

Abstract:

Forensic Science is gaining more and more importance nowadays in providing tangible comparison and identification of physical and trace evidences recovered from scenes of various science disciplines providing evidence for the criminal justice system in fields of DNA analysis, Toxicological analysis and Drug identifications amongst others. The application of modern techniques in forensic science is playing a pivotal role in conducting in-depth analysis and elucidating crimes that were not possible decades ago. Established in the 1950's, Forensic Science Laboratory, FSL is an autonomous body operating under the aegis of Government of Mauritius to provide a scientific service to the Criminal Justice System by analyzing samples submitted from crime scene and providing expert evidence in criminal trials. The exposes will lay emphasis on the journey of Forensic DNA in human identification and how the FSL Mauritius provides an impartial, high quality and timely forensic service in support of the justice system.

Sharing the best practices: lesson learnt from the Mauritius Forensic Science Laboratory.



Ms Auckloo Asha,

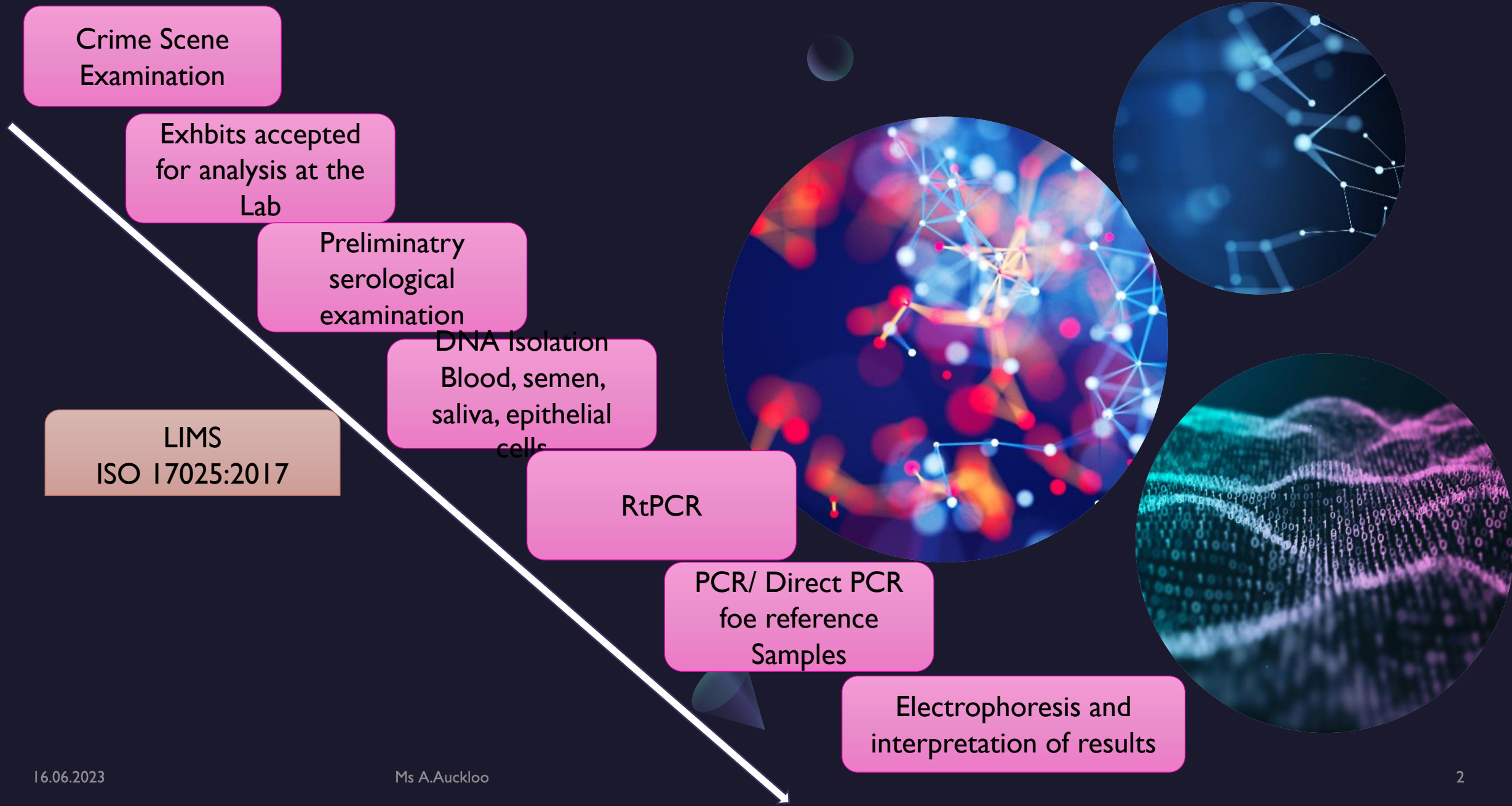
Senior Forensic Scientist,

Mauritius Forensic Science Laboratory

14th June 2023



DNA Workflow in Mauritius



**IF YOUR DATA COLLECTION IS WRONG,
ANY CONCLUSION IS WRONG!**

Garbage Data In

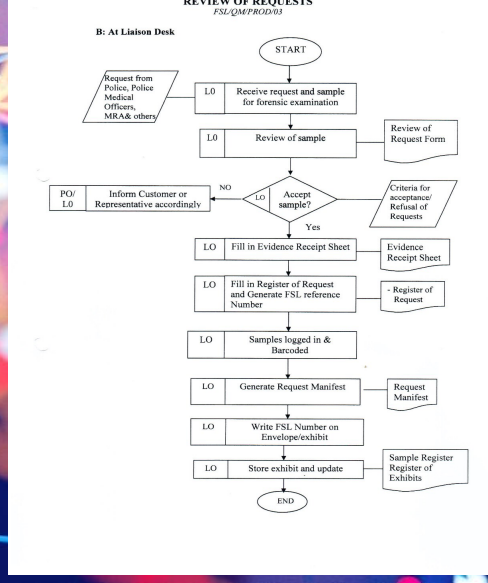
Analysis Pipeline

Garbage Data Out

DATA QUALITY MATTERS

veracityapp
powered by AIE

<https://www.assetintegrityengineering.com/software/veracity-app/> | info@aiigroup.org



Crime scene examination

- forensic scientists attend crime scenes of homicide, rape amongst other major cases

- identification, collection, packaging and transportation of exhibits

- training to FOA and Crime Scene Managers - on importance of Evidence and crime scene management

- exhibits accepted by lab only if they meet criteria of acceptance,

- review of police request and

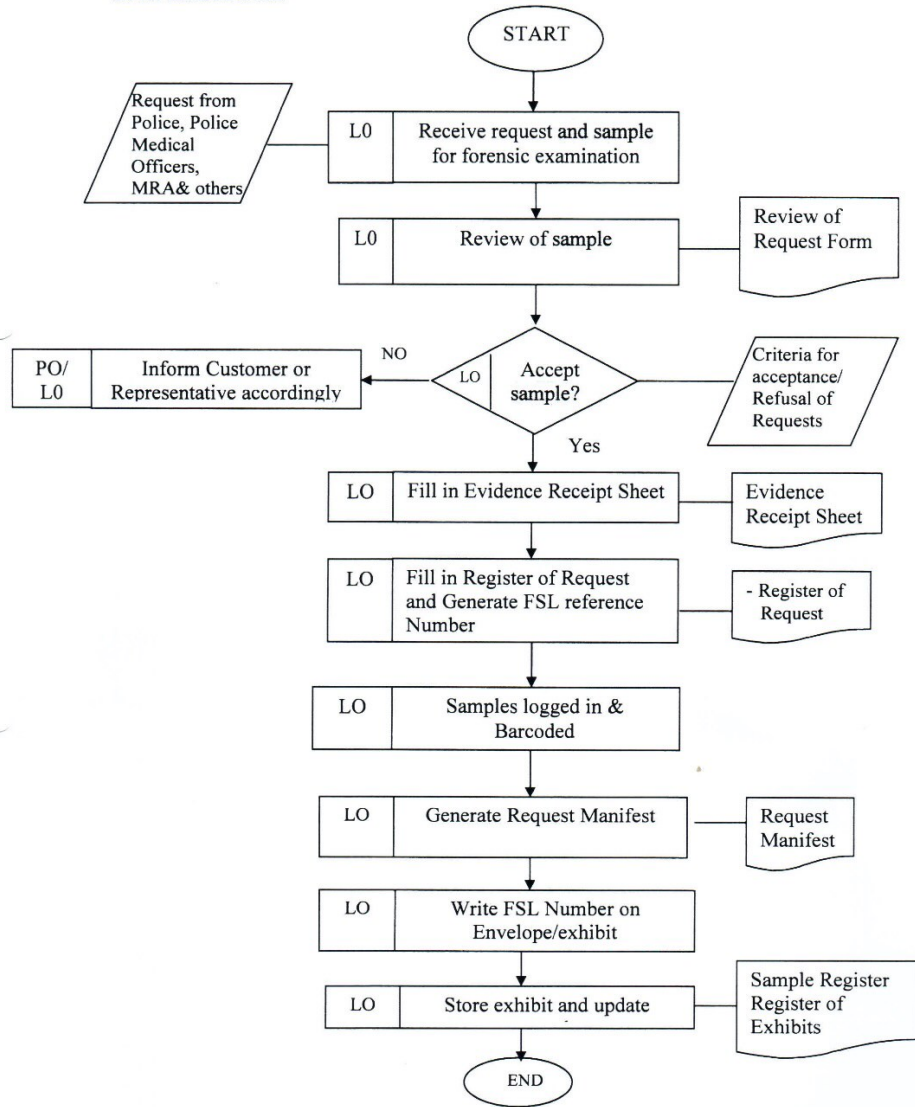
- proper storage of exhibits at the FSL



REVIEW OF REQUESTS

FSL/QM/PROD/03

B: At Liaison Desk



implementation of Policies and procedures

Quality in Mauritius Forensic Science Laboratory

International Organization for Standardization (ISO 17025:2017)

