10 MIN	Good will message – Police.	-CP Hakeem Odumosu, Commissioner of Police Lagos State, Nigeria.
11.30AM	10 MIN	Good will message- Jones Day.	Hon Judge Ann Williams, Jones Day, Chicago, IL, USA.
11.40AM	20 MIN	<b>PA-01:</b> Forensic Science Awareness: Its importance to effective public safety.	-Barry Fisher, Senior Forensic Science Advisor, Park Dietz and Associates, Los Angeles, CA, USA.
12.00PM	20 MIN	<b>PA-02:</b> LSD&FC Update.	-Dr Richard I Somiari, Center Director, LSD&FC, Lagos, Nigeria.
12.20PM	15 MIN	Governor’s Remarks.	-HE Babajide Sanwo-olu, Governor of Lagos State, Nigeria.
12.35PM	05 MIN	<b>BREAK</b>	
<b>SESSION 2: MODERATOR -</b>			
12.40PM	20 MIN	<b>PA-03:</b> The Role of Forensic Sciences in Clarifying the Fate of Missing Persons.	-Damilola Esther Fagbohun, Forensic Program Assistant, ICRC, Nigeria. <b>and</b> Juan Manuel Guerrero Rodriguez, Forensic Specialist, ICRC, Nigeria.
01.00PM	50 MIN	<b>PA-04:</b> The New York State Police Crime Laboratory System: Background and Case Success.	-Dr Ray Wickenheiser, Director, NYSP Crime Laboratory System, New York State Police, Forensic Investigation Center, Albany, New York, USA.
01.50PM	50 MIN	<b>PA-05:</b> The importance of forensic evidence in judicial proceedings in Nigeria.	-Hon Justice Lateefa Abisola Okunnu, Lagos State High Court, Lagos, Nigeria.
02.40PM	50 MIN	<b>PA-06:</b> What's done cannot be undone: The potential of forensic DNA testing	-Dr Michael Coble, Associate Professor and Associate Director, Center for Human Identification, University of North Texas Health Science Center, Fort Worth, TX, USA.
03.30PM	10 MIN	<b>Q &amp; A</b>	
03.40PM	05 MIN	<b>BREAK</b>	
<b>SESSION 3: MODERATOR -</b>			
03.45PM	50 MIN	<b>PA-07:</b> Forensic evidence and judicial proceedings.	-Hon Judge Ann Claire Williams (Ret.), Of Counsel, Jones Day, Chicago, USA. <b>and</b> Hon Judge Marian F. Gaston, Assistant Presiding Judge, San Diego Superior Court, Juvenile Division, San Diego, CA, USA.
04.35PM	20 MIN	<b>PA-08:</b> Use of Forensics to Resolve a Rape, Homicide, Attempted Homicide and Burglary Case in Lagos.	-Adesola Onabanjo, MS, Forensic DNA Analyst, LSD&FC, Lagos, Nigeria.
04.55PM	20 MIN	<b>PA-09:</b> Using DNA to resolve biological relationship disputes.	-Victoria Osidipe, Forensic DNA Analyst, LSD&FC, Lagos, Nigeria.
05.15PM	10 MIN	<b>Q &amp; A</b>	
<b>POSTER SESSION</b>			
05.25PM-06.00PM		<b>PO-01:</b> Application of age-old forensics to investigation.	-Lieutenant Ayodeji Owoyomi, Nigerian Army Corps of Military Police, Nigeria.
		<b>PO-02:</b> Quantification and purity assessment of trace DNA extracted from latex hand gloves.	-Samuels Elejo John, African Center for Excellence (ACENTDFB), Forensic Biotechnology, Ahmadu Bello University, Zaria, Nigeria

