REPORT OF THE
JOINT SUBCOMMITTEE STUDYING

Creation of a DNA Test Data Exchange

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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MEMBERS OF THE COMMITTEE

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Delegate W. Roscoe Reynolds, Vice-Chairman
Senator Robert C. Scott
Delegate C. Hardaway Marks
Delegate Warren G. Stambaugh

STAFF

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Division of Legislative Services
Mary P. Devine, Staff Attorney
John G. MacConnell, Staff Attorney

Administrative and Clerical

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Amy Wachter, Office of the Clerk, Senate of Virginia

Report of the
Joint Subcommittee Studying
Creation of a DNA Test Data Exchange
To
The Governor and the General Assembly of Virginia
Richmond, Virginia
January 1, 1990

TO: Honorable L. Douglas Wilder, Governor of Virginia,
and
The General Assembly of Virginia

AUTHORITY FOR STUDY

Senator Edward M. Holland was the chief patron of Senate Joint Resolution No. 127 as approved by the 1989 Session of the General Assembly. The resolution created a five-member joint subcommittee to study the feasibility of creating a repository to store, maintain and exchange the results of DNA tests conducted in the Commonwealth. The joint subcommittee was specifically requested to consider the following issues: (i) the feasibility of requiring all persons convicted of a felony sex offense or an attempt to commit such an offense to submit to a DNA test; (ii) whether persons currently incarcerated for such offenses should be tested; (iii) the need for creation of a data bank consisting of the results of all DNA tests, to be maintained and administered by the Department of General Services, Division of Consolidated Laboratories, Bureau of Forensic Science; (iv) whether adoption of specific procedures governing storage, maintenance and access to the data is necessary to protect the confidentiality of the data; and (v) the costs and funding necessary for implementation and administration of the program. Several of these issues were addressed by other legislation during the 1989 Session. See discussion at DNA Testing in Virginia, infra.

Senators Edward M. Holland and Robert C. Scott were appointed to the joint subcommittee by the Senate Privileges and Elections Committee from the Senate Committee for Courts of Justice. The Speaker of the House appointed Delegates C. Hardaway Marks, Warren G. Stambaugh and W. Roscoe Reynolds from the House Committee for Courts of Justice.

GENERAL INFORMATION ON DNA TYPING

DNA (deoxyribonucleic acid) is a molecule found in chromosomes within the nucleus of each cell in the human body which carries the body's genetic information. It is generally accepted that, except for identical twins, the DNA found in each individual is unique.[1] Some suggest that the chances of two people having identical DNA patterns may be as great as 100 billion to one.[2] There are many forensic uses of DNA analysis. The results may be used to establish or negate a link between a suspect and evidence found at a crime scene in certain criminal cases. DNA typing is more precise than traditional methods of establishing parentage. In Great Britain, authorities have used DNA typing in immigration cases to establish the required familial

relationship. It has also proven useful in identifying missing persons or victims of crimes whose identities are unknown.

Typical DNA typing involves analysis of a sample of body fluid or tissue to ascertain the position ("locus") of areas of DNA which are known to vary from person to person on a fragment of DNA.[3] These areas are called polymorphisms. Laboratories in this country currently use three forms of DNA analysis, each developed and used primarily by one of the three commercial laboratories conducting DNA typing in the United States.

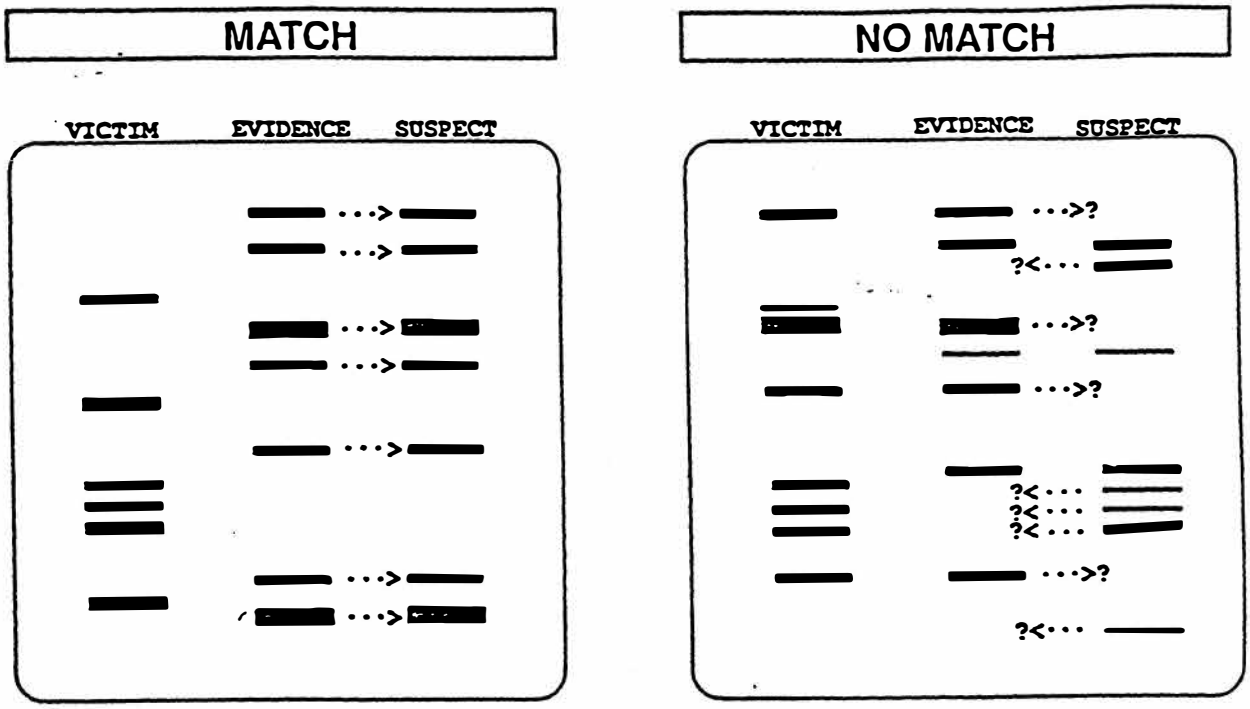
Cellmark Diagnostics Corporation of Germantown, Maryland, and Lifecodes Corporation of Valhalla, New York, use Restriction Fragment Length Polymorphism (RFLP) analysis. See Appendix B. RFLP analysis requires approximately 10-50 nanograms of DNA. The amount of the tissue or fluid sample needed for the analysis varies with the type of sample used. This analysis uses several sequential scientific procedures resulting in a DNA "print."[4] The print consists of a pattern of bands. The frequency of the appearance of certain DNA bands is established using a statistical data base, employing a statistical formula known as the Hardy-Weinberg Equilibria. The number of bands in the print depends on the number of probes used. The genetic probes act as "biological magnets"[5] which lock onto key polymorphic segments of the DNA. Because the probes are "labeled" with radioactive markers, once they lock onto the DNA segment their position is determined by use of a photographic process, similar to an x-ray, known as autoradiography, or "autorad." Proponents of DNA typing allege that the DNA fragments identified by use of these special probes are truly unique to each person.

