

Report to the Attorney General on Delays in Forensic DNA Analysis

**REPORT SUBMITTED FOR
THE DEVELOPMENT OF REGULATIONS FOR
THE SEXUAL OFFENCES ACT, 2006**

TO

TASK FORCE SECRETARIAT

BY



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The opinions, factual and other findings, conclusions, or recommendations in this publication represent the points of view of CSI Nairobi Task Group and do not necessarily reflect the official position or policies of Bode Technology U.S.A, DNA Solutions Pty Australia and the Kenya Government.

Signed: _____

Date _____

Kinyanjui Murigi
CSI Nairobi

Message from the Director

It is my honor to transmit this Report to the Attorney General on the progress, from a private forensic company's point of view on Forensic DNA Analysis in relation to the Sexual Offences Act of 2006 in Kenya. As directed, CSI Nairobi convened a task force of its own in-house criminal justice and forensic experts to examine the reasons for the delay/slow implementation of the Sexual Offences Act of 2006 with special emphasis on crime scene evidence DNA analysis.

Attached in this report you will find two (2) letters we wrote to H.E The President before and after the signing of this wonderful Sexual Offences Act. Another letter was also addressed to you.

We commend H.E The President and yourself for supporting and permitting the Sexual Offences Bill to become the Sexual Offences Act of 2006.

Based on the views and opinions of the members of the task force, I am submitting the following recommendations for your consideration in developing a comprehensive national effort to ensure the successful implementation of DNA Forensic evidence.

Respectfully submitted,

Kinyanjui Murigi

Director, CSI Nairobi Task Force Coordinator

Abstract

The past decade has seen great advances in a powerful criminal justice tool: deoxyribonucleic acid, or DNA. DNA can be used to identify criminals with incredible accuracy when biological evidence exists. By the same token, DNA can be used to clear suspects and exonerate persons mistakenly accused or convicted of crimes. In all, DNA technology is increasingly vital to ensuring accuracy and fairness in the criminal justice system.

Nothing in the history of Kenya prepared the local forensic community for the mass fatalities that were witnessed in the Post Election Violence of 2007.

Much in the history of mass rape events however prepared the world's forensic community for the task of identifying those who perpetrated mass rapes following Kenya's post election violence between Dec 2007 and Feb 2008. Post Mortem analysis of Mass rapes in Bosnia and those perpetrated in 1994 during the Rwandan Genocide were well documented and researched for all and sundry to read.

For the world's forensic laboratories, the primary lesson of this monumental and historic effort is clear: every international forensic laboratory should have a plan for addressing mass rape incidences through DNA analysis.

For the Government of Kenya, this was a wake up call to speed up the full and successful implementation of the Sexual Offences Act of 2006.

Having made African history by exonerating the first African using DNA evidence under the Sexual Offences Act of 2006 (letter attached) in July 2007, CSI Nairobi, DNA Solutions East Africa, The Nairobi Women's Hospital, DNA Solutions Australia and Bode Technologies group U.S.A are set to make global history in two (2) ways; firstly by being the first companies to use forensic science during a period of active unrest and secondly, by introducing the first privately funded DNA Access programme that will facilitate Kenyans have FREE access to the world's leading forensic facilities.

This report discusses the efforts being undertaken to engage DNA testing in all times, including periods of active unrest like those witnessed in the Post Election Violence in Kenya and how the same is being used to hold individuals accountable for sexual offences. It also details our efforts as Kenya's premier private forensic facility, our challenges and our major decisions on the way forward as a private forensic company.

We are confident that this report will be of great assistance to the Attorney General's Office. We believe that with this paper, the office will also keep abreast with our current efforts in facilitating justice for the women, men and children of Kenya who were raped during the recent Mass Rape Incident.

Acknowledgments

CSI Nairobi is grateful for the support of the many people who are involved in all our historic projects.

CSI Nairobi thanks Dr.Sam Nthenya, CEO, and Snr.Sister Rahab Ngugi of The Nairobi Women's Hospital for ensuring that DNA samples were collected from the survivors of the mass rape. We also thank them for their continued support in the launch of our DNA Access programme.

We especially thank Bode's Ed Huffine (Vice President) and DNA Solution's Vern Muir (President) and Dan Leigh (Marketing Director) and their scientific teams for their steadfast support throughout our entire DNA testing processes beginning 2002.

Bode Technology has also facilitated funds for research and development on the rape and HIV/AIDS infection statistics. The compilation of these statistics was also supported by information and statistics from the 1994 Rwanda Genocide Model.

We also wish to thank Ms.Pamela Olilo, Registered Clinical Officer and Trauma Counsellor, New Nyanza Provincial Hospital for her support in compiling rape statistics in Kisumu City.

The local (and especially the Nation and Standard Media Groups) and international press has also given us overwhelming support throughout this exercise.

On a special note, we wish to thank the United States President and Congress in advance for their financial support in analysis of our current Sexual Assault backlogs and for the finance of Africa's first private DNA Laboratory.

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CHAPTER 1 INTRODUCTION

1.0 Advancing Justice Through DNA Technology – President’s Initiative

DNA technology is increasingly vital to ensuring accuracy and fairness in the criminal justice system. DNA can be used to identify criminals with incredible accuracy when biological evidence exists, and DNA can be used to clear suspects and exonerate persons mistakenly accused or convicted of crimes.

Kenya’s current DNA collection and analysis system needs improvement. In many instances, Kenya’s public crime lab is overwhelmed by backlogs of unanalyzed DNA samples. In addition, this lab may be ill-equipped to handle the increasing influx of DNA samples and evidence. The problems of backlogs and the lack of up-to-date technology result in significant delays in the administration of justice. More research is needed to develop faster methods for analyzing DNA evidence. Professionals involved in the criminal justice system need additional training and assistance in order to ensure the optimal use of DNA evidence to solve crimes and assist victims. And the criminal justice system needs the means to provide DNA testing in appropriate circumstances for individuals who assert that they have been wrongly convicted.

H.E President Mwai Kibaki believes we must do more to realize the full potential of DNA technology to solve crime and protect the innocent. The President did consent to the Sexual Offences Act of 2006, hereafter called the President’s initiative.

Under the President’s initiative, the Attorney General should improve the use of DNA in the criminal justice system by providing funds, training and assistance to ensure that this technology reaches its full potential.

The President’s initiative promotes:

Using DNA to Solve Crimes: When used to its full potential, DNA technology will permit the criminal justice system to identify criminals quickly and accurately. More crimes will be solved and persons mistakenly accused or convicted of crimes will be cleared if the criminal

justice system is provided with the necessary funding, technology, and assistance it needs to reap the benefits of DNA technology.

Under the President's initiative, the Attorney General should:

Eliminate Backlogs: Initiate funding to the Government lab and other private labs to eliminate, within five years, the current backlogs of unanalyzed DNA samples for the most serious violent offenses – rapes, murders, and so on.

Strengthen Crime Laboratory Capacity: Initiate funding to improve the analysis capacity of the Government lab so they can process DNA samples efficiently and cost-effectively and help prevent future backlogs.

Stimulate Research and Development: Initiate resources to stimulate innovative research in order to develop, among other things, more rapid and less costly methods of DNA analysis and the ability to analyze smaller and more degraded samples.

Provide Training: Initiate training on the collection and use of DNA evidence to the wide variety of professionals involved in using DNA evidence in the criminal justice system – police officers, prosecutors, defense Lawyers, judges, forensic scientists, medical personnel, victim service providers, corrections officers, and probation and parole officers.

Using DNA to Protect the Innocent: Under the President's initiative, the Attorney General should advance the use of DNA technology to protect the innocent from wrongful prosecution.

Using DNA to Identify Missing Persons: In order to help provide closure for families of missing persons, the Attorney General should provide education and outreach to medical examiners, coroners, law enforcement officers, and victims' families on the use of DNA to identify missing persons.

1.2 About CSI Nairobi

CSI Nairobi is a unique company indeed. Our objective is to save the people of Eastern and Central Africa through the expanded use of DNA.