		<b>PO-03:</b> The forensic microbiome: investigation of the microbiome for time since death estimation and human identification.	-Onengiye Ogbanga, Andrew Nelson, Sarah Gino and Noemi Procopio, Faculty of Health and Life Sciences, Northumbria University, New Castle Upon Tyne, UK and Dept of Health Sciences, University of Piemonte Orientale, Novara, Italy
		<b>PO-04:</b> The imperative of a regulatory framework for the establishment of a National Crime DNA database in Nigeria.	-Osinibi, Olusegun Michael, Dept of Private Law, Faculty of Law, Olabisi Onabanjo University, Ogun State, Nigeria.
		<b>PO-05:</b> Forensic graphology a vital tool for criminal investigations.	-Nwanyigor Nnamdi, Centre For Forensic Programme and DNA Studies, University Of Benin, Benin City, Edo State, Nigeria.
		<b>PO-06:</b> HIV – forensics: identification of HIV antigens and antibodies on blood-stained clothes.	-Idris MA, Onwumer GB, Babadoko AA, Bakare TB, Nasir U, Wada R and Abba G. Department of Haematology & Blood Transfusion Services, Ahmadu Bello University Teaching Hospital, Zaria, Kaduna State, Nigeria, Nigerian Defence Academy, Kaduna State, Nigeria, Antiretroviral Treatment Laboratory, ABU Teaching Hospital, Zaria, Kaduna State Nigeria and School of Health Technology, Makarfi, Kaduna State Nigeria.
06.00PM	06.05PM	ROUND UP OF DAY 1	
<b>DAY 2 - WEDNESDAY AUGUST 11, 2021</b>			
<b>SESSION 4: MODERATOR -</b>			
11.00AM	05 MIN	Welcome	
11.05AM	20 MIN	<b>PA-10:</b> Use of DNA in missing persons identification	Afeez Akande, Forensic DNA Analyst, LSD&FC, Lagos, Nigeria.
11.25AM	50 MIN	<b>PA-11:</b> Preventing Child Trafficking thru the use of "Rapid DNA"	Dane Plaza, Director of Federal Operation, Bode Technology, Lorton, VA, USA.
12.15PM	30 MIN	<b>PA-12:</b> The evolution of the coroner system to a medicolegal death investigation framework in Zambia	Dr Luchenga "Adam" Mucheleng'anga, Forensic Pathologist, Zambia Medicolegal Death Investigation System, Lusaka, Zambia.
12.45PM	30 MIN	<b>PA-13:</b> Role of the Forensic Pathologists in the Justice System	Dr Ronald K. Wright MD JD FAFS FNAME, Forensic Pathologist, Fort Lauderdale, FL, USA.
01.15PM	10 MIN	<b>Q &amp; A</b>	
01.25PM	05 MIN	<b>BREAK</b>	
<b>SESSION 5: MODERATOR -</b>			
01.30PM	50 MIN	<b>PA-14:</b> Understanding Forensic Genealogy	Arthur Young, Forensic Specialist, Guardian Forensic Sciences, Abington, PA, USA.
02.20PM	50 MIN	<b>PA-15:</b> DNA in human Identification	-Dr Michael Coble, Associate Professor and Associate Director, Center for Human Identification, University of North Texas Health Science Center, Fort Worth, TX, USA.
03.10PM	30 MIN	<b>PA-16:</b> Computer Forensics	Chief of Police David Splain, Nether Providence Police Department, Delaware County, PA, USA.
03:40PM	10 MIN	<b>Q &amp; A</b>	
03:50PM	05 MIN	<b>BREAK</b>	
<b>SESSION 6: MODERATOR -</b>			
03:55PM	30 MIN	<b>PA-17:</b> Latent Fingerprint Development and Analysis	Shawn Dolan, Latent Fingerprint Examiner, Forensic Consulting Associates of New



			England, Belmont, MA, USA.
04.25PM	20 MIN	<b>PA-18:</b> The integration of forensic science, military operations, and law enforcement investigations as a unified means of combating insecurity in Nigeria.	Lieutenant Ayodeji Owoyomi, Special Investigator, Nigerian Army Corps of Military Police, Nigeria.
04.45PM	30 MIN	<b>PA-19:</b> Forensics on the Wild Side	Dr Brandt Cassidy, President, Trace Helix Consulting LLC, Norman, OK, USA.
05.15PM	10 min	<b>Q &amp; A</b>	
05.25PM	10 min	Vote of Thanks	Titilayo Shitta-Bey, SG/PS Lagos State Ministry of Justice, Lagos, Nigeria.