Cellmark used a multi-locus probe RFLP procedure until early 1988. Multi-locus probes lock onto clusters of polymorphic DNA segments occurring at intervals on the DNA chain. These probes produce approximately fifteen bands. The resulting DNA prints are then compared, visually or by machine, to ascertain if there is a match. The likelihood of a coincidental match on all the bands is low.[6] Multi-locus probe analysis requires a larger tissue or fluid sample than single-locus probe analysis. Cellmark continues to use the multi-locus process in paternity cases but has switched to the single-locus probe process for use in criminal cases.

Lifecodes Corporation pioneered the single-locus probe process in the United States. Four genetic probes are used. The probes lock onto polymorphic DNA segments that occur once in the DNA chain ("loci"). Two bands are produced, one inherited from the mother and one from the father. The resulting print is then compared with at least one other specimen as with the multi-locus probe process.

The print on the left below[7] represents a match between the suspect and evidence found at the crime scene. DNA from the victim is also analyzed to establish that the crime scene evidence is not from the victim. The print on the right shows no match on the three samples.

DNA Print Comparison



The Lifecodes test has been used in over 400 criminal and 2,000 paternity cases and has been admitted in evidence in over twenty-two criminal trials in the United States.[8] Virginia, Florida, Oklahoma, New York, Ohio, Kansas, Kentucky, North Carolina, South Carolina and Idaho have admitted DNA prints as evidence.[9] In each jurisdiction, a preliminary determination was made of the reliability and general acceptance of the test in the scientific community ("Frye" test).[10] In 1988 the Fifth District Court of Appeals of Florida became the first state appellate court to uphold a trial court's decision to allow the results of a DNA test (RFLP) to be used in evidence in a criminal prosecution.[11]

Forensic Science Associates of Richmond, California, uses a DNA amplification process, Polymerase Chain Reaction (PCR), which artificially duplicates the natural process by which DNA copies itself. Thus, a much smaller sample is required. A single strand of hair may be sufficient. RFLP analysis examines the length of polymorphic DNA segments; PCR analysis relies on an examination of certain polymorphic DNA segments, called alleles, to determine whether or not they are present on the DNA segment.[12] See Appendix C. After the DNA is amplified, i.e., duplicated by PCR, a series of radioactive probes are added. Each probe searches for a specific allele. The presence of the allele in the samples tested appears on an x-ray of the sample as a dot. The dots for two samples are compared to determine whether there is a match. Because a high percentage of a population may have the allele identified by any one probe, a series of these specific probes are used to reduce the percentage. Allele-specific analysis, such as PCR, is primarily exclusionary. The presence of the series of identified alleles would merely place the person whose DNA was analyzed within a population sharing those same alleles, while the absence of one of the alleles in the series would exclude the person.

The costs of DNA typing vary. The RFLP analysis conducted by Lifecodes for use in a criminal case runs about $110 per sample in paternity cases and from $110 to $250 per sample in criminal cases.[13] Cellmark requires three samples in paternity cases and charges $200 per sample. It is generally less expensive to run an analysis in a paternity case because problems associated with extraction of the DNA from the sample submitted are minimized when liquid blood is readily available. In criminal cases, the charge is approximately $285 per sample.[14] The analysis can take anywhere from 2 1/2 to 8 weeks to complete.

BACKGROUND

A. DNA Testing in Virginia

The 1988-90 budget included an appropriation of $206,000 for the Bureau of Forensic Science (BFS) to establish a state-run DNA laboratory to perform forensic stain work. The Tidewater Regional Laboratory, the first state-run DNA laboratory in the country, became operational in May 1989. Serologists from BFS received training at Lifecodes in 1988 and also at the FBI Laboratory, which began operation in January of 1989. Approximately $85,000 was spent to equip the Norfolk laboratory for testing. Another $11,000 of the appropriation was spent to purchase refrigerators and freezers for storage of the samples to be collected pursuant to the legislation enacted in 1989 (see discussion below). The remainder was spent on personnel and supplies needed to conduct the stain work. It is anticipated that 300-400 samples can be tested at the laboratory annually. The Tidewater laboratory has neither the personnel nor the physical space to run a DNA data bank program.

The laboratory uses the single locus RFLP analysis, a technique also recommended and used by the FBI. Under guidelines established by BFS, the lab is using DNA analysis as an additional serological test on selected samples submitted to the lab for "traditional" serological examination. Known blood samples from the victim of a violent crime and from a suspect are generally required. In limited instances (e.g., serial crimes), samples may be accepted for testing although a suspect has not been identified. See Appendix D for guidelines established by BFS. These guidelines are similar to those promulgated by the FBI in March 1989 for use in the FBI laboratory.[15]

House Bill No. 1823 (Ch. 409), introduced by Delegate James F. Almand during the 1989 Session, specifically required the Division of Consolidated Laboratory Services, Bureau of Forensic Science, to establish a DNA testing program. The bill became effective July 1, 1989. Delegate Stambaugh sponsored companion legislation, also effective July 1, 1989, to define the type of program. House Bill No. 1765 (Ch. 536) requires blood typing and DNA analysis, using the RFLP technique, of all persons convicted before or after July 1, 1989, of any of the following offenses: rape, carnal knowledge of a minor, forcible sodomy, inanimate object sexual penetration, aggravated sexual battery, marital sexual assault or any attempt to commit the foregoing offenses except marital sexual assault. The legislation specifically requires the Division to "hold and maintain the test results and make such results available to duly appointed law-enforcement officers upon request." Thus, the 1989 General Assembly implicitly determined that a data bank could and should be created, with the Bureau of Forensic Science having primary responsibility.

Cost figures for H.B. 1823 and H.B. 1765 were prepared during the 1989 Session by the Department of Planning and Budget. These figures assumed that the Department of Corrections would withdraw blood samples from the approximately 1,400 persons then incarcerated in a state correctional facility for one of the designated sex offenses. The estimate also assumed that approximately 500 of the designated sex offenders would be added to the prison population annually. The fiscal impact statement indicated that eight additional full-time employees would be needed at the Bureau at a total cost of $310,000, including $20,000 for training, for the first year. Equipment was estimated to cost $250,000 and supplies $140,000. The total first year cost was estimated to be $700,000. In addition, the Bureau anticipated that 2,000 - 3,000 additional square feet would be needed to house the employees and equipment. Although the legislation required that a DNA sampling and testing program be established on July 1, 1989, no funding for the program was provided in the FY 89-90 budget.

RFLP analysis has been used in several criminal prosecutions in Virginia.[16] On September 22, 1989, the Virginia Supreme Court found, in two separate cases involving the same defendant, that ". . . the undisputed evidence (in each case) supports the trial court's conclusion that DNA testing is a reliable scientific technique and the tests performed . . . were properly conducted." Spencer v. Commonwealth, 238 Va. at ____, 6 V.L.R. 391, 416 (1989). The court held that the DNA tests had been properly admitted but seemed to leave open to question whether the result would be the same if some evidence had been presented to question the reliability of DNA testing or the procedures used to conduct the test.

The PCR technique was used by the prosecution in the May 1989 trial of the same defendant in Chesterfield County on capital murder charges. RFLP typing could not be used in the case because the samples collected at the crime scene had been contaminated with bacteria.[17] This was reportedly only the third criminal case in the country in which the PCR test was admitted in evidence,[18] although it has been used in approximately forty criminal investigations.[19]

The Health Sciences Center at the University of Virginia began DNA testing for use in paternity cases in May 1989.[20] The Child Support Enforcement Division of the Department of Social Services has contracted with Genetic Design, Inc., of North Carolina to conduct DNA analysis to establish paternity for purposes of determining and enforcing support obligations.