Ensuring our clients access information and justice through better use of DNA evidence will involve all of us, working together. CSI personnel must recognize when to obtain DNA evidence in cases and how to collect and preserve it. Our representatives must guide our prosecutors on how to effectively present DNA evidence in court. And judges must have a solid background on the issues involved in DNA evidence in order to make sound judgments about admissibility and the weight to be given in the evidence.

CSI believes that better use of DNA evidence holds tremendous potential for increasing East and Central Africa's capacity to solve thousands of paternal cases, crimes, etc. We have much information about how DNA evidence can help solve cases years, or even decades, after a crime has been committed.

CSI Nairobi is affiliated to the following leading DNA laboratories;

DNA SOLUTIONS LABORATORY (AUSTRALIA)

BODE TECHNOLOGIES (U.S.A)

1.3 CSI Nairobi Private Forensic Lab

To ensure that all East and Central Africans access justice through the expanded use of DNA, CSI Nairobi will be the first private forensic laboratory in Africa in May 2008.

CSI Nairobi, together with our international partners is in the final stages of assembling the first forensic DNA laboratory in Africa to serve the governments and peoples of the entire region with crucial DNA services – both private and forensic.

Private – Genetic testing

Forensic – Sexual Assault, Homicide, Burglary and Violent Crime

CSI Nairobi has been engaged in significant planning and funding discussions with our internationally recognized labs that will be able to provide the necessary skills and training to make Kenya's new lab a successful, state-of-the-art facility. CSI Nairobi looks forward to full-implementation of the plan and lab development before May 2008.

Our international labs are all ISO 17025 accredited.

Upon completion, DNA Laboratory of East Africa will not only be beneficial to Kenya immediately but will achieve international accreditation within six (6) months of operation, making it capable of serving the entire Africa with its portfolio of DNA testing services. From a results point of view, once the accreditation is achieved all results will comply with strict procedures and testing requirements - therefore results cannot be queried.

1.4 Bode Technologies

Forensic DNA Analysis is undertaken by BODE Technologies of the US for CSI Nairobi. BODE Technologies is the world's largest and most respected private forensic lab. CSI Nairobi represents BODE in East and Central Africa. We have attached a brochure on Bode.

CHAPTER 2

DNA IN EAST AND CENTRAL AFRICA

2.0 History of Private DNA Testing East and Central Africa

CSI Nairobi is a pioneer in the field of DNA, crime scene and computer investigations in East and Central Africa. Kinyanjui Murigi, the current President initiated the project in 2001. CSI Nairobi remains the only private forensic agency vetted and recognized by the international community in Africa (except South Africa).

Kinyanjui underwent training with several laboratories in the USA and Australia; he has successfully completed the training and now holds several certificates in laboratory compliance and procedures.

CSI Nairobi has been certified by all their affiliated laboratories to operate as their agent in the region of East and Central Africa. DNA Solutions Pty of Australia, through CSI Nairobi exclusively provides DNA Paternity testing analysis for East and Central Africa. Bode Technology of the U.S, through CSI Nairobi exclusively provides DNA Forensic evidence analysis for East and Central Africa.

Kinyanjui's main purpose of creating CSI Nairobi was to use DNA evidence in the fight against sexual assault, which is a growing problem in our country Kenya. The recent Mass Rape Incidents truly justify this endeavor.

CSI Nairobi has been investigated by Kenya's Intelligence organizations and the U.S Commerce Department.

Today, CSI Nairobi and her sister company DNA Solutions East Africa have the support of more than 100 forensic scientists – both local and international.

2.1 Milestones

Some of CSI Nairobi's milestones in East and Central Africa may seem mundane compared to the west. However, this technology is new here and the services long overdue.

(a) DNA Solutions Pty Australia - DNA Paternity testing a first in East and Central Africa.

Non – Intrusive DNA Paternity testing is finally available in East and Central Africa fully supported by DNA Solutions Pty.

DNA Solutions Pty undertakes all DNA Paternity tests on behalf of CSI Nairobi. CSI Nairobi is the sole provider of bloodless DNA Paternity tests in East and Central Africa. This massive advantage means that CSI Nairobi now undertakes DNA Paternity tests for all major hospitals in the region, for all immigration cases, Court cases and for individuals.

This service has been available to residents of this region of Africa since 2006.

(b) DNA Solutions provides five (5) free paternity tests for the needy.

CSI Nairobi was able to assist Kenyans in need of justice but with no access to money undertake crucial DNA Paternity tests in July, 2007. This has never been undertaken before anywhere in Africa. Attachment.

2.2 Naivasha Case Study – DNA Analysis by Bode Technologies

MOSES KAMAU NDUNGU MAKES GLOBAL DNA EXONERATION HISTORY

Moses Kamau Ndungu, 20, a suspect in a sexual defilement case under the Sexual Offences Act of 2006, became the first African to be exonerated by DNA evidence.

Accused of defilement of a minor that subsequently resulted to the birth of a child, DNA Analysis exonerated Moses as the father of the child. Naivasha Principal Magistrate, Mr. John Kingori ordered the suspects release after hearing the State's application.

This case was historic for several reasons namely:

2 Kenya lacks a forensic lab to assist the Police,
3 Not even the South African Police (to our best knowledge), the only police force with a
functional forensic lab in Africa has been able to achieve this feat,
4 It was the first case to be fully supported by substantial scientific evidence under the
Sexual Offences Act of 2006.

The DNA results in this case were determined by procedures that have been validated
according to standards established by the Scientific Working Group on DNA Analysis
Methods (SWGDM)

5 It was the first time the private sector (CSI Nairobi) together with the Kenya Police has
successfully undertaken a highly complicated and intricate scientific case of this nature;
and

6 It forever changed the prosecution of Sexual offences in Kenya.

- It simply meant that suspects accused of sexual offences will from then on demand DNA proof of their presence on the victim.
- It ensured that thousands of Kenyans wrongfully accused of rape acquire justice.
- It meant that victims of rape will finally awake and demand that DNA analysis is used to assist them seek closure.

CHAPTER 3

SEXUAL ASSAULT EVIDENCE

3.0 Special Considerations

When dealing with sexual assaults, the investigator usually has a living victim who can provide the investigator with information that will help in collecting and preserving the pertinent evidence. The investigator should glean as much information as possible, so he or she will know which evidence to collect. For example, if the victim tells the investigator (which in this case may be the examining physician) that no oral penetration occurred, then the investigator knows that no oral swabs will need to be taken. Any information should be passed on to the crime lab, so the forensic scientists will know how to process the evidence submitted. Evidence should never be submitted without communicating relevant information.

When dealing with sex crimes, the victim should be taken to the hospital immediately and the examination started as soon as possible. Photographs should be taken to document any injuries which the victim received. If necessary, oral, vaginal, and/or anal swabs should be taken from the victim and air dried for one hour in a moving air source as soon as possible. They should be collected as soon as possible because the body begins breaking down the various components in seminal fluid through drainage, enzyme activity, pH, etc. The swabs should be air dried under a fan for at least one hour. This can either be accomplished by the doctor at the hospital, or, upon collecting the kit from the doctor; the investigator should bring it immediately to a secure place and air-dry it. The reason for this is that the moisture in the swabs allows microorganisms to grow which can destroy the evidentiary value of the swabs. Known saliva samples from the victim must also be air-dried along with any other wet or moist samples (not including whole blood samples, vaginal washing or any other liquid samples collected).

Usually, the best sample of seminal fluid comes from the swabs, as long as they are preserved properly. The next best place is usually the victim's panties because the seminal fluid will drain into the panties (if the assault was vaginal or anal in nature). The stain will sometimes be better preserved because the seminal fluid tends to dry faster in the panties. If the panties have wet stains, then they should be air dried as soon as possible before packaging. Clothes can be a good source of seminal fluid if the assailant ejaculated on the victim's clothes. The clothes can also be

a source for the suspect's blood, hairs, fibres, or other evidence transferred to the victim from the suspect. Clothing should be air-dried before permanent packaging and each article of clothing should be packaged separately.