# ABSTRACTS

## PLENARY PAPERS

### **PA-01: Forensic Science Awareness: Its importance to effective public safety**

Barry Fisher, MS, MBA Senior Forensic Science Advisor, Park Dietz and Associates, Los Angeles, CA, USA.

Effective public safety is based, to some degree, on the public's confidence in law enforcement. Without that conviction, civil unrest is a possibility. A small yet important element of a citizenry's trust in its police is a healthy forensic science system. Forensic science is defined as the application of science to law. Often, matters under investigation by the police, prosecution, and courts require specialized skills and knowledge that only forensic science and provide.

What are the elements of a robust forensic science system? This presentation will discuss several of the key parts. The following are a few of the topics which will be described in this presentation. They include:

- Facility
- Personnel
- Staffing
- Management
- Budget
- Political Support

These topics represent the beginnings of an effective forensic science service within a larger public safety enterprise.

### **PA-02: The Lagos State DNA & Forensic Center**

Richard I. Somiari, PhD

Center Director, Lagos State DNA & Forensic Center, Lagos, Nigeria.

The Lagos State DNA & Forensic Center was established in 2016. The DNA unit was commissioned on 27<sup>th</sup> September 2017 and accredited by A2LA to ISO 17025:2017 standards in February 2019. LSD&FC is the only laboratory in Nigeria accredited to ISO 17025 for forensic DNA analysis. In 2018, LSD&FC established and validated the Lagos State DNA Database (LSDD). The database contains STR profiles obtained during the analyses of DNA from criminal and civil case work. The DNA profiles are stored in separate compartments, which can be independently queried to determine if a questioned profile will match a known profile. LSD&FC has worked on over 590 cases to-date. Out of these

cases 27% are criminal in nature. The three most common criminal cases handled are sexual assault (46%), homicide (27%) and burglary (8%). LSD&FC works very closely with the Nigeria Police, and it has been leveraged by government agencies, the military, NGO's, investigators, prosecutors, defense attorneys, hospitals, security agencies and the public. LSD&FC was vandalized during the End SARS protest in October 2020. Limited services will be rendered until the restoration is completed.

**PA-03: The Role of Forensic Sciences in Clarifying the Fate of Missing Persons**

Damilola Esther Fagbohun Forensic Assistant, & Juan Manuel Guerrero Rodriguez Forensic Specialist, International Committee of the Red Cross, Nigeria.

During armed conflicts, other situations of violence, disasters and migration, many persons can become missing or unaccounted for, due to the intrinsic dynamics of such settings, but also due to the mishandling of their human remains. As in the different contextual circumstances of disappearance, the chances of death are an unfortunate reality, multiple disciplines within the realm of forensic sciences can be employed to actively contribute in the clarification of the fate of the missing persons, by providing diverse scientific means for the search, recovery and identification of their remains. Considering that by June of 2021, the International Committee of the Red Cross in Nigeria has reported approximately 24.000 cases of missing persons - which are mostly related to the armed conflict in the North East - this paper will provide a short review of the forensic disciplines and methodologies which are frequently employed for the resolution of missing persons cases, while critically discuss the different challenges that Nigeria faces as a nation, for the adequate implementation and use of such expertise.

**PA-04: The New York State Police Crime Laboratory System: Background and Case Success**

Dr. Ray Wickenheiser DPS MBA FAAFS,  
Director, NYSP Crime Laboratory System, New York State Police  
Forensic Investigation Center, Albany, NY, USA.

This presentation will provide a general background on the forensic program at the New York State Police Crime Laboratory System and highlight one of our case successes using familial searching.

**PA-05: The importance of forensic evidence in Judicial Proceedings in Nigeria.**

Hon Justice Lateefa Okunnu  
High Court Judge, Lagos State, Nigeria.