B. National Initiatives

In September of 1988, Senator Edward M. Kennedy (D-Mass.) asked the Office of Technology Assessment of the U. S. Congress to provide the U. S. Senate Committees on the Judiciary and on Labor and Human Resources with data on the forensic uses of DNA testing.

Critics suggest that the studies conducted to date on the reliability of the probes used in DNA testing are suspect because such studies (i) are few in number and (ii) have been conducted by employees of the companies marketing DNA typing or by other individuals having a financial stake in the validity of the technique.[21] The OTA project will evaluate the reliability and costs of the tests and include recommendations on who should be tested and when,[22] how

the test results should be stored and maintained and who should have access to the test results. Many of the policy issues have been addressed in other contexts, for example, upon creation of AFIS (Automated Fingerprint Identification System). Because of DNA's unique nature, however, the privacy issues are much more complex and dangerous. There is growing concern over the potentially discriminatory uses which can be made of DNA test results. As researchers isolate more molecular bases of physical and mental health, demands for access to this information by employers, insurers and even governments are expected to increase.[23] A draft report from the OTA project should be ready in early 1990.

The FBI has also been working on these issues in conjunction with representatives of eight states, including Virginia, and Canada. Like OTA, the FBI Technical Working Group is evaluating the procedures currently used for DNA analysis. Specific recommendations are anticipated on the type of process which should be used, including recommendations on the appropriate process for extracting DNA from the fluid or tissue sample, which restriction enzyme should be used[24] and quality control procedures to be followed.

Additionally, the FBI is developing a prototype for a data bank, a project that should be completed late in 1989 and for which Virginia was selected as a pilot state. The recommendations of the technical working group are related to this project. Uniform methodology and protocols are needed to develop a data base and a common link, similar to the National Crime Information Center (NCIC), which is accessible to all the states for use in criminal investigations. The American Society of Crime Laboratory Directors also favors the establishment of a common analytical protocol and data management format.

CONDUCT OF STUDY

The joint subcommittee had three primary tasks. The first involved an assessment of the need for and feasibility of creating a DNA testing program for a data bank exchange. This issue was addressed by the 1989 General Assembly. The legislature agreed that effective July 1, 1989, persons convicted of certain sexual crimes would have a sample of blood taken for DNA analysis. Remaining for consideration, however, was a determination of whether additional crimes should be added. For example, many criminologists view a burglary as an "attempted rape." The joint subcommittee also reviewed available data on recidivism characteristics of offenders and received testimony from prosecutors and law enforcement officials in order to identify efficient uses of the data bank.

Additionally, several procedural aspects of the program had to be worked out. For example, the legislation enacted in 1989 specified neither who was to withdraw the blood sample nor whether the Department of Corrections was responsible for collecting samples from jail inmates and persons who are not incarcerated following conviction. The fiscal impact statements prepared for HB 1765 and HB 1823 assumed that responsibility for collecting the samples would lie with the Department of Corrections, but no funding was provided to the Department to cover the costs of collection. Because of uncertainty over responsibility for withdrawing the blood samples and the fact that the legislation did not provide specific guidance on procedures for collecting and

storing the samples, no samples were collected until September 1989. Finally, the legislation did not address chain of custody issues, storage problems, testing procedures to be used or future uses of the samples.

The subcommittee's second task involved an assessment of procedures for establishing and maintaining a DNA data bank to allow the exchange of information resulting from performance of the DNA analyses. Some of the issues involved in this assessment overlap with those mentioned above. For example, the standards or protocols which will govern sampling and handling of the samples should be generally agreed upon and accepted in both the scientific and legal communities. A data bank would be of little value if the procedures used in Virginia were incompatible with procedures used in another state. The joint subcommittee made policy decisions on the long-term uses to be made of the DNA data created and made available through the data bank. These decisions included determinations of who is to have access to the data, how they are to obtain the data and for what purposes. The highly private nature of the information which can ultimately be gleaned from a DNA analysis requires development of stringent safeguards to adequately protect the individual's privacy interests.

The third task centered on the funding issues involved in establishing and maintaining the blood sampling and the DNA data bank programs. As noted, no additional funding was provided for the data bank program as enacted in 1989. In addition, because the subcommittee recommends expansion of the program to cover all convicted felons (see discussion, infra) additional funds must be obtained.

Four meetings of the joint subcommittee were held in Richmond. In addressing the issues under consideration the joint subcommittee drew on the expertise of Dr. Paul Ferrara, Director of the Bureau of Forensic Science and chairman of the American Society of Crime Laboratory Directors Committee on DNA Implementation, and Jim Kearney, Chief of the FBI Research Center. Additionally, representatives of the Office of the Attorney General, the Department of Corrections, the Virginia State Police, the Virginia Sheriffs' Association, the Parole Board, the Commonwealth's Attorneys Services and Training Council and the American Civil Liberties Union participated in the deliberations of the joint subcommittee. The joint subcommittee is grateful for the invaluable assistance provided.

RECOMMENDATIONS

A. Legislation

Appendix E is the legislation recommended by the joint subcommittee for consideration during the 1990 Session of the General Assembly. The joint subcommittee strongly supports the decision made in 1989 to conduct DNA analysis of persons convicted of certain crimes and to use the results of these analyses to create a DNA data bank. Recidivism data establishes that persons convicted of violent crimes are highly likely to commit the same or other violent crimes in the future.[25] Furthermore, material susceptible to DNA analysis, i.e., body tissues or fluids, may be left at as many as 30 percent of all crime scenes. DNA analysis will revolutionize criminal investigatory procedures. However, DNA analysis alone cannot identify a

suspect; creation of a data bank to facilitate comparisons of DNA evidence left at a crime scene with possible suspects is essential.

1. WHO SHOULD BE SUBJECT TO INCLUSION IN THE DNA DATA BANK.

As of July 1, 1989, § 53.1-23.1 of the Virginia Code requires blood samples to be withdrawn from persons convicted, before or after that date, of certain felony sex offenses or attempts to commit those offenses. The Department of Corrections and the Bureau of Forensic Science agreed that employees of the Department of Corrections will withdraw the blood in conjunction with the intake physical conducted when the offender enters the state correctional system. Sampling of these offenders began on September 18, 1989, in accordance with protocols developed by the Department and the Bureau. The few samples collected thus far have been transported to the Bureau and are being stored pending analysis. As noted above, the Bureau does not yet have the personnel or equipment necessary to begin the data bank program.

In order to be effective, the sampling program must capture for the data bank those offenders who will first have the opportunity to commit further crimes, i.e., those offenders being released from the system. If these samples are not collected, the data bank will not be useful for several years, i.e., until the persons sampled as they enter the system are released. The Department does not currently conduct physical examinations as inmates leave the system. Therefore, the Department has not taken samples from persons released since July 1, 1989.

Approximately thirty persons subject to sampling have been released from the state prison system. All are currently on supervised parole and remain subject to the Department's control. The joint subcommittee recommends that the Department obtain samples from these individuals before their parole expires. The physical intrusion caused by withdrawal of the blood in accordance with accepted medical standards is minimal. Schmerber v. California, 384 U.S. 757 (1966). The benefit to law enforcement and public safety in the Commonwealth is great.