Bed sheets, comforters, spreads, etc. can also be a source of evidence from the suspect. The value of this type of evidence should be carefully considered by the investigator before collecting it. If the bed is a "high traffic" area, meaning that numerous people have had access to the bed and the bed sheets haven't been cleaned in a long time, then it won't have as much evidentiary value as a bed where only one person had access to it and the sheets have been cleaned recently. The investigator should use the side lighting technique to look for any loose trace evidence on the sheets which may be lost during handling and packaging. This evidence should be placed in a paper packet and then placed in an envelope. If the sheets have wet stains and these can be attributed to the rape, then the investigator should circle these stains and inform the crime lab that those are the relevant stains to be examined. The investigator should note that he or she circled the stains and as always, air-dry the evidence before permanently packaging it. The investigator should neatly fold the sheets inward to prevent the loss of any other loose evidence. The sheets can then be packaged separately in paper bags, air-dried if necessary, and submitted to the crime lab.

If a suspect is established in a rape case, then reference samples should be collected from the suspect for comparison. These samples should include: a whole blood sample in a red, yellow, or purple top "Vacutainer"; a saliva sample (air dried); 15-20 pulled head hairs; and 15-20 pulled pubic hairs. If the suspect is captured within 24 hours and it can be established which clothes and/or shoes he wore during the attack, then the items should be packaged separately and submitted to the crime lab. Sometimes trace evidence from the victim such as hairs, fibres, blood, etc. can be found on the suspect's clothing.

The key to proper collection, preservation, analysis, and overall usefulness of evidence is open and plentiful communication between investigators, forensic scientists, and prosecutors. This will make the most of the evidence which can make or break a case. This paper has presented general guidelines on the collection and preservation of evidence. The investigator should

remember that each crime scene is different and each crime scene is a learning process. The investigator should also keep in mind that different crime labs may like their evidence collected in different manners. This is why the investigator should not hesitate to call his or her crime lab if he or has a question or a problem on the collection or preservation of evidence.

Activities before Post Election Violence

In December 2007, CSI Nairobi, DNA Solutions East Africa and The Nairobi Women's Hospital together with Bode Technology launched an ambitious project to facilitate the majority of women and children to access DNA Forensic evidence in East and Central Africa. This has never been done before anywhere in the world. CSI Nairobi, The Nairobi Women's Hospital and Bode Technology are poised to make global history with the success of this project.

This project, set to roll out in April 2008 was briefly postponed due to the Post Election violence.

3.1 Major Challenges

3.12 Lack of Public Education

This is our view is the most challenging task. The mention of the word "DNA" to Kenyans invokes a wide variety of reactions but none that is forensic. The majority of Kenyans lack knowledge on the power of DNA as a forensic tool. We intend to tackle this problem using our DNA Access programme.

3.13 Lack of Crucial Sexual Assault Kits in Kenyan Hospitals

A Sexual assault kit, often referred to as a "rape kit", is a set of items used by medical personnel for gathering evidence following a sexual assault. The purpose of a sexual assault kit is used in preserving physical evidence to be used in criminal proceedings.

A sexual assault kit contains commonly available examination tools such as cotton swabs, urine collection containers, a speculum, sterile sample containers and sealable envelopes for holding physical evidence such as hair, semen, blood and body tissues. While not necessarily a dedicated

part of a kit, adjunct equipment such as a camera and standard blood collection equipment should also be available.

Samples are collected from three primary regions:

- Clothing
- Evidence found on the body
- Evidence found in the genital and anal region

A typical evidence collection process for sexual assault victims is:

- The victim's clothing is collected and new clothes are provided.
- Saliva sample for detection of semen if there was oral penetration must be done within 2 days.
- Mouth swabs and mouth washing also for the detection of semen if there was any oral penetration.
- Skin samples for the detection of body fluids and lubricants.
- Control sample of skin swab for background DNA
- Unused swab for control
- Head and pubic hair samples for the detection of body fluids and identification of foreign particles or fibres.
- Vulval, low vaginal, high vaginal and endocervical swab for the detection of vaginal intercourse and detection of lubricants or condom if used.
- Perianal, rectal and anal canal swab for the detection of anal intercourse and detection of lubricants or condoms if used.
- Fingernails for the recovery of trace evidence or mechanical fit evidence from the scene.
- Blood and urine samples for analysis of drugs and alcohol.

Typical evidence collection process from a sexual assault suspect is

- Buccal swabs as a reference sample for DNA profiling
- Penile, coronal sulcus grans and shaft swab for the detection of body fluids from intercourse and detection of lubricants or condoms if used.
- Head hair sample as control and for microscopic comparison.

The sexual assault kit is then sealed in a box and secured at the hospital until given to the police for further laboratory analysis. For the box to be used in criminal proceedings, it is vital that the chain of custody and the integrity of the kit are preserved.

3.14 Lack of a Sufficient Pool of Forensic Personnel in Kenya

The forensic scientists in Kenya, like in all other African states, are very few. This is partly because there are no available training institutions locally but mainly because there are no promising opportunities in the job market.

Qualifications for a Career in Forensic Science

Introduction

Forensic science plays a crucial role in the criminal justice system. As an applied science, it requires a strong foundation in the natural sciences and the development of practical skills in the application of these sciences to a particular discipline. A forensic scientist must be capable of integrating knowledge and skills in the examination, analysis, interpretation, reporting, and testimonial support of physical evidence. A properly designed forensic science program should address these needs and strengthen the student's knowledge, skills, and abilities in these areas. A combination of education and practical training can prepare an individual for a career in forensic science.

Model Candidate

A model candidate for all forensic science practices possesses personal integrity, holds a baccalaureate degree (at a minimum) in the natural sciences, and has additional certifications from recognized international forensic bodies.

Personal characteristics

Because forensic science is part of the criminal justice system, personal honesty, integrity, and scientific objectivity are paramount. Those seeking careers in this field should be aware that background checks similar to those required for law enforcement officers are likely to be a condition of employment. The following may be conducted and/or reviewed before an

employment offer is made and may remain as ongoing conditions of employment (this list is not all inclusive):

- Drug tests.
- History of drug use.
- Criminal history.

Summary

A strong educational background in the natural sciences, personal attributes such as honesty and integrity, and additional professional skills are necessary to prepare a candidate for a career in forensic science. In addition to formal academic education and employer-provided training, a level of self-motivated professional development, including certification and involvement in the field, provides tremendous growth opportunities for both experienced professionals and those entering the field.

3.15 Lack of a Police Dedicated Forensic Laboratory in Kenya

Kenya lacks a Forensic Lab dedicated to the work of the Kenya Police. Forensic facilities come with their own challenges – whether in Kenya or in the United States.

To state that constructing a forensic facility is complicated would be a gigantic understatement.

To help crime lab directors get a grasp on such an undertaking, the U.S. Department of Justice and the National Institute of Justice assembled experts from across the U.S who were tasked with developing a set of guidelines. “[Forensic Laboratories: Handbook for Facility Planning, Design, Construction and Moving](#)” was born in 1998 from the work of this think-tank and provides a comprehensive guide and practical checklist for the planning process (attached).

One of the most important concepts to remember, the handbook emphasizes, is that the measure of a forensic lab’s success is how well it meets the current and future needs of its occupants — especially in light of the numerous special considerations involving environmental health and safety, as well as operational efficiency, hazardous materials handling, adaptability, cost issues, and the security and preservation of evidence in an uncontaminated state.

According to the NIJ handbook, labs must meet rigorous expectations. “The technical work performed in forensic laboratories must be able to withstand any evidentiary challenge. When detailing the needs of the laboratory, be ready to defend those needs against the questions that will arise because of the cost involved. Quality laboratory service is expensive, and the buildings in which these services are provided tend to be expensive. Cost-cutting that would jeopardize the lab’s testing quality cannot be an option.”

As the NIJ handbook states, “Staff needs and functional processes are the driving factors. From the start, the scientists who will occupy the building should be involved with the design/build team to explain their special requirements for the laboratory.”