This presentation will discuss the importance of forensic evidence in judicial proceedings.

**PA-06: "What's done cannot be undone: The potential of forensic DNA testing"**

Michael Coble, PhD  
Associate Professor/Associate Director, Center for Human Identification,  
University of North Texas Health Science Center, Fort Worth, TX, USA.

The usefulness of DNA in forensics will be presented.

**PA-07: Forensic Evidence and Judicial Proceedings**

Judge Ann Claire Williams  
Of Counsel  
JONES DAY® - One Firm Worldwide<sup>SM</sup>  
Chicago, IL, USA.

and

Judge Marian F. Gaston  
Assistant Presiding Judge  
San Diego Superior Court  
Juvenile Division, San Diego, CA, USA.

This presentation will discuss the value and significance of forensic evidence in judicial proceedings.

**PA-08: Use of forensics to resolve a rape, homicide, attempted homicide and burglary case in Lagos**

Adesola Onabanjo, MS  
Forensic DNA Analyst, Lagos State DNA & Forensic Center

We recently dealt with a 4-in-1 case comprising Rape, Homicide, Attempted Homicide and Burglary. Case Summary

- A woman was allegedly raped and murdered.
- Her husband was brutally attacked.
- Motive appeared to be money.
- Two suspects were apprehended by the Police.

This presentation describes the use of multiple forensic methodologies to assist the police in their investigations.

**PA-09: Using DNA to resolve relationship disputes**

Victoria Osidipe  
Forensic DNA Analyst, Lagos State DNA & Forensic Center

Biological relationship tests are used to determine if there is a preexisting biological relationship between individuals. The tests work by identifying the specific DNA sequences for multiple loci in the tested individuals and finding the similarities between the sequences. These tests can be applied in the context of paternity, maternity, sibling: half or full, twin zygosity: fraternal or identical, grand parentage and avuncular. Each test aims at establishing a specific degree of relationship and DNA test results usually have a probability range of 0 to 99.99%. At LSD&FC, we have applied biological relationship testing in a wide range which include settlement of inheritance disputes, insurance settlement, custody cases and criminal investigations such as child trafficking and rape.

**PA-10: Use of DNA in missing person identification**

Afeez Akande  
Forensic DNA Analyst, Lagos State DNA & Forensic Center

Globally, the use of DNA typing in human identification has evolved tremendously and is considered a very reliable method for identification of human remains. This presentation describes the successful identification of 2 unidentified remains recovered from a septic tank in Lagos, Nigeria. DNA typing of 27 unique STR markers was performed on the unidentified remains and alleged relatives of the missing persons. Based on the DNA profiles obtained, it was determined that the questioned bone samples were from two different subjects, both subjects are males, one bone matched "relative 1" and the second bone matched "relative 2". Our analysis helped bring a closure to the case for the family, and enabled the police proceed with their investigations, which led to the prosecution of some suspects.

**PA-11: Preventing Child Trafficking thru the use of Rapid DNA**

Dane Plaza

Director Federal Operations, BODE Technology, Lorton, VA, USA

Rapid DNA technology can provide agencies with real-time investigative information, confirm database hits, enhance border security and public safety, aid in prevention and detection of human trafficking, and provide identifications in mass casualty events. Bode Technology is currently providing support services on a US Government program which is utilizing Rapid DNA along the Southwest US border to identify and deter possible child trafficking by identifying fraudulent family units attempting to cross the border. This complex program encompasses deploying instruments to non laboratory environments, establishing consumable supply chains, setting up key infrastructure, and training hundreds of non-technical operators. Additionally, the multiple field-forward and geographically-separated Rapid DNA facilities all rely on Bode's accredited laboratory staffed with trained reachback scientists who are providing 24/7/365 support. Bode's goal in discussing this project experience with the community is to share challenges and mitigations when implementing a Rapid DNA program and to convey the impact the program has had to date in preventing child trafficking along the Southwest US border.