The draft legislation (§ 19.2-310.2) requires incarcerated persons to submit to sampling as a condition of release from custody. This particular provision is based on a recently enacted California statute and is consistent with the intent of the 1989 legislation. The Department estimates the cost of an exit physical to be $40 per inmate. Approximately 5,500 inmates are released each year. The maximum additional annual cost to the Commonwealth would be $220,000. This amount would be less if blood samples, and not complete physical exams, were required.

The statute must apply to all persons similarly situated. The joint subcommittee rests its determination to require sampling of certain offenders on the fact of conviction and likelihood of future criminal activity; the type of sentence imposed and the place where the sentence is served are irrelevant. Section 19.2-310.2 of the proposed legislation gives specific authority to the courts to require a person convicted of one of the specified offenses to submit to blood sampling whenever a suspended sentence of incarceration is imposed. The section would also apply in those rare instances when a sentence of incarceration is not imposed following conviction.

The legislation (§ 19.2-310.3) also specifies that the court is to order submission to sampling at a time and place specified by the court. It will not be necessary for every offender to appear at the Bureau for sampling. Because of the procedural requirements affecting admissibility of DNA evidence (see § 19.2-270.5, discussed infra), the legislation implicitly requires the court-ordered withdrawal to be conducted in accordance with the procedures used and approved by the Bureau. In most instances, the analysis of a sample submitted to the Bureau for inclusion in the data bank will not be admitted into evidence, but will be used as an investigative tool. Nonetheless, in order to ensure the quality of the data in the data bank, uniform procedures must be followed.

Persons sentenced to confinement in a local jail for the specified offenses will also be subject to sampling under the legislation. As of July 1, 1989, over 318 felony sex offenders were confined in local jails. This number was obtained from the responses of 77 local jails to a survey by the Virginia State Sheriffs Association of the 98 jails across the Commonwealth. The majority of those responding would be able to conduct the sampling and necessary storage and transportation of the samples to Richmond with existing available medical personnel and equipment. The Department of Corrections is given the authority to designate where the samples for these locally held prisoners will be withdrawn.. The subcommittee believes the process of designating these locations should be a cooperative effort involving the Department, the Bureau and the Sheriffs' Association.

Again, the procedures governing withdrawal of the sample from persons entering and leaving the local jails should conform to those approved and used by the Bureau. Section 19.2-310.4 requires any blood sample withdrawn for purposes of inclusion in the data bank to be sent to the Bureau within fifteen days of withdrawal. This time limitation is intended to minimize opportunities for unauthorized access to the samples and to ensure that the sample is received by the Bureau without contamination or deterioration. It is not necessary that the Bureau conduct the analysis within any specified time period, but the sample should be properly frozen and securely stored to preserve its integrity.

The joint subcommittee spent a considerable amount of time discussing which offenders should be subject to sampling for inclusion in the data bank. The subcommittee agreed that only convicted offenders should be included. This decision will eliminate a perceived threat that creation of a DNA data bank involves a significant invasion of privacy or takes the Commonwealth down the path toward creation of a statewide identification register. Convicted felony offenders currently have their fingerprints and photographs taken and criminal records are maintained. Prisoners also undergo physical examinations, including withdrawal of blood samples, as they enter the prison system. Hence, sampling and inclusion in the data bank result in virtually no increase in the level of intrusion or invasion of privacy interests of these individuals.

The joint subcommittee concurs in the decision to include felony sex offenders. Available data on Virginia offenders shows that persons convicted of rape (36.3%) and aggravated assault (32.8%), including sexual assault, are highly likely to be reconvicted of another crime within five years. See Appendix F. Approximately 50 percent of all persons convicted of felony

assault, robbery or rape will be rearrested within five years for a violent felony. Over one quarter of the persons convicted of murder or voluntary manslaughter will be reconvicted; 6.3 percent of those new convictions will be for a different violent felony and 3.4 percent for a similar homicide. The recidivism data supports inclusion in the data bank of DNA test results of offenders convicted of felony sexual offenses, assault, capital murder, first and second degree murder and voluntary manslaughter.

In addition, the joint subcommittee believes that persons convicted of felony burglary should be subjected to DNA analysis for the data bank. The Department of Criminal Justice Services advised the joint subcommittee that data collected for the report on Violent Crime in Virginia showed that over 36 percent of persons convicted of rape or sodomy had prior convictions for larceny (22.3%) or burglary (14.1%). Of those convicted of murder, 20.2 percent had a prior larceny conviction and 11.5 percent had a prior burglary conviction. The relatively high recidivism rate for these theft offenses, coupled with the likelihood of tissue or body fluids being present at the scene of a burglary, persuaded the subcommittee that a burglary conviction should be the basis for inclusion of a DNA analysis in the data bank. The joint subcommittee also noted that Timothy Spencer had several burglary convictions prior to his arrest and conviction on capital murder charges.

The Department of Corrections pointed out that expanded list of offenders being considered for inclusion in the legislation represented approximately 90 percent of the total prison population. The subcommittee found that the data bank would be more efficient and cost effective if all convicted felons were required to give a blood sample for DNA analysis (See § 19.2-310.2). The sampling procedure for the will simply becoming a matter of routine for the Department; it will not be necessary to segregate 10% of the felon population to ensure that they are not tested and, as noted above, there would be no increase in the level of intrusion or invasion of privacy of these persons.

2. LIMITATION ON PROCEDURES USED.

The subcommittee spent considerable time discussing whether specific procedures governing withdrawal and analysis of the samples should be codified. Because of concern that § 53.1-23.1 was too "open-ended", the subcommittee agreed that the statutes should include basic parameters designed to minimize the intrusion and preserve the integrity and confidentiality of both the sample and the analysis. In making this determination, the joint subcommittee observed that the statutory procedures governing blood sample analysis in driving under the influence cases (DUI) are very specific. However, there are distinctions.

The blood sample analysis in DUI cases gives rise to statutory presumptions. The DNA analysis performed on offenders' blood samples will be used as an investigative tool. In most instances, a comparison between crime scene evidence and an analysis in the data bank will be used to target a suspect. The comparison may form the basis for a probable cause finding necessary to obtain a search warrant requiring the suspect to provide a fresh sample to compare with the crime scene evidence. A match between crime scene evidence and a data bank sample will rarely be used as direct evidence of guilt. It may, in rare instances, be used to establish identity, but motive, opportunity and all the other necessary aspects of a prosecution would have to be established.

Additionally, DNA technology continues to change rapidly. The joint subcommittee did not want to tie the Bureau into any unnecessarily specific procedures which would soon be outdated. This factor was particularly important due to the national movement toward creation of DNA data banks. An effective nationwide data bank system requires that each data bank utilize standard methodologies and procedures, which include, among other things, the designation of particular restriction enzymes and probes. The recommended legislation gives the Bureau a relatively free hand in adopting procedures based on available, credible technology. Initially, the Bureau intended to use Lifecodes' methodology, but decided in the fall of 1989 to switch to the methodology in use at the FBI DNA Laboratory. The FBI recommends this methodology to all the states considering or in the process of establishing DNA labs. The American Society of Crime Laboratory Directors also recommends this methodology. As noted previously, adoption of a standard methodology is essential to creation of an efficient DNA data bank program.