Constructing a new crime lab revolves around four obvious activities: planning, design, construction and move-in, with careful planning and communication essential to successfully moving from one stage to the next.

Planning

A needs assessment forms the baseline for the project. It documents user and facility needs, evaluates the existing facility, defines space requirements and provides cost data. Transforming the needs assessment into a design program allows architects and engineers to prepare for the design process. According to the NIJ handbook, the needs assessment must demand full user participation; provide justification for size and cost; resolve issues relating to expansion, splitting operations, refurbishment or new construction; and answer questions as to size, cost, site evaluation and selection. It should also:

- Introduce the new project
- Describe existing facilities and its challenges/liabilities
- Describe the lab’s mission statement and its difficulty or impossibility of meeting its responsibilities under existing conditions
- Summarize area, staff, site and budget and provide “the bottom line”
- Analyze current and emerging social, economic, political and crime trends impacting the lab’s work
- Relate caseload data to staff and facility needs
- Describe facility and space descriptions

- Provide designer guidelines regarding safety, security, functionality and adaptability
- Provide space specifications and technical standards that must be met
- Provide equipment data sheets
- Provide the site analysis
- Establish a reasonable construction budget

Design

While there is no universally correct plan for forensic lab design, according to the NIJ, functional requirements of each lab — including the needs of specific scientific disciplines, equipment and instrumentation — must be considered. The facility layout must support and optimize the lab's particular area of expertise and is frequently dictated by differing lab procedures; one lab may do restriction fragment length polymorphism (RFLP) and polymerase chain reaction (PCR) in its DNA analysis, while another lab may do only PCR. Or one lab might require all in-process evidence be returned to a central vault at the end of the day while another lab may allow it to be stored in individual lockers within lab workspace. Site design also takes into account urban vs. rural settings, site access, lighting, landscape and parking design with an eye toward security. General building design considers labspecific considerations of exterior walls, HVAC intakes, duress alarms, lab tours, equipment and systems maintenance, corridors, mechanical systems, plumbing systems, electrical systems, as well as general lab design (to be covered in series Part Two).

Construction

During this phase, all planning and design work is brought to fruition. The steering team must ensure that all lab needs are fully implemented. The lab director should appoint an individual as the lab technical coordinating officer (LTCO) to represent the lab's interests and to act as a facilitator/coordinator during construction. The lab director and the LTCO must be prepared to help resolve any pitfalls that crop up during this phase, including questions of expectations, quality standards, implementing systems, equipment installation and coordination, as well as any necessary lab layout revisions.

Move-in

Lab work must continue while the relocation is underway, so a strategic plan for the move must be developed. When addressing the move, the steering committee must discuss what the tasks

are, what order they will be performed, who is going to do them, and who has sign-off authority.

Tasks can be assigned into categories:

- Continuous tasks address inventory, personnel coordination, security assurance and training, chemical and biological hazards, and custodial requirements
- Long-range tasks address requests for proposals from movers, warranty issues, liability issues, temporary storage needs, specialty movers, and furniture and equipment issues
- Intermediate tasks address evaluations of movers' bids, administrative issues and work in progress issues
- Short-term tasks address specialty equipment coordination, notification of clients/users, refrigeration concerns, and filing and packing issues, as well as vendor deliveries, rehearsals and walk-throughs
- Immediate tasks address monitoring of movers, equipment audits, security compliance, and integrity of evidence transfer audits
- Post-move tasks address equipment set-up, damage and breakage, discarding used materials, conducting tracking systems and quality assurance audits, and creating a new facilities manual

Establishing a reasonable and realistic timetable for the move is essential, as is a plan to cover any contingencies.

3.16 Kenya Police Lack DNA Forensic Training

The Kenya Police lack crucial training on the collection, storage and transportation of DNA Forensic evidence.

Just as today's law enforcement officer has learned to look routinely for fingerprints to identify the perpetrator of a crime, that same officer needs to think routinely about evidence that may contain DNA. Recent advancements in DNA technology are enabling law enforcement officers to solve cases previously thought to be unsolvable. Today, investigators with a fundamental knowledge of how to identify, preserve, and collect DNA evidence properly can solve cases in ways previously seen only on television. Evidence invisible to the naked eye can be the key to solving a residential burglary, sexual assault, or child's murder. It also can be the evidence that

links different crime scenes to each other in a small town, within a single State, or even across the Nation.

The saliva on the stamp of a stalker's threatening letter or the skin cells shed on a ligature of a strangled victim can be compared with a suspect's blood or saliva sample. Similarly, DNA collected from the perspiration on a baseball cap discarded by a rapist at one crime scene can be compared with DNA in the saliva swabbed from the bite mark on a different rape victim.

Kenya Police Officers need to be trained as a comparative on the following two (2) subjects:

Course: What Every Law Enforcement Officer Should Know About DNA Evidence—First Responding Officers

- DNA Evidence Overview
- Officer Responsibilities
- Sources, Locations, and Limitations
- Elimination and Reference Samples
- CODIS
- Homicide
- Sexual Assault
- Burglary
- Violent Crime

Course: What Every Law Enforcement Officer Should Know About DNA Evidence—Investigators and Evidence Technicians

- DNA Evidence Overview
- Officer Responsibilities
- Sources, Locations, and Limitations
- Elimination and Reference Samples
- CODIS

- Homicide
- Sexual Assault
- Burglary
- Violent Crime

3.17 Lack of Forensic DNA Training for Officers of the Court

All Judges, Magistrates and Court Prosecutors must be educated on Forensic DNA. Attached is a standard training module on the same.

3.18 Lack of Training - Doctors & Victim Service Providers

In one of the most disturbing revelations, Doctors and Nurses in Kenya are not adequately trained on how to collect, preserve and transport DNA Forensic evidence in institutions of higher learning. To date, this has been undertaken by CSI Nairobi. Beneficiaries include Doctors of the Nairobi Women's Hospital and the Mater Hospital.

3.19 Lack of a National Protocol

To date, CSI Nairobi uses the proven Texan protocol (attached) for lack of a comprehensive protocol in the country for the collection of DNA Forensic Evidence.

3.1-10 Lack of a National DNA Database (CODIS)

Kenya lacks a National DNA Databank: CODIS

The Combined DNA Index System, CODIS, blends computer and DNA technologies into a tool for fighting violent crime. For example, the current version of CODIS in the United States uses two indexes to generate investigative leads in crimes where biological evidence is recovered from the crime scene. The Convicted Offender index contains DNA profiles of individuals convicted of felony sex offenses (and other violent crimes). The Forensic index contains DNA profiles developed from crime scene evidence. All DNA profiles stored in CODIS are generated using STR (short tandem repeat) analysis.

CODIS utilizes computer software to automatically search its two indexes for matching DNA profiles. Law enforcement agencies at federal, state, and local levels take DNA from biological evidence (e.g., blood and saliva) gathered in crimes that have no suspect and compare it to the DNA in the profiles stored in the CODIS systems. If a match is made between a sample and a stored profile, CODIS can identify the perpetrator.

The use of this technology **MUST BE AUTHORISED BY AN ACT OF PARLIAMENT.**

3.1-11 Lack of Criminal Profiling Programme

Kenya lacks basic forensic tools crucial to the profiling of sexual offenders and other criminals. French Poet Jacques Rigaut said *“Don’t forget that I cannot see myself that my role is limited to being the one who looks in the mirror”*

DEFINITION OF CRIMINAL PROFILING

"It is an attempt to determine the attributes of an unknown subject (UNSUB) or perpetrator based on evaluating minute details of the crime scene, the victim, and any other obtainable evidence."
(Copson 1995)

Just like DNA profiling, profiling can be either PROACTIVE or REACTIVE. When investigators use profiling to try and solve crimes that have already happened, they are being reactive, and this whole crime-solving part of it is what has been glamorized. Proactive profiling involves an attempt to interdict and foil crime before it happens, and can be defined as follows:

<i>A Definition of Proactive Profiling</i>
"To make judgments about another, relative to possible criminal activity, based on a number of overt and subtle factors which may or may not include things such as a person's race, manner of dress and grooming, behavioral characteristics, when and where the observation is made, the circumstances under which the observation is made, and relative to information the officer may already possess." (Fredrickson & Siljander 2002: 15)

Just as reactive profiling is over-glamorized, proactive profiling is over-criticized. It seems whenever proactive profiling is discussed in the context of police activity in areas where a significant number of inhabitants are ethnic minorities, the charge of racial profiling is raised. Historically, 90% of profiling has involved murder (65%) and rape (25%) cases (Holmes & Holmes 2002). 70% of all serial murder is sexually motivated (Newton 2000). And this is the reason why we want to place our concentration on Rapists and Serial Killers.