ISO 17025: 2017 is the standardized Norm that regulates the activity of testing and calibration laboratories to ensure technical competence and the reliability of the results obtained through any type of procedure that the laboratory wants to submit to accreditation based on the methodology or analytical resources available.



International Organization for Standardization (ISO)

- Professionalism
- Chain of custody and integrity of samples
- International recognition
- Reliability of results
- Credibility of results identification and evidential value of items gathered from scenes in criminal investigations.





Case Study



Scene examined together with scene of crime officer

Dead body wrapped in layers of bedsheets and tied with black opaque plastic bag , plastic bag wrapped over the head

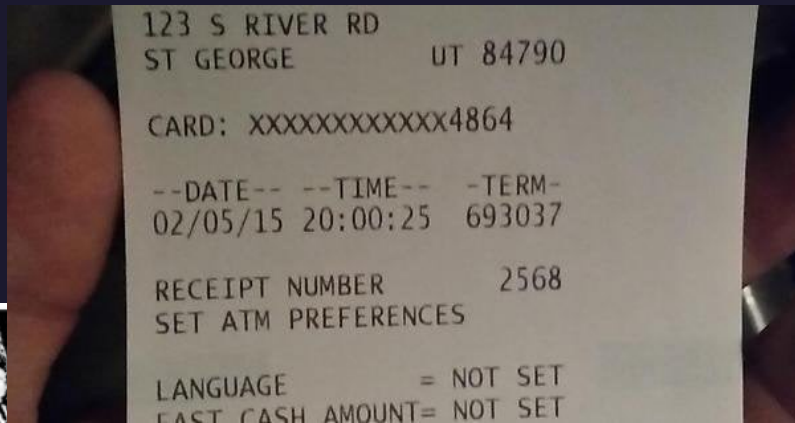
Crime scene examination, break-in at the back region - kitchen, sink two cups, ashtray cigarette butts, no disturbance as such, body found under bed, all windows closed, no visible trail of blood



Exhibits collected from crime scene

- Swabs from door handles
- Swabs recovered from plastic bag for presence of epithelial cells
- Cigarette butts from ash tray
- Swabbing from mouth and handle areas of cups from sink
- Swabbing from partial finger prints
- Swabbing of plastic wrapping containing body on the crime scene
- Luminol / bluestar stains

Exhibits collected from crime scene





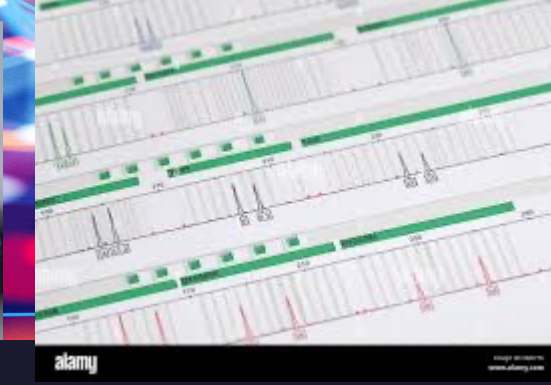
Investigation



reference samples from suspect

reference sample from victim

exhibits recovered from autopsy



DNA Analysis & interpretations of results

partial prints

can

cigarette but

adhesive tape roll

popsicle stick and wrapping



lessons learnt

effective communication between stakeholders

case conferencing

peer review

continuous professional development

continuous training of stakeholders including ISO requirements



the novel perspective

Touch DNA

new perspective of processing cases-

murder case - knife - blood

rape - semen

drug cases



Achievements



National DNA Database

The DNA database now contains more than 50 000 DNA profiles as at April 2022.

Affiliation to ISFG-Fr Since 2021

participated in the inter laboratory comparison exercise thus increasing our credibility and professionalism in the DNA analysis section



the way forward

Regionally:

Explore opportunities of collaboration with other Africa countries to share best practices and increase our knowledge on updated DNA analysis technologies to improve our DNA service delivery.

Be involved in the creation of a professional association at Africa level (similar to ISFG) so that we can meet up annually and share best practices and know-how as well as common challenges being faced by DNA Laboratory within Africa



the way forward



Internally

- Increase the number of loci being examined for STR analysis
- Validation studies to implement mt DNA analysis in Mauritius

Increase in number of Technical signatories.



Thank You

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geoscience**

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