Because the methodology for conducting the analysis will frequently be modified, revised or updated in response to rapid improvements in the available technology, the Bureau is not required to adopt the methodology by adherence to the Administrative Process Act. See § 19.2-310.4. Nonetheless, the Bureau must document the methodology, including any revisions, and will make the methodology in effect at any given point in time available to persons with an interest. The joint subcommittee stressed to the Bureau the possible importance to a criminal defendant of being able to ascertain what procedures were used in conducting a DNA analysis of his blood. A suspect may claim that he was wrongly identified by comparison of his DNA analysis with a search of the data bank because different probes were used. A criminal defendant will need to verify that the analysis of his sample conforms to the procedures used to analyze evidence found at the crime scene. Documentation of the methodology in use ensures the credibility of both the data bank and DNA analysis in general.

It is likewise necessary for the Bureau to document chain of custody of the blood sample. Specific requirements for labelling the sample and documenting of custody are included in §§ 19.2-310.4 and 19.2-270.5, and by the reference to § 19.2-270.5 found in § 19.2-310.3. These provisions are modeled on corresponding provisions in the DUI statutes. The joint subcommittee reasoned that at least as much care should be taken to document custody of these blood samples as for those to be used as evidence in a DUI prosecution. The uniform methodology and the procedures for labelling and documenting custody apply not only to the analysis of samples to be included in the data bank but also to any analysis which is to be used in evidence. See §§ 19.2-270.5, 19.2-310.3 and 19.2-310.4. The joint subcommittee recognizes that DNA analysis will continue to be performed by private laboratories. A defendant in a criminal case may, for example, have an independent analysis performed to use as exculpatory evidence or to challenge the results of an analysis performed by the Bureau. Section 19.2-270.5 requires as a condition of admissibility of any DNA analysis that the analysis have been performed in "substantial conformance" with the procedures used by the Bureau. Because variations in the techniques used will directly affect the results of an analysis, it is important that standard techniques be used. The joint subcommittee believes the substantial compliance provision will promote adoption of a nationally uniform methodology and eliminate the need for state oversight or certification of private labs. Whether a lab

substantially complied with the Bureau's procedures will necessarily involve a review of all the facts in a particular case. Strict adherence to the statutory requirements and the methodology adopted and documented by the Bureau will, however, limit the extent of review required.

The Bureau is granted the authority to hold the remaining portion of a sample submitted to it for analysis and inclusion in the data bank. Opponents suggest that such storage, whether the sample is in liquid or stain form, poses too great a threat to legitimate privacy interests.[26] Merely having the liquid blood or stain available, they say, creates an unwarranted opportunity for use of the sample for a purpose other than data banking, e.g., analysis to determine the presence or absence of a genetic predisposition to disease or a particular type of behavior. However, the joint subcommittee believes that a considerable advantage can be derived from preservation of the samples. As the DNA technology progresses, the data in the data bank could become outdated. Proponents of retention argued, and the subcommittee agreed, that the ability to retest the sample using updated techniques is essential to maintenance of a state-of-the-art data bank system. All agree that (i) the retained samples should not be used for any analysis other than updating prior identification analysis or for use in a statistical data base without identifying information on the person whose blood was analyzed and (ii) stringent safeguards must be implemented to prevent other uses.

The joint subcommittee believes proper safeguards have been included in the legislation. First, the Bureau must adopt regulations governing security of the stored samples. The publication and public comment requirements of the regulatory process provide an opportunity for close scrutiny of the procedures, and ensure that the procedures will not be changed without comparable scrutiny. Second, § 19.2-310.6 imposes criminal sanctions on any person who obtains or attempts to obtain any blood sample submitted to the Bureau if the person is not authorized to have access to the sample and intends to perform a DNA analysis on the sample. The felony penalty will apply whether the sample is in liquid form or has been reduced to a swatch. The statute will also cover such wrongful access to <u>any</u> sample where the intent is to perform an unlawful DNA analysis, i.e., a sample submitted for traditional serological analysis which is wrongfully diverted to DNA analysis as well as wrongful access to stored samples.

3. USES OF DNA ANALYSIS

Based upon the testimony received, the joint subcommittee found that DNA analysis can be performed consistently and accurately. If so performed, the analysis provides a compelling indicator of identity. To the extent that there is disagreement over the reliability of DNA analysis, the disagreement focuses on adherence to accepted methods of analysis and the interpretation of the analysis.[27]

Section 19.2-270.5 of the proposed legislation, modeled after a recently enacted Maryland statute, recognizes DNA analysis as scientifically sound and accepted evidence of identity. This perspective conforms with the holdings of the Virginia Supreme Court in the <u>Spencer</u> cases. Attorney General Terry strongly supports the adoption of such a statute to codify the decision of the Court. See <u>Appendix G.</u> It is hoped that this will eliminate the need for lengthy pretrial hearings.

The joint subcommittee recognizes that questions relating to adherence to appropriate procedures in conducting the analysis will remain in each case. As noted above, adherence to the procedures adopted by the Bureau in connection with analysis conducted for the data bank acts as a quality control and will ensure admissibility. The weight to be given the DNA evidence once admitted, including questions relating to interpretation of the results, will be determined by the trier of fact.

Because DNA evidence is so persuasive, the joint subcommittee believes it is critical to provide each party to a criminal case with notice prior to its use. The legislation gives the opposing party a little over two weeks to prepare to rebut the results of the analysis or concede the findings. While this provision was also derived from the Maryland statute, the joint subcommittee believes each party is entitled to notice; the Maryland statute only requires the Commonwealth to give notice prior to use.

The joint subcommittee noted that the Bureau is being ordered by courts in the Commonwealth to perform DNA analysis for indigent defendants. This is clearly an appropriate use of the Commonwealth's resources. The joint subcommittee believes the Commonwealth has a constitutional obligation to provide an indigent defendant with access to DNA analysis and "assistance necessary to prepare an effective defense" based on lack of identity, where identity is "seriously in question." See Ack v. Oklahoma, 470 U.S. 70 (1985).

While acknowledging the validity of DNA analysis as evidence of identity, the joint subcommittee also affirmed the need to preserve the confidentiality of the samples submitted and the resulting analysis. The DNA data bank is limited to offenders. The section on admissibility (§ 19.2-270.5) clarifies that the results of an analysis performed prior to an adjudication of guilt are not to be used in the data bank or otherwise in any manner from which the identity of the person whose blood was analyzed could be ascertained. This would not prevent inclusion of the analysis in a data base of classifications of populations used to establish the probabilities for identification (i.e., in a statistical data base). The prohibition on use of samples obtained prior to conviction with identifying information applies equally to the Bureau and to private or other public laboratories.

The proposed legislation also allows a person whose DNA profile is in the data bank to have all identifiable information, including the remainder of any sample submitted, purged or destroyed if his conviction is reversed. This provision applies regardless of the basis for the conviction.

The DNA data bank will include only the digitized profile. The data in the data bank alone could not be used for improper purposes in the absence of identifying information. The Bureau will maintain identifying information on the individual in a separate file. Specific identifiers will be used on the digitized profile to allow cross-reference to the sample subject's identity file.