**PA-12: The evolution of the coroner system to a medicolegal death investigation Framework in Zambia**

Dr. Luchenga Adam Mucheleng'anga

Forensic Pathologist, Zambia Medicolegal Death Investigation System, Lusaka, Zambia.

Dr. Mucheleng'anga - Dr. Mucheleng'anga will share the experiences of the evolution of the coroner system to the current medicolegal death investigation (MLDI) legal framework in Zambia. Dr Mucheng'anga is the State Forensic Pathologist in Zambia, and has been instrumental in advocating for improvements to the medicolegal death investigation (MLDI) system laws that were passed in Parliament last year, which transforms the colonial coroner system into a hybrid system. He will discuss the old colonial coroner legacy system in Zambia, the standards he advocated to incorporate in the revised bill, the advocacy process, and now his efforts in implementing changes. In his lecture, Dr. Mucheleng'anga will share the experiences of the evolution of the traditional system to the modern one.

**PA-13: Role of the Forensic Pathologists in the Justice System**

Dr. Ronald Wright

MD JD FAAFS FNAME

Forensic Pathologist, Fort Lauderdale, FL, USA

Dr. Wright will present a series of cases that exemplify the crucial role of forensic pathologists in the justice system and the vital information that they can provide to the investigation. Dr. Wright will draw on his knowledge and years of expertise in some of the most challenging cases ever.

**PA-14: Understanding Forensic Genealogy**

Arthur W. Young, B.S., ABC-MBT

Forensic Biology Specialist, Guardian Forensic Sciences, Abington, PA, USA

Forensic genealogy is the application of genetic principles to DNA databases in order to solve crimes. In the 1990s, the world started building such databases of convicted offenders, but by the 2010s, there was the commercialization of DNA databases and the information that they contain. It's now possible for adopted children to find their biological parents and long-lost relatives, to learn about one's own ancestry, and to uncover certain health risks, just by submitting a DNA sample. This lecture will look at the successes, the failures, the risks, and the limits of this methodology.

**PA-15: "DNA in Human Identification"**

Michael Coble, PhD

Associate Professor, Associate Director, Center for Human Identification, University of North Texas Health Science Center, Fort Worth, TX, USA.

The basics of the use of DNA for human identification will be presented.

**PA-16: Computer Forensics**

David M. Splain

Chief of Police, Nether Providence Police Department  
214 Sykes Lane, Wallingford, PA, USA.

This presentation will provide the basics of computer forensics.

**PA-17: Latent Fingerprint Development and Analysis**

Ms. Shawn Dolan, CLEP

President & CEO, FEDS LLC, Belmont, MA, USA.

Drawing on years of experience and expertise, Ms. Dolan will share cases that demonstrate latent fingerprint development and analysis, and how there is still room for it in a modern world. It is one of the world's first and oldest forensic techniques, turning invisible evidence visible, and answering questions that no other technique can. In the 21st century, the science has evolved, using better chemistries and even lasers, but it remains an art that has been mastered by few. Please join Ms. Dolan on an exciting journey through her case files and learn how to see the invisible.

**PA-18: The integration of forensic science, military operations, and law enforcement investigations as a unified means of combating insecurity in Nigeria.**

Lieutenant Ayodeji Owoyomi,

Special Investigator, Nigerian Army Corps of Military Police,  
Nigerian Army, Abuja, Nigeria.

In Nigeria, crime rates and insecurity have become high over the last years. The 2021 Global Peace Index (GPI) has ranked Nigeria eighth among the least peaceful countries in Africa after South Sudan, Somalia, Democratic Republic of Congo, Libya, Central African Republic, Sudan and Mali. Nigeria has also been on the global crime map since 1980 and the nature of crimes ravaging Nigeria includes armed robbery, murder, rape, fraud, human trafficking, kidnapping, drug trafficking, banditry and terrorism etc.