GOALS OF PROFILING

According to Holmes & Holmes (2002), who take the FBI serial killer profiling technique as a model for proactive profiling of an UNSUB (Unknown Suspect), there are three goals that a profiler strives for:

- To provide a social and psychological assessment of the offender

The first goal will involve hypothesizing about the offender, and in some cases, guessing as to the offender's age, sex, race, religion, employment, place of residence, and so forth, as can be reasonably inferred.

- To provide a psychological evaluation of belongings in possession by the offender
- To provide interviewing suggestions and strategies

The second and third goal will involve analysis of souvenirs (taken from the victim at the crime scene) as well as the analysis of motive (usually from signature elements, or what the offender did at the scene that they didn't have to do, or from further guessing about what fantasy the offender has in mind). *There's no such thing as a motiveless crime*. Just because we don't understand the motive doesn't make it any less visible. "How plus Why equals Who" according to Douglas et. al (1986), and a good psychological profile is an educated attempt to provide parameters about the type of person who committed a certain crime.

CRIMINAL PROFILING IN KENYA

Between 1750 and 1850, two popular fields of scientific practice consisting of the **PHYSIOGNOMISTS** and **PHRENOLOGISTS** tried to prove that there were links between the propensity to engage in criminal behavior and unusual physical appearance (mostly the face,

ears, or eyes) and the shape of the skull (bumps on the head being an indicator of dominant brain areas). The physiognomists studied facial appearance and the phrenologists studied bumps on the head. Both fields of study were quite influential at the time, and are lumped together in history books as part of criminal anthropology, early biological perspectives, the legacy of demonology (*ugliness as the mark of evil*), or in the 20th century, known as **constitutionalism** (the study of human physique, or constitution of the body). The search for a constitutionally determined "criminal man" continued up until 1950 when it was finally discredited, BUT NOT IN KENYA OR AFRICA BY LARGE.

Checklist physiognomic indicators.

- Unusually short or tall height
- Small head, but large face
- Small and sloping forehead
- Receding hairline
- Wrinkles on forehead and face
- Large sinus cavities or bumpy face
- Large, protruding ears
- Bumps on head, particularly the Destructiveness Center above left ear
- Protuberances (bumps) on head, in back of head and around ear
- High cheek bones
- Bushy eyebrows, tending to meet across nose
- Large eyesockets, but deepset eyes
- Beaked nose (up or down) or flat nose
- Strong jawline
- Fleshy lips, but thin upper lip
- Mighty incisors, abnormal teeth
- Small or weak chin
- Thin neck
- Sloping shoulders, but large chest
- Long arms
- Pointy or snubbed fingers or toes
- Tattoos on body

There's also a whole subspecialty field that, for lack of a better term, might be called the "physical attractiveness" studies (Cavior & Howard 1973; Agnew 1984) which suggest that ugliness really has got something to do with becoming a criminal, or at least how badly you get treated in society and court.

However, it's important to remember that profiling evolved from the FBI's understanding of serial murder, and from the somewhat broad mandate of the behavioral science unit within the FBI in the early 1970s to formally introduce law enforcement to psychological and behavioral science principles.

FBI PROFILING

Studies have found that FBI profiling techniques are of some assistance in 77% of cases, provide leads for stakeouts solving cases 45% of the time, and actually help identify the perpetrator (or UNSUB, unknown subject) in 17% of cases (Teten 1995). Ressler and Burgess (1985) reported an inter-rater reliability that averages 76-93%. Pinizzotto has conducted other studies on the accuracy of profiling. The FBI profilers not only studied homicide, but assault, rape, sexual molestation, repetitive indecent exposure, arsonists, bombers, "nuisance offenders" (such as obscene phone callers, voyeurs, etc.), and other ritualistic crimes. The FBI's VICAP team (computer reporting system) was founded in 1983 (Violent Crime Analysis Programme).

CANADIAN CONTRIBUTION

The Canadians already has a Major Case File (MCF) which collated serious, violent crimes, and their evaluation of other systems, in addition to their own approach at case linkage - which involved counting sexual assaults which theoretically could escalate into murder - resulted in a truly unique Canadian system known as ViCLAS (technically spelled ViCLAS, for Violent Crime Linkage Analysis System). The ViCLAS software also is a bit more user-friendly in the entry of data than the FBI system. The HITS database is probably the most robust, allowing 227 query capabilities.

ViCLAS produces both "confirmed" and "potential" linkages. A number of countries including, Belgium, Austria, Australia, Holland, Japan, and the United Kingdom have adopted ViCLAS

and are using it as their major case linkage system as well as the American states of Tennessee and Indiana. The RCMP have given the software away free to these countries and have provided them with the necessary technical support and training to operate it.

GEOGRAPHIC PROFILING

The most basic concept in geography and/or geographic profiling is "nearness" which in psychology has the equivalent concept of "least effort." The *principle of least effort* (Zipf 1950) holds that a person considering all the possibilities for action will most likely select the course of action which involves the least expenditure of effort. When distance is involved, one also has to account for subjective, psychological perceptions of distance, which varies by familiarity with the terrain, among other things. Humans tend to move thru geographical areas utilizing cognitive maps, sometimes called "mental maps" which, in the person's mind, contain images of paths, borders (edges), and landmarks, among other things. Habitual areas are called "activity spaces" and within those spaces are "anchor points," and criminals, like anyone else, operate within the confines of those spaces and points, no matter how stable or nomadic they are (nomadic criminals simply have fewer anchor points). A number of sophisticated statistical techniques (proximity statistics) can then be applied to standard crime maps and used to predict offender residence location.

3.2 Current Challenges and Managing Expectations

A pioneer in any new technology is likely to encounter unique management challenges in a mass rape incident.

Uncertainty, ambiguity, and stress are the hallmarks of the early stages of a mass rape incident response. Also, a Crime lab Agent will encounter new constituents: the victims' families, public officials, the media, and the general public all will have expectations about the technology of DNA analysis and the timeline for DNA-based analysis.

A Crime Lab Agent who is faced with responding to a mass fatality incident will encounter a host of new constituents, in addition to their traditional constituents.

Although these constituencies seek the same outcome—the maximum number of profiles and the maximum number of convictions—their priorities may not be the same as the laboratory’s. For example, elected officials and the public may focus on the speed of the analysis process, whereas the laboratory’s primary focus may be on the quality of the collection and analysis processes. Although these goals are not mutually exclusive, they may occasionally clash.

The media, which plays an important role in keeping the public informed, can place additional demands on the Crime Lab Agent. CSI Nairobi is dealing with this situation by widely disseminating routine information whenever such is available from Bode.

The Project director, Ed Huffine is leading CSI Nairobi through these challenges while continuing to ensure that the laboratory meets its charge of traditional casework and databasing. Because it is impossible to predict all the challenges of a mass rape response, Ed Huffine assures us that flexibility is a critical quality for him as the project director.

At CSI Nairobi we have assumed that the public, including public officials and the media, knows little about the realities of DNA analysis, popular television shows notwithstanding. We understand that the public will have to be educated in order to develop realistic expectations about the speed and power of DNA testing. The public must be encouraged to understand that the nature and scope of mass rape incidences can affect the laboratory’s ability to make DNA profiles, including the fact that some of the perpetrators may not be identified. In mass rape incidents, DNA may be collected and analyzed, but never profiled.