Only persons with a legitimate law enforcement need will be authorized to search the data bank. See § 19-2-310.5. In order to deter and prevent unauthorized intrusions into the data bank, the Bureau is required to maintain records on all requests received for a search of the data. A person

identified by a data search and charged with a crime as a result of the search is given the right to request a copy of the information compiled by the Bureau in support of the search request. The Bureau must also adopt regulations to specifically govern how search requests are to be made and verified. The joint subcommittee believes special safeguards are needed to prevent persons without a legitimate law enforcement need from finding out that any individual's profile is included in the data bank. Such knowledge is equivalent to knowledge that the individual has been convicted of a felony. Section 19.2-389 of the Code of Virginia protects convicted felons from unwarranted disclosure of the existence of their criminal record. The Criminal Justice Services Board has adopted regulations that provide for access to data in the Central Criminal Records Exchange which should provide a model for the Bureau. The joint subcommittee intends for the regulations adopted by the Bureau to ensure the security of the data bank system. A law enforcement officer from another state may contact the Bureau directly to request a search or may contact the FBI, which will act as a clearinghouse for DNA information. While the FBI will not maintain identifying information on persons whose DNA profiles are included in state data banks, it will be able to tell a requestor from another state that the profile he submitted matches one in Virginia. The requestor would then contact the Bureau and upon verification of his identity and authority, could be told that the profile matches that of a particular individual.

The criminal penalties authorized in the legislation vary depending upon the seriousness of the offense. Improper access to the data bank is punishable as a Class 3 misdemeanor. Because no criminal intent is involved this is the least serious offense. Nonetheless, the joint subcommittee believes some criminal sanctions are appropriate to protect the integrity of the data bank system. The sanctions are also intended to encourage those with authority to use the data bank to do so with care. A person who accesses or uses the data bank with the knowledge that such use violates strict confidentiality requirements of the statutes or regulations is punished more severely. The most severe penalty is reserved for those who obtain or attempt to obtain a tissue or fluid sample which has been submitted to the Bureau and intend to use the sample for an unauthorized DNA analysis.

B. Funding

Upon request of the subcommittee, the Bureau submitted data on its funding needs to implement the DNA data bank program. In response to the data bank legislation enacted in 1989, the Bureau submitted a 1990-92 Budget Addendum Request for $1.05 million. See Appendix H. This would cover personnel, equipment, supplies and miscellaneous expenses for a data bank limited to convicted felony sex offenders. Full funding of this budget addendum is required to allow the Bureau to comply with the mandate of the statutes. The subcommittee supports this request.

In addition, the Bureau pointed out the need to expand capacity to perform DNA stain work in the course of criminal investigations. This expanded capability goes hand-in-glove with establishment of a comprehensive data bank program. The stain work conducted on samples left at a crime scene will be run through the data bank in order to identify the perpetrator. In addition, the stain work may be requested by defendants for use as exculpatory evidence. Both functions are of great importance to the criminal justice system.

The subcommittee concurs in the Bureau's conclusion that DNA stain work should be conducted in all the regional laboratories. A major problem for the Bureau, however, is locating the space needed for these operations. The Northern Virginia and Central Virginia laboratories have the space for personnel and equipment to conduct stain work, but not for a data bank program. It is estimated that an additional 13,000 square feet would be needed for the program contemplated in the proposed legislation. Lack of space has been an on-going problem for the Bureau, and alternative short-term solutions are being pursued. The subcommittee encourages a prompt resolution of this problem.

Without regard to the space problems, which must be solved separately, the subcommittee believes the funding requests of the Bureau represent a reasonable approach to making appropriate use of the DNA technology. Samples submitted for the data bank will be frozen and stored until the capability exists (personnel, equipment and supplies) to conduct the analysis and store the results. The expanded stain work capability will also facilitate creation of the statistical data base used to derive the probabilities for identifying suspects following a search of the data base. Both the stain work and data bank programs will be phased in over the biennium at an approximate total cost of $4.16 million. The subcommittee recommends full funding of these requests by the General Assembly.

CONCLUSION

The joint subcommittee believes DNA technology will revolutionize criminal investigatory work, to an even greater degree than fingerprint identification processes. Virginia is in the forefront of a nationwide movement to make appropriate use of this technology. We created the first state-run DNA laboratory in the country. We have begun the process of collecting samples for inclusion in a DNA data bank. A national link between state-run data banks is anticipated.

The proposed legislation on DNA analysis and data banking is a well-reasoned balance of the interests of persons subject to testing and the interests of the Commonwealth in crime prevention and detection.

Respectfully submitted,

Edward M. Holland, Chairman
W. Roscoe Reynolds, Vice-Chairman
Robert C. Scott
C. Hardaway Marks
Warren G. Stambaugh

Footnotes

[1] Identical twins are derived from the same cell formed upon the union of sperm and egg and therefore share the same DNA.

[2] Backgrounder: DNA Fingerprinting, Council of State Governments, October 1988.

[3] Every two years, the Human Gene Mapping Conference meets to review new research and to identify, assign and publish the specific position of particular genes or alternative forms of genes on a chromosome. The Conference is made up of internationally recognized scientists and is considered the official registrar of gene sites. See discussion People v. Wesley.

[4] A detailed explanation of these steps can be found in "DNA Typing: Acceptance and Weight of the New Genetic Identification Tests," 75 Va. L. Rev. 45, (1989) at 65. See also People v. Wesley, 1533 N.Y.S.2d 643 (Albany Cty. Ct., 1988).

[5] 75 Va. L. Rev. at 71.

[6] Id. at 48.

[7] From Backgrounder, supra.

[8] Id. at 49.

[9] Compiled from Backgrounder, supra and "For First Time DNA Findings Ruled Admissible in Virginia Court," Washington Post, July 7, 1988, at D.1.. A May 1989 Report of the DNA Implementation Committee to the American Society of Crime Laboratories Executive Board, Quantico, Virginia, states that 25 states have admitted the results.

[10] Frye v. United States, 293 F. 1013 (D.C. Cir. 1923) established the general standard for use of testimony based on new scientific procedures or techniques. The Virginia Supreme Court has rejected the Frye rule. O'Dell v. Commonwealth, 234 Va. 672 (1988).

[11] Andrews v. State, 533 So.2d 841 (1988, Fla. App.).

[12] Id. at 76.

[13] "DNA - The New Fingerprints," Debra Cassens Moss, ABA Journal, May 1, 1988.

14 Id.

15 See "FBI Announces New DNA Policy," Focus on Forensics, March 1989.

16 Commonwealth v. Spencer, Docket No. CR88-132, Circuit Court of Arlington County; Docket Nos. 88-181F and 88-187F, Circuit Court of the City of Richmond; Docket No. CR88-410609, Circuit Court for Chesterfield County.

17 See "Chesterfield Jury Convicts Spencer of Cho Murder," Richmond Times Dispatch, May 13, 1989, at B1.

18 See "Decision expected today on amplified DNA printing," Richmond Times Dispatch, May 10, 1989, where it was reported that the results of a test conducted using the amplification process of Forensic Science Associates had been admitted as evidence in a rape case in Texas.

19 75 Va. L. Rev. at 50.

20 "DNA testing to be used in paternity cases," 3 Virginia Lawyers Weekly 725, Feb. 6, 1989.

21 Id. at 73.

22 The jurisdictions currently requiring samples to be taken from certain segments of the population generally limit sampling to persons convicted of certain crimes, particularly sexual offenses and other violent crimes. It has been suggested that appropriate determination of who should be tested would be based on identification of crimes having a high rate of recidivism.

23 Weiss, "Predisposition and Prejudice," Science News, January 21, 1989 at 40.

24 According to John W. Hicks, deputy director of the FBI laboratory, the FBI currently uses and recommends Hae III as the restriction enzyme.

25 See Violent Crime in Virginia, Virginia Department of Criminal Justice Services, May, 1989; Recidivism of Prisoners Released in 1983, Special Report, Bureau of Justice Statistics, April 1989.