The Armed Forces of Nigeria has over 15 simultaneous internal security operations and military exercises, the Nigeria Police has over 40 internal security operations and over 100 joint operations between the military, police and other law enforcement agencies ongoing to counter myriads of existing and emerging security challenges in different parts of the country.

The sophistication in terms of how these crimes are perpetrated in Nigeria has made traditional techniques unproductive and ineffective. The Nigerian Military, Nigeria Police Force and other law enforcement agencies still rely mainly on eye witness testimonies, circumstantial evidence, and confessions. Where that fails, a combination of two or all is considered a thorough and detailed investigation as far as they are concerned. Whereas, the most important source of evidence; forensic evidence which is more reliable, authentic, concrete and productive are criticized and underutilized.

With the use of available primary and secondary data, this paper examined the integration of forensic science, military operations and law enforcement investigations as a unified

means of combating insecurity in Nigeria.

### **PA-19: Forensics on the Wild Side**

Brandt Cassidy, PhD

President, Trace Helix Consulting LLC. Norman, OK, USA.

This presentation will cover the collection, preservation, and laboratory DNA analysis performed to prosecute individuals accused of crimes against wildlife. Proper collection and preservation are necessary for the successful forensic DNA analysis to match biological evidence used to convict individuals. Proper protocols for evidence collection, preservation and DNA analysis are required to support the successful prosecution in a court of law. The basis of the methodology for DNA analysis will be presented to help law enforcement understand why recommended practices are employed. Examples of identification of elephants (ivory), rhinoceros (horns) and Rosewood (logs) species will be presented to illustrate how the technology works. Specifically, the use of short tandem repeats, DNA sequencing and mitochondrial analysis will be explained.

## **POSTERS**

### **PO-01: Application of age-old forensics to investigation**

Lieutenant Ayodeji Owoyomi,

Special Investigator

Nigerian Army Corps of Military Police,

Nigerian Army, Abuja, Nigeria.

Violent crimes and the desire to solve the mystery surrounding them have existed since the beginning of mankind. The origins of forensic science can be traced back to 3000 B.C when Egyptian Pharaohs ordered investigations into the cause of death of officials. The [ancient world](#) lacked standardized forensic practices, which enabled criminals to escape punishment. Criminal investigations and trials relied heavily on forced [confessions](#) and witness [testimony](#). However, ancient sources contain several accounts of techniques that foreshadow concepts in forensic science developed centuries later. In one of Song Ci's accounts between 1186–1249 (Washing Away of Wrongs), the case of a person murdered with a sickle was solved by an investigator who instructed each suspect to bring his sickle to one location. He realized it was a sickle by testing various blades on an animal carcass and comparing the wounds. Flies, attracted by the smell of blood, eventually gathered on a single sickle. In light of this, the owner of that sickle confessed to the murder. As the rational values of the [Enlightenment era](#) increasingly permeated society in the 18th century, criminal investigation became a more evidence-based, rational procedure – the use of torture to force confessions was curtailed, and belief in witchcraft and other powers of the [occult](#) largely ceased to influence the court's decisions. This study was conducted to examine the application of age-old forensics to investigation, as forensics is a dynamic field of knowledge and skills which can be highly helpful and useful for criminal investigation. Knowledge of forensics provides the investigator with the ability to recognize and seize on evidence opportunities that would not otherwise be possible.

### **PO-02: Quantification and purity assessment of trace DNA extracted from latex hand gloves**

Samuels Eleojo John

African Center for Excellence (ACENTDFB)

Forensic Biotechnology,

Ahmadu Bello University,

Zaria, Nigeria.