Bode’s effort to frame realistic expectations and candidly discuss issues such as the limitations of the technologies is greatly assisting CSI Nairobi limit disappointments in the future.

The public’s ultimate measure of the laboratory’s performance is the number of profiles. CSI Nairobi is already raising awareness that DNA testing takes longer— sometimes much longer— than depicted in television dramas is an important message. Using metrics such as the number of

samples received and the number of samples analyzed, CSI Nairobi is assisting Bode's Project director convey the complexity and time requirements of DNA analysis.

CSI Nairobi understands that the project director will need to use numerous skills to organize and manage a mass rape incident response. Flexibility, innovation, and creativity likely will be demanded. Mass rape incidents intensify the routine pressures faced by laboratories and often expose the laboratory to heightened scrutiny.

3.3 Project Management

As mentioned before in the introductory remarks, a project of this nature has never been undertaken before ANYWHERE in the world. CSI Nairobi is managing functions related to the collection, storage and preservation of DNA evidence here in Kenya.

To this effect, CSI Nairobi has now introduced Sexual Assault Kits for the first time in Kenya. These have been facilitated by Bode and training by CSI Nairobi.

However the bulk of the scientific work lies with Bode. This project is certainly Herculean. Samples collected may not conform to standards accustomed to the laboratory. Funding is also a major challenge.

However we are confident that Bode, with its qualified and experienced scientific team will pull through for the people of Kenya, as it did for the victims of 9/11.

3.4 Media Relations

Because DNA technology is of such interest to the public in Kenya, there are many DNA-related questions from the media. To minimize the potential for misunderstandings, CSI Nairobi has a single point of contact between the laboratory and the press, and Bode staff has been instructed on how to respond if contacted directly by the media.

Through these press briefings, CSI Nairobi is assisting to educate the public and manage expectations by providing a realistic picture of what DNA analysis can— and cannot—do.

3.5 Major Decisions

“ Decisions made by the laboratory director during first 48 hours following a mass rape incident are crucial to the efficiency and overall success of the DNA testing effort. “NIJ

Following the Presidential vote announcement, massive riots and battles erupted in Kenya. These battles were not only fought on the streets, but also on the bodies of women and children. Here was a situation similar but not synonymous to September 11. Nothing could have prepared anyone for this. Children as young as 4 years were not spared.

The nature of this mass rape incident were so horrific that CSI Nairobi immediately issued a Press Release castigating a section of Kenyan men.

The immediate focus was on Kenya’s security forces. For the rape survivors, the attention was and is still focused on **The Nairobi Women’s Hospital**.

It was time to make major decisions.

The hours and days immediately following the mass rape incidences in Kenya were inevitably chaotic. The Nairobi Women’s Hospital, well known in the region for treating survivors of rape was overwhelmed by the volumes of survivors of rape (many gang rape).

‘Extreme situations call for extreme measures.’**Nicollo Machiavelli**.

(a) Bode approved to conduct the forensic analysis of these MRIs at their cost immediately. Time was of the essence and the first shipment of samples was sent to Bode shortly after this. It must be mentioned that **Ed Huffine** of Bode was instrumental to the success of this initial process. To date, Bode Technology is still undertaking the DNA Testing.

(b) CSI Nairobi also decided to launch the DNA Access programme in April 2008 to stem rampant rape in the region. Funds are still being sort for this operation.

(c) Together with Bode, CSI Nairobi decided on building a Forensic Lab to serve the region as soon as funds are available. Our request is to date with the U.S Congress to facilitate the same through Bode Technology.

CHAPTER 4 RAPE STATISTICS – POST ELECTION

4.0 Nairobi

Area	Female Survivors	Male Survivors	Total
Akiba	1		1
Baba Dogo	11		11
Dandora	41		41
Dagoreti	3		3
Eastleigh	22		22
Eastlands	1		1
Embakasi	5		5
Eldoret	Unknown		Unknown
Garden Estate	1		1
Githurai	4	1	5
Gachie	3		3
Gathiga	1		1
Guthunguri	1		1
Huruma	11	2	13
Hurlingham	1		1
Innercore	1		1
Karen	16	2	18
Kikuyu	42	1	43
Kamukunji	1	1	2
Kawangware	2	1	3
Kibera	70	12	82
Kangemi	4		4
Kitengela	1		1
Kabete	11		11
Kabiria	2		2
Kiserian	1		1
Kiambu	1		1
Kirinyaga Rd.	1		1
Kasarani	6		6
Kahawa West	4		4
Kariokor	1		1
Kinoo	2		2
Kayole	8	1	9
Korogocho	Unknown	1	1
Kabete	2		2
Kingeero	1		1
Komarock	2		2
Kariobangi	1		1
Kangundo	1		1

Kileleshwa	1		1
Kilimani	1		1
Kawangware	3		3
Kenyatta Univ.	1		1
Kaloleni	1		1
Kari	Unknown	1	1
Kigoro	1		1
Limuru	4		4
Lavington	1		1
Langata	2		2
Mathare	95	15	110
Maringo	2		2
Mukuru Kwa Rueben	1		1
Muguga	1		1
Makadara	11		11
Mtito Andei	Unknown	1	1
Mwiki	1		1
Mai Mahiu	1		1
Makuyu	1		1
Ngong	11		11
Ngumba	6		6
Nderi	Unknown	1	1
Nakuru	Unknown		Unknown
Naivasha	Unknown		Unknown
Ngara	2		2
Ongata Rongai	6		6
Pipeline	2		2
Pangani	1		1
Rongai	1		1
Ruaka	1		1
Satellite	1		1
South C	2		2
Shauri Moyo	1		1
Spring Valley	1		1
South Lands	1		1
Sotik	Unknown	1	1
Umoja	21		21
Uthiru	2		2
Thika	1		1
Waithaka	1		1
Wangige	2		2
Yaya	1		1
	479	41	520

Notes:

- 92% of the rape survivors were women
- 40% of the rape survivors were women above 18 years. Almost all Gang Rape
- 60% of the rape survivors were women and girls below the age of 18years (Minors)
- 40% of these Minors were above 10 years. Two (2) out of three (3) were Gang Raped.
- 60% of these Minors raped were below 10 years of Age with the youngest 9 Months old.
- 55% of Minors raped below 10 years KNOW the perpetrator (Family, Friend or Relative)
- 8% of rape survivors are men
- The most dangerous neighborhoods for women and children are Mathare and Kibera.
- The most dangerous affluent neighborhoods for women and children are Karen and Ngong.

These statistics are based upon;

1. A section of the information received from the Nairobi Women’s Hospital and
2. Independent research undertaken by CSI Nairobi.

4.1 Kisumu

Area	Female Survivors
Nyalenda	20
Kanyanwar	5
Kibos	11
Kasule	1
Milimani	2
Town Centre	4
Robert Ouko Estate	1
Nyawita	29
Kabras	1
Manyatta	9
Kondele	1
	84

Notes:

- 100% of the rape survivors were women

Statistics received from **New Nyanza Provincial Hospital** indicate:

- 18% of the rape survivors were women above 18 years. Almost all Gang Rape
- 82% of the rape survivors were women and girls below the age of 18years (Minors)
- 41% of these Minors raped were below 10 years of Age with the youngest 4 years old.
- 41% of rape survivors are Gang Raped, the youngest survivor being 10 years.
- The most dangerous neighborhoods for women and children are Nyalenda and Nyawita.
- The most dangerous affluent neighborhood for women and children is Milimani.

The final statistics are based upon;

1. Section of the information received from the New Nyanza Provincial Hospital and
2. Independent research undertaken by CSI Nairobi.

Observation from Kisumu – Reasons for comparatively low rape cases in volatile Kisumu.

- The Kisumu business community, professionals and middle class shielded and created safe passage for non-Luo Kenyans in Kisumu. This is an unprecedented demonstration of ethnic tolerance and social maturity amidst hostilities.
- CSI Nairobi has no documented report of rape survivors from non-Luo ethnic communities.
- The energies of most of those involved in the violence were mostly directed towards activities other than sexual assault.