26 Report of New York State Forensic DNA Analysis Panel, September 6, 1989.

[27] See, e.g., People v. Castro.

Appendices

1989 SESSION

SENATE JOINT RESOLUTION NO. 127 Appendix A

Creating a joint subcommittee to study the feasibility of creating a DNA test data exchange.

Agreed to by the Senate, February 6, 1989
Agreed to by the House of Delegates, February 21, 1989

WHEREAS, recent developments in molecular biology and genetics have significant implications for forensic science; and

WHEREAS, identification techniques utilizing analysis of DNA is far more accurate than previous techniques using blood type and HLA analysis; and

WHEREAS, these new techniques provide a readily available and accurate investigative tool for the law-enforcement community, particularly with respect to sexual assault crimes; and

WHEREAS, the Virginia Association of Chiefs of Police supports creation of a data base for DNA and adoption of procedures for storage and access to the data to facilitate investigations of past and future crimes; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That a joint subcommittee be created to study the feasibility of creating an exchange of data resulting from DNA test analysis, similar in function and purpose to the Central Criminal Records Exchange. The joint subcommittee shall be appointed as follows: two members of the Senate Committee for Courts of Justice to be appointed by the Senate Committee on Privileges and Elections and three members of the House Committee for Courts of Justice to be appointed by the Speaker of the House.

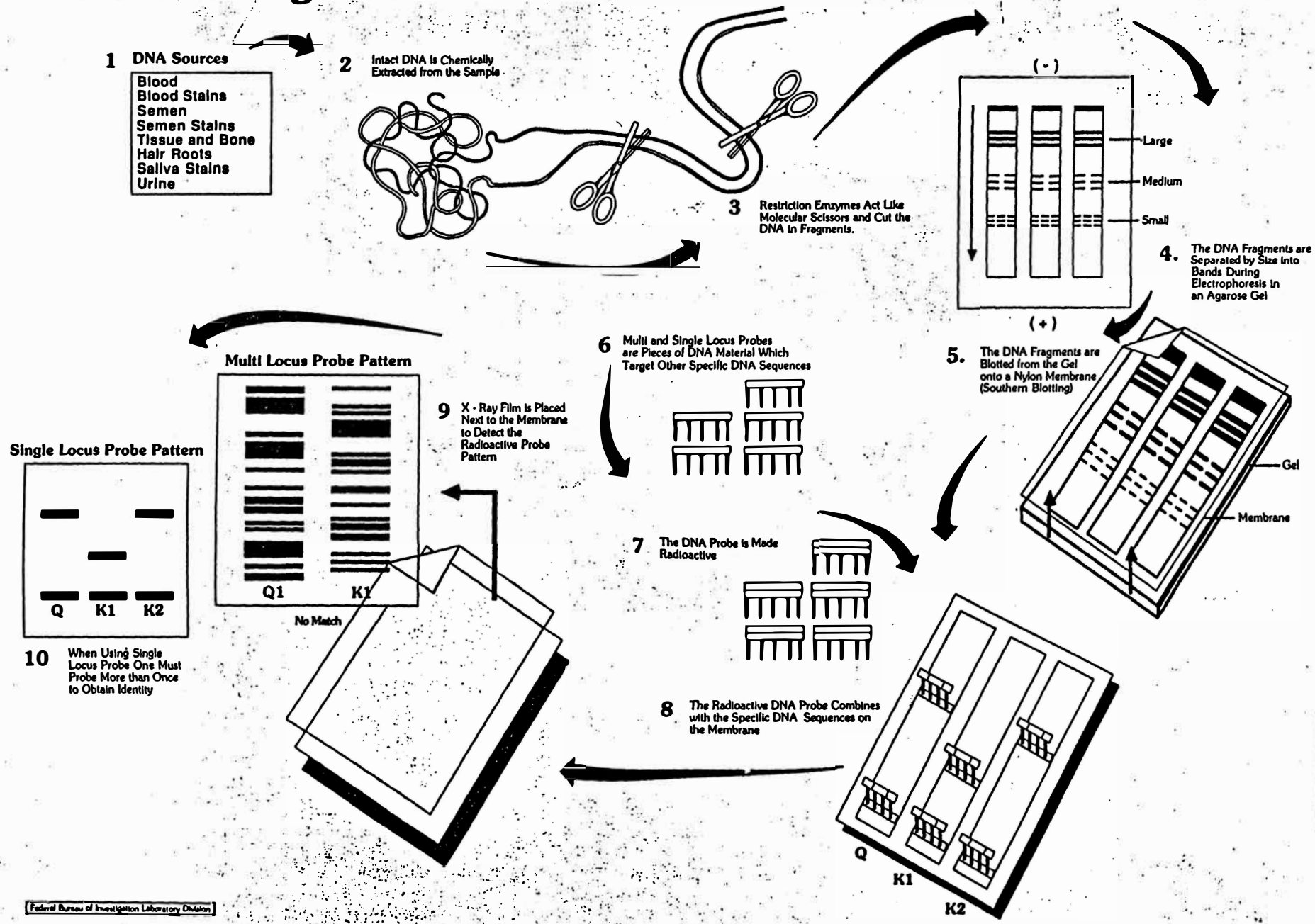
The joint subcommittee shall consider, in addition to other issues, (i) the feasibility of requiring all persons convicted of a felony sex offense or an attempt to commit such an offense to submit to a DNA test; (ii) whether persons currently incarcerated for such offenses should be tested; (iii) the need for creation of a data base consisting of the results of all DNA tests, to be maintained and administered by the Division of Consolidated Laboratories, Bureau of Forensic Sciences; (iv) whether adoption of specific procedures governing storage, maintenance and access to the data is necessary to protect the confidentiality of the data; and (v) the costs and funding necessary for implementation ar administration of the program.

The joint subcommittee shall complete its work in time to submit its recommendations, if any, to the 1990 Session of the General Assembly.

The indirect costs are estimated to be $10,650; the direct costs shall not exceed $3,600.

Restriction Fragment Length Polymorphism (RFLP)

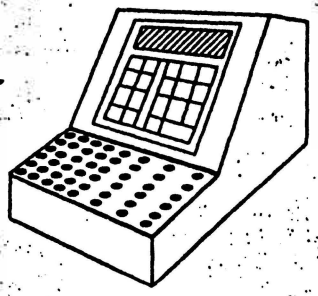
Multi & Single Locus DNA Probes



Appendix B

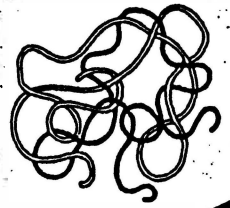
Polymerase Chain Reaction (PCR)

Dot Blot Method



1 DNA Sources

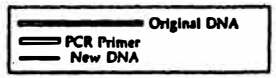
Blood	0.1 ul
Blood Stain	1 ul
Semen	0.5 ul
Semen Stain	1 ul
Hair Root	1-2 Hairs
Tissue	10 ng
Bone	50 ng
Saliva	5 ul
Urine	20 ul