Worn premeditated protections such as hand gloves decrease the chances of cross-examination due to an almost total absence of recoverable DNA from crime scenes; but the used hand gloves could be disposed within a considerable radius around the scene and a design to identify and analytically represent these evidence before a judicial system is required. This study examines the cost-effective method of trace DNA recovery in used latex hand gloves with sufficient STRs for PCR amplification and Forensic typing. The effect of double swabbing and substrate cutting methods were analyzed at fingertip, whole inner surface and entire palm regions at 15 and 30 minutes respectively, at the African centre for excellence on neglected tropical diseases and forensic biotechnology (ACENTDFB) of Ahmadu Bello University, Zaria. The qualitative and quantitative analysis of trace DNA is significant around the whole inner section with an average value of 26.23ul and the fingertip area recorded 18.16ul, which are both suitable profiles for STR comparison. Recovery of trace DNA has a higher success rate when double swabbing method, at a totaled 0.53ul, is applied compared to substrate cuttings 0.22ul. The purity of the DNA samples analyzed all produced  $\geq 1.70$ . Double swabbing method appears to have a high success rate at the whole inner section and the fingertips of the hand glove. Time differences were negligible This cost-effective method of isolating trace DNA for forensic analysis produces considerable amount of STRs for PCR amplification.

### **PO-03: The forensic microbiome: investigation of the microbiome for time since death estimation and human identification**

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Diverse communities of microorganisms exist on and within the human body, as well as in other environments such as soil. The total genetic material contributed by microbes to a specific environment is known as the microbiome. Cell cultures has been used in the identification of bacteria and fungi, but the limitations of cultures mean that not all species of bacteria/fungi from a sample can be cultured successfully, particularly strict anaerobic bacteria, which would die in the presence of oxygen. Due to advances in next generation sequencing (NGS) techniques, metabarcoding – which allows the identification of various microorganisms within a sample from an environment using a short section of **DNA** from a specific **gene** – is now possible. This means that changes or differences in microbiome of environmental or human samples can now be characterized. The differences in the microbiome observed among individuals has been shown to occur due to factors such as diet, lifestyle, and health status of its host. Also, the microbiome of grave soil changes in a successive and reproducible manner, as various microorganisms thrive in the conditions that accompany the various stages of decomposition of a body. This, therefore, presents the potential of the microbiome to be used in human identification and time since death estimation.

### **PO-04: The imperative of a regulatory framework for the establishment of a National Crime DNA database in Nigeria**

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The evolution of DNA sequencing has had an extensive impact on the administration of criminal justice in many jurisdictions. DNA analysis provides an opportunity for crime laboratories to develop distinct personal profiles which are important in identifying crime suspects. This is connected with Locard's principle of exchange which states that perpetrators of crime usually leave traces of their presence at the crime scene while also taking traces from the crime scene along with them. The use of DNA evidence in criminal justice has led to the arrest of previously unidentifiable perpetrators of crime as well as the exoneration of wrongfully convicted persons. The functionality of DNA technology in the criminal justice system depends on the existence of a comprehensive DNA database to facilitate comparisons between existing and newly obtained DNA samples. However, obtaining DNA samples from suspects has been challenged for being a bio-invasion of the suspect's right to privacy and causing stigmatization of citizens without due process. DNA analysis is also susceptible to unscrupulous manipulations in forensic science laboratories. Hence, to avert potential legal challenges, countries with advanced forensic capabilities and comprehensive DNA databases have evolved extensive regulatory frameworks to oversee the collection and retention of DNA samples of suspects. Collection of DNA samples in Nigeria for crime solving purposes is still at a very elementary stage and a national DNA database does not exist yet.

Hence, the aim of this paper is to undertake a comparative legal analysis and argue that, for the use of DNA technology to succeed in Nigeria's criminal justice system, it is imperative to put in place a regulatory framework that will control the collection and storage of DNA samples as well as dictate the conduct of forensic laboratory scientists. In essence, a national DNA database is vital to combat crime but it must be subject to a regulatory framework. **Key words:** Criminal justice, DNA database, Forensic evidence, Nigeria, Regulatory framework.