4.3 HIV Infections

KENYA’S MASS RAPE INCIDENCES (MRIs) –

OVER 950 NEW HIV INFECTIONS IN NAIROBI OVER A SPAN OF TWO (2) WEEKS

In times of social unrest, Gang rape is the ONLY outstanding crime against the persons of women, children and men.

In every Gang rape, there is the Dominant participant and the Unwilling participant. Using the 1994 Rwandan Genocide Model (RGM), over 90% of the Dominant participants had HIV/AIDS. If we translate these statistics to suit the recent MRIs in Kenya, we can also comfortably infer that the same statistics hold, given the geographical profiles of the MRIs.

Out of the estimated 500 rapes that happened in Nairobi during the post election violence, 95% were Gang rapes with an average of three (3) participants. Estimating that the Dominant participant initiated the rape (all were spontaneous, implying that no form of protection was used), then all the subsequent participants contracted the deadly HIV Virus from the Dominant participant. This situation is further compounded by the fact that a number of the victims also had the HIV Virus at the time of the rape.

Statistically this translates to 950 new HIV infections.

Reasons for Gang rape: Drugs or psychopharmacological explanations have strong empirical support. Up to 85% of Gang rape and stranger violence is drug-related. The alcohol-violence link is the strongest. Drugs can entrap people into a life of crime (the enslavement hypothesis), escalate already-existing criminal tendencies (the escalation hypothesis), and/or produce spin-off violence related to the drug trade (systemic violence).

Due to this strong connection of Gang rape to psychopharmacological explanations, most (85%), if not all of those who participated in the recent MRIs will eventually succumb to full blown AIDS and die in eight (8) years if they do not seek treatment immediately and stop engaging in unprotected sex. However rape as a crime has the highest rate of recidivism. This means that these rapists will continue to rape, endangering both their victims and themselves. If the latter is the case (and from statistics we contend that it will), then these rapists will be dead in three (3) years from AIDS related complications (especially Liver sclerosis). That statistically translates to more than 1,200 AIDS related deaths between the year 2011 and 2016.

Such is poetic justice.

CHAPTER 5 RECOMMENDATIONS AND CONCLUSION

To address the problems identified by the task force, CSI Nairobi recommends the creation of a comprehensive, national DNA strategy that addresses DNA casework analysis and the issue of backlogs. CSI's recommendations have two primary goals: (1) build our Nation's capacity to use DNA evidence as a routine forensic tool and (2) enhance public safety until long-term capacity can be built.

CSI's specific recommendations are as follows:

Recommendation 1: Improve the DNA Analysis Capacity of Public Crime Laboratories

Our Nation's only crime lab based at the Government Chemist does not have the capacity to take full advantage of DNA forensic technology because of an insufficient number of trained personnel, inadequate equipment, cramped laboratory space, outdated information systems, and growing casework demands. To build public crime lab capacity, the following specific elements should be considered as part of a long-term strategy:

A. Kenya Police Forensic Laboratory

The Panel recognizes the unprecedented complexity of forensic DNA in Kenya. It was agreed as a first recommendation that the Kenya Police **MUST** be equipped with a modern forensic laboratory as soon as possible.

The lab should serve only the police.

B. Develop a National DNA Database

The national DNA database is a key police intelligence tool that helps to:

- Quickly identify offenders
- Make earlier arrests
- Secure more convictions
- Provide critical investigative leads for police investigations

DNA samples obtained for analysis from the collection of DNA at crime scenes and from samples taken from individuals in police custody can be held in the National DNA database.

Maintaining and developing the database should be one of the government's top priorities. However, there should be no plans to introduce a universal compulsory or voluntary, DNA database.

C. Ensure that crime labs have the basic equipment and materials to conduct DNA analyses

Crime laboratories face rapidly increasing workloads and lack the funds to purchase and maintain new equipment. All crime laboratories should have access to the latest technology for conducting standard DNA analysis. CSI recommends that assistance be provided to those crime labs that are without basic equipment and materials to conduct the fundamental processes of DNA analysis—extraction, quantitation, amplification, and analysis.

D. Equip public crime labs with laboratory information management systems

Certain portions of the DNA testing procedure are labor-intensive and time-consuming. A significant amount of staff time is devoted to tracking and managing evidence samples. Often, evidence tracking is accomplished through hand-written entries on forms.

Laboratory information management systems (LIMS) are designed to automate evidence handling and casework management. They can improve the integrity and speed of evidence handling and help to demonstrate a proper chain of custody. These systems can provide the additional benefit of aiding public crime labs with the management of all casework, not simply DNA samples.

LIMS are especially critical to efforts to maximize staff resources. They can increase efficiency by freeing up analysts' time. Increased staff time can then be devoted to testing procedures not amenable to automation.

LIMS also can be part of a comprehensive laboratory strategy to improve communication with other criminal justice agencies. The DNA task force identified inadequate communication among law enforcement, crime laboratories, and the courts as one of the largest problems plaguing existing resources. Duplicate collections, case dispositions, suspect exclusions, incomplete data submission, and evidence location are all issues that contribute to wastes of time and expense.

Kenya's public DNA laboratory does not have a LIMS. Significant start-up costs are involved in implementing these systems, requiring some labs to first upgrade their existing computer hardware and networks. LIMS involve initial capital expenditures for computer systems, software, and supporting hardware, as well as continuing costs for maintenance and support. CSI recommends that the national DNA strategy support the implementation of a LIMS in all public crime labs.

E. Provide automation tools to public DNA laboratories

To streamline aspects of the DNA analysis procedure that are labor- and time-intensive, crime laboratories seek to use automated systems, such as robots, to perform DNA extraction. These systems increase analyst productivity, limit human error, and reduce contamination.

In Kenya, no examples of forensic DNA laboratory automation exist to serve as models.

However, the South African experience may be instructive. Robotics play a significant role in the South African database process: removal of human capital performing repetitive processes enables reassignment of that capital to the post-analysis phase of interpretation, evaluation, and court testimony. Automation within the system involves coordinating robotic actions with minimal or no human intervention to obtain reproducible results. Important characteristics of the South African system include large capacity; walk-away capability; and tracking, recording, and verification at every step (a quality assurance measure), largely assisted by a LIMS. DNA task force members discussed how the South African Police Service's experiences demonstrate the utility (i.e., cost- and time-saving measures) of automation.

F. Maximize the use of technology in quality assurance and data analysis processes

Forensic DNA analysis requires two data reviews for quality assurance purposes. To meet this labor-intensive requirement, some labs designate individuals to do nothing but review this data.

Expert data-reading systems can rapidly assess the quality of DNA profile data and greatly reduce staff time. They provide accurate and reliable quality assurance measures and assist human reviewers who may become fatigued from repetitive and exhaustive data reviews. Technology is currently being field tested to perform the initial "data read," while having the laboratory analyst conduct the required second read. It is likely that a commercial product will be available soon for the forensic community. Once properly integrated and accepted by the forensic community, expert systems will have a significant impact on streamlining quality assurance procedures.

In addition, quality assurance and data analysis can be greatly enhanced and accelerated by providing secure communications connectivity for consultants. These consultants can be hired on a contract basis to review and interpret data and provide reports directly to the laboratory. This flexibility is often essential given limited resources and fluctuating demands. A long-term national strategy should consider supporting the ability of crime laboratories to contract with outside experts for "virtual" assistance with case analysis, interpretation, and laboratory management.

G. Continue to assist crime labs in meeting accreditation requirements

Kenyan Law should imitate the laws in the United States when it comes to the accreditation of forensic DNA laboratories.

Federal law requires that all laboratories submitting DNA forensic and convicted offender sample profiles for inclusion in the National DNA Index System (NDIS) demonstrate annual compliance with the FBI Director's National Quality Assurance Standards for Forensic DNA and Convicted Offender Laboratories. Laboratories can demonstrate compliance through accreditation by the ASCLD's Laboratory Accreditation Board (ASCLD/LAB), certification by the NFSTC, or a combination of internal and external audits.

H. Support efforts to ensure appropriate retention and storage of forensic evidence

Forensic evidence must be stored in a manner that ensures its integrity and maintains its availability while criminal investigations and judicial proceedings continue. Appropriate evidence storage conditions require costly equipment such as security systems, environmental control systems, ambient temperature monitors, and dehumidifiers.

Evidence storage problems further complicate casework backlogs. Evidence might be stored at a courthouse, police agency, or evidence warehouse rather than in appropriate lab storage facilities.

To encourage appropriate retention and storage of forensic evidence, CSI recommends the collection and dissemination of best-practice information about evidence retention and storage.

Such information should identify cost-effective practices and facilitate the exchange of information among the law enforcement and forensic community about the value of particular equipment. A long-term capacity building strategy could also provide support for the development of appropriate storage.

I. Support mitochondrial DNA testing

Nuclear DNA analysis is the preferred means of DNA analysis. However, sometimes attempts to develop a nuclear DNA profile fail. The only other option, then, may be mitochondrial DNA testing. This most often occurs when the biological sample is old, degraded, or otherwise compromised.

State laboratory representatives indicated that all their labs lack the capacity to conduct mitochondrial DNA analysis. Therefore, these cases often need to be outsourced by labs without this capability. Outsourcing mitochondrial DNA analyses on a routine basis is cost-prohibitive. To address the problem, task force members recommended that Kenya expand their capabilities in this area. If mitochondrial DNA testing services were available at a lower cost, the kinds of cases using this technology might increase.

J. Encourage the use of DNA technology to identify human remains

CSI recommends that the national DNA strategy include programs that would encourage use of the proposed DNA database.

Specifically, medical examiners and coroners should be encouraged to collect DNA samples before disposition of any unidentified human remains.

The strategy should also support access to mitochondrial DNA analysis for ALL jurisdictions that lack this capacity. Finally, the strategy should support further research and development to improve DNA analysis of degraded remains and outreach and educational efforts to the public and law enforcement.

Recommendation 2: Help Crime Labs Eliminate Casework Backlogs

CSI recommends that financial assistance be provided to the government chemist crime lab to address the current substantial casework backlog while lab capacity is being built. At the present time, the crime laboratory capacity is limited. Because clearing casework backlogs requires more capacity than may be needed for the long-term, the government crime laboratories need continued financial support that gives them the flexibility to contract with private laboratories or consultants.

Recommendation 3: Support Training and Education for Forensic Scientists

Crime laboratory capacity is directly related to the number and quality of highly trained forensic DNA examiners and technicians. DNA task force members emphasized that the criminal justice system needs to ensure that enough qualified DNA analysts are available to conduct DNA analysis. The DNA task force members agreed that there is currently a growing need for more uniformly educated and trained analysts who can begin supervised casework once hired.

CSI recommends that the following specific proposals be considered as part of a long-term comprehensive strategy:

A. Ensure that newly hired forensic scientists have the necessary training and education

Currently, CSI supports a technical working group comprising forensic science experts and educators to develop model curriculums for degrees in forensic science. Colleges and universities should be encouraged to use such models as a resource, if they choose to develop specialized areas of study. Encouraging focused curriculums and ongoing coordination between the academic and forensic communities will help produce highly trained forensic DNA analysts who understand protocols and quality assurance standards.

The national DNA strategy should support the dissemination of such information.

Task force members identified the need for intensive, “on-the-job” training to prepare new forensic analysts for casework. To meet this need, CSI will continue to work with the members of our private labs and other forensic science professionals to explore ways to assist public crime laboratories in training forensic scientists.

B. Develop strategies for increasing the pool of qualified forensic scientists who work in public crime laboratories

The task force identified a critical need to encourage students to become trained in forensic sciences and to seek careers in public crime laboratories.

Recommendation 4: Provide Training and Education to Police Officers, Prosecutors, Defense Attorneys, Judges, Victim Service Providers, Medical Personnel, and Other Criminal Justice Personnel

Key players in the criminal justice system should be trained in the proper collection, preservation, and use of forensic DNA evidence. Fundamental knowledge of the capabilities of DNA technology is essential for police officers to collect and store evidence properly, prosecutors to introduce it successfully in court, and judges to rule correctly on its admissibility. Victim service providers should be trained to inform victims about DNA evidence and its potential impact on a case. Defense Lawyers and others in the court system also should be provided with information about the capacities and limitations of DNA technology.

A. Train law enforcement officers in crime scene evidence collection and in emerging applications of DNA evidence

As first responders to crime scenes, law enforcement officers must be able to identify, preserve, and collect probative biological evidence. Improper collection can mean that valuable evidence is ignored or untestable.

CSI recommends that the national DNA strategy provide funding for training of law enforcement officers on the basic technical concepts of DNA evidence and basic “awareness training” on identifying and collecting DNA evidence at crime scenes. In addition, CSI recommends that the national strategy support training for evidence technicians, investigators, and others processing crime scenes. This specialized training would relate to DNA evidence collection protocols and strategies for determining which items are likely to lead to probative (and not duplicative) evidence.

Additionally, investigators and responding officers should learn about DNA databases and their potential to provide leads in current and “cold” cases. Likewise, training and information aimed at law enforcement leadership and policymakers will help ensure the national strategy is implemented and that line staff will support increasing the use of forensic science in routine criminal justice practice. The national DNA strategy should include support for law enforcement training agencies and organizations for the development of training curriculums and materials.

B. Train prosecutors, defense attorneys, and judges

CSI intends to continue developing educational materials relating to DNA evidence. The DNA task force expressed its support for the DNA for Officers of the Court project, which CSI is currently developing through its Forensic Resource Network.

CSI recommends that support be provided to prosecutors’ organizations to provide training and technical assistance opportunities for prosecutors. Prosecutors should be provided more information about solving “cold cases” with DNA evidence, post-conviction DNA testing requests, and developing innovative legal strategies to optimize the power of DNA databases.

CSI also recommends that training be made available for defense counsel in order to promote public confidence in the integrity of the criminal justice system. Defense counsel who handle cases involving biological evidence should have access to training and resources on the applications and limitations of DNA evidence, especially in the postconviction context.

CSI recommends that the comprehensive national strategy support legal education programs to provide training and resources on forensic DNA technology.

Judges also must be equipped with technical and scientific knowledge to make rulings in cases involving forensic DNA evidence. They should be aware of capacity issues facing public crime laboratories in their jurisdictions. CSI recommends that support be provided to judicial training conferences and professional organizations for the development of DNA training and educational resources for judges.

C. Provide ongoing DNA education and support to crime victims, victim service providers, and medical personnel who collect evidence for sexual assault investigations

Victims and those who advocate on their behalf must have access to information about the investigative and courtroom uses of forensic DNA evidence. The DNA task force reached a clear consensus that Sexual Assault Nurse Examiner (SANE)/Sexual Assault Response Team (SART) programs SHOULD BE PUT IN PLACE IMMEDIATELY to exponentially increase the quality and quantity of forensic evidence collected from sexual assault victims.

However, given the high turnover rates in this profession, efforts to standardize evidence collection kits or processing techniques would be one way of ensuring uniformity across the country.

In addition to supporting specialized evidence collection programs for sexual assault victims, CSI also recommends the development of educational materials for medical providers, especially those in rural or under-served areas that cannot support specialized programs.

To address the concerns of victims, CSI has developed educational materials. CSI recommends developing additional materials and training programs to disseminate information about best practices that respect victim privacy while also encouraging effective evidence collection.

D. Train probation and parole officers and corrections personnel

CSI recommends that the national DNA strategy supports efforts by government to augment the capacity of their probation, parole, and corrections staff to collect DNA samples from convicted offenders. Such support could include education and training for probation, parole, jail, and prison staff on the collection of these samples.

Conclusion

CSI recommends the development of a national, comprehensive strategy to maximize the use of DNA evidence throughout the criminal justice system. CSI recommends that the aforementioned proposals be incorporated into that strategy.