#### **PO-05: Forensic graphology a vital tool for criminal investigations**

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Forensic graphology is the study of handwriting. Handwriting Analysis or Graphology is a scientific method of recognizing, appraising and understanding personality through the strokes and patterns revealed by handwriting. Handwriting is one of the unique characteristics to represent what is in our minds, to communicate with others. Each person has a unique handwriting just like a fingerprint, and it represents individual characteristic, a unique feature of an individual. Handwriting it is a complex motor skill which involves a combination of sensory, neurological, and physiological impulse. Handwriting refers to a person's unique style of writing characters created by hand with a writing instrument such as a pen or pencil. Handwriting is an acquired skill and a complex perpetual-motor task, sometimes referred to as a neuromuscular task. Because each person's handwriting is unique just like DNA, it can be used to verify the writer of the document. Handwriting shows the true personality including behaviour, emotional outlay, self-esteem, anger, imagination, honesty, fears, defences, criminal tendencies and many other personality traits. Forensic investigators use handwriting pattern/technology to determine personality traits of an individual. In different agencies use graphology for checking application for jobs, writer identification, recruitment procedure, medical diagnosis, psychology, compatibility for marriage, career guidance, motivates different employees and child behavior and development. In this poster we discussed that forensic graphology helps in criminal profiling by analyzing handwriting on ransom notes in kidnapping cases or blackmailing letters or in the cases of pen poison letters, disputed handwriting and writing sample found at the crime scene. It helps in investigation by determining the psychological



state of the writer, identifying the writer as well as helping in criminal profiling. The various features of handwriting (such as, spacing, margins, pen pressure, size of the letters, zones, slant, i-dot, t-bars etc.) are discussed in this poster as well as their significance in describing various behavioral aspects of the persons. **Keywords:** Forensic science; Forensic graphology; Graphology; Handwriting analysis; Personality traits; Writing features.

#### **PO – 06: HIV – FORENSICS: IDENTIFICATION OF HIV ANTIGENS AND ANTIBODIES ON BLOOD-STAINED CLOTHES**

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HIV is one of the sexually transmitted infections of viral origin that occurs by contact with or transfer of blood, pre-ejaculates, semen and vaginal fluids. It can be acquired through sexual assault incidents such as rape. Detection and confirmation of HIV in infected human blood traces and blood stains found on the blood-stained clothes of sexual assault survivors are very important in forensic analysis, particularly in rape cases involving suspected HIV positive perpetrator and a HIV negative victim. The genetic relatedness between the HIV strain in the survivor and that in the suspect can be used in criminal prosecutions as evidence of responsibility for HIV transmission to the survivor.

**Aims:** To determine the extent to which HIV antigens and antibodies can be detected on different blood stained clothes with a view towards developing a forensic diagnostic methodology for rape cases, and early intervention for Prophylaxis, particularly in a no-suspect case. **Materials and Methods:** A case control clinic-based study of HIV positive patients (HIVPP) and HIV negative individuals (HIVNI) between the ages of 18 to 65 years was conducted. 10 HIVP samples spotted on clothing materials were tested consecutively after 1 month and after 4 months for the presence of HIV antibodies using Enzyme Linked Immunosorbent Assay (ELISA) and 10 HIVNI were tested using the same method as well. Sero-positive HIVP considered as "subjects" and 10 HIVNI Sero-negative as "controls. HIV-1 RNA PCR (viral load) was done on all the subjects and controls. **Statistical analysis used:** Data analysis was conducted with SPSS version 23 statistical software, and findings were presented as means, standard deviation and Student t Test to compare the Subject's and Control's where appropriate, p value of  $\leq 0.05$  was considered as significant. **Results:** A total of 10 HIV positive samples from known adult HIV positive patients on antiretroviral (ART) drugs and 10 HIV negative individuals were studied. All the subject's HIV ELISA results were positive to HIV and their Plasma HIV-1 RNA PCR was detectable in different concentrations. While that of controls was negative and undetectable. **CONCLUSION:** HIV antigens or antibodies are detectable using ELISA technique on 100% cotton, 50% cotton mixed with 50% polyester and 100% polyester clothing materials stained with HIV positive blood after four months found at room temperature in an open environment, but 100% cotton clothing material produced more accurate results as no much effect was noticed. **Key Words:** HIV virus, Blood stains, ELISA and HIV-1 RNA PCR.



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