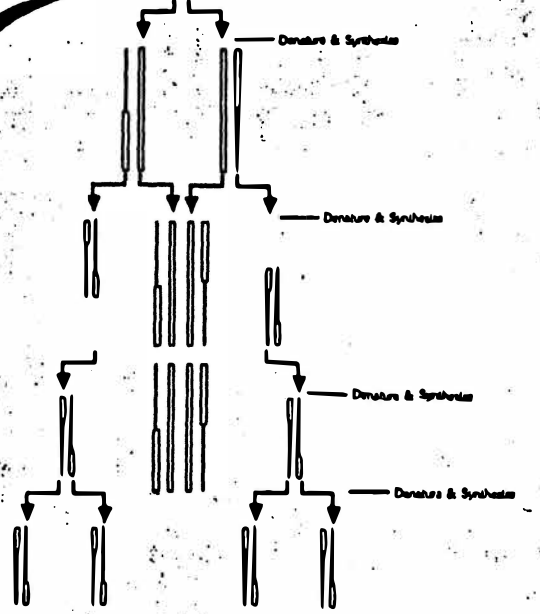
2 Intact or Fragmented DNA is Chemically Extracted

3 DNA is Placed in Thermal Cycle Analyzer and Amplified by the PCR (Molecular Xeroxing)

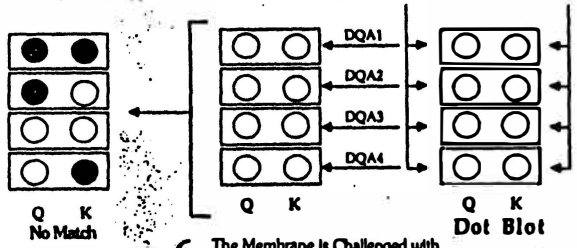
Polymerase Chain Reaction



4 Following 30 - 40 Cycles of the PCR, 100,000* Copies of the Original DNA are Produced



5 The Amplified DNA is Immobilized by Spotting it onto a Membrane.



6 The Membrane is Challenged with DNA Probe Specific to the HLA DQ-Alpha Allele. The Probe is Conjugated to Horseradish Peroxidase.

7 The Membrane is Washed and Floated in a Color Developer Containing H_2O_2* Tetramethyl Benzidene

8 There are 21 Different Phenotypes at HLA DQ Alpha Locus (Most Frequent is 1 in 5, Least is 1 in 800) The PCR Dot Blot Method DOES NOT PROVIDE IDENITY

Federal Bureau of Investigation Laboratory Division

COMMONWEALTH of VIRGINIA

DEPARTMENT OF GENERAL SERVICES

DIVISION OF
CONSOLIDATED LABORATORY SERVICES

1 NORTH 14TH STREET
RICHMOND, VIRGINIA 23219

BUREAU OF FORENSIC SCIENCE

TO: ALL VIRGINIA LAW ENFORCEMENT AGENCIES

SUBJECT: DNA TESTING GUIDELINES

Effective May 1, 1989, the Bureau of Forensic Science will begin performing DNA analyses on selected suitable evidence which has been submitted to the laboratory for serological examination. DNA testing will, on that date, be available as an additional serological test. Thus, every case submitted to our forensic laboratories for serological examination will be evaluated for applicability of DNA analysis. However, because of our limited capacity to conduct these tests, we must be selective to ensure that our resources are being used most effectively. To that end, the following guidelines have been established for evaluating a case for the potential of DNA analysis:

Guidelines for Performing DNA Analysis on Forensic Samples

1. DNA analysis will generally be limited to cases received after implementation of the technique in the Bureau of Forensic Science.

2. DNA analysis will be limited to suitable probative stains and known blood samples in those cases involving a violent crime, e.g., homicide, sexual assault, aggravated assault. However, due to our limited capacity, priorities will be established by the Bureau of Forensic Science.

3. Samples for DNA analysis must have the necessary conventional serological examinations performed first. The suitability (i.e., size, quality, probative value) of these specimens for DNA analysis can then be determined.

4. Known blood samples, collected in a lavender top (EDTA preservative) tube, from the victim and suspect(s) are required for comparison purposes prior to DNA analysis on questioned body fluid stains. Elimination blood samples, e.g., from a victim's husband or boyfriend, may also be required.

5. In certain cases (such as serial homicide/rapes), DNA analysis may be conducted even though a suspect has not been identified.

6. Generally, DNA analysis will be limited to 3 to 4 samples per case, consisting of victim's blood, suspect's blood and 1 or 2 questioned stains.

7. The investigator and the prosecuting attorney may be consulted regarding which specific serological examinations are to be performed on samples too limited for complete evaluations.

8. DNA analysis will only be done for the agencies served by the Virginia Bureau of Forensic Science, unless the Bureau is directed to do otherwise by court order.

9. Sample collection and preservation techniques for DNA analyses are the same as those for any serological evidence.

It must be emphasized that DNA analysis is not a technique that can be performed overnight. Under optimum conditions, the process takes approximately six weeks to complete. Therefore, this should be considered when setting trial dates.

Deanne F. Dabbs, Forensic Serology Section Chief, can be reached at (804) 786-2343 to answer your questions concerning DNA analysis, these guidelines or the status of DNA analysis on your case.

1990 SESSION

LD0161122

SENATE BILL NO. 130

Offered January 17, 1990

A BILL to amend and reenact § 19.2-387 of the Code of Virginia, to amend the Code of Virginia by adding a section numbered 19.2-270.5 and by adding in Chapter 18 of Title 19.2 an article numbered 1.1, consisting of sections numbered 19.2-310.2 through 19.2-310.7, and to repeal § 53.1-23.1 of the Code of Virginia, all relating to DNA analysis; data bank exchange; penalties.

Patrons–Holland, E.M., Scott and Walker; Delegates: Reynolds, Stambaugh, Marks and Almand

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Referred to the Committee for Courts of Justice

Be it enacted by the General Assembly of Virginia:

1. That § 19.2-387 of the Code of Virginia is amended and reenacted and that the Code of Virginia is amended by adding a section numbered 19.2-270.5 and by adding in Chapter 18 of Title 19.2 an article numbered 1.1, consisting of sections numbered 19.2-310.2 through 19.2-310.7, as follows:

§ 19.2-270.5. DNA profile admissible in criminal proceeding.—In any criminal proceeding, the evidence of a DNA (deoxyribonucleic acid) profile comparison is admissible to prove or disprove the identity of any person. This section shall not otherwise limit the introduction of any relevant evidence bearing upon any question at issue before the court. The court shall, regardless of the results of the DNA analysis, if any, consider such other relevant evidence of the identity of the accused as shall be admissible in evidence. For DNA evidence to be admissible under the provisions of this section, withdrawal of the blood sample and the DNA analysis shall be performed by an individual possessing sufficient training, and the sampling and analysis shall be performed in substantial compliance with the methods and procedures used by the Bureau of Forensic Science. Only a correctional health nurse technician or a physician, registered professional nurse, licensed practical nurse, graduate laboratory technician, or phlebotomist shall withdraw any sample to be submitted for analysis. No civil liability shall attach to any person authorized to withdraw blood as provided herein as a result of the act of withdrawing blood from any person submitting thereto, provided the blood was withdrawn according to recognized medical procedures. However, no person shall be relieved from liability for negligence in the withdrawing of any blood sample.

Chemically clean sterile disposable needles and vacuum draw tubes shall be used for all samples. The tube shall be sealed and labelled with the subject's name, social security number, date of birth, race and gender, the name of the person collecting the sample, the date and place of collection. The tubes shall be secured to prevent tampering with the contents. The steps herein set forth relating to the taking, handling, identification, and disposition of blood samples are procedural and not substantive. Substantial compliance therewith shall be deemed to be sufficient.

At least fifteen days prior to commencement of the proceeding in which the results of a DNA analysis will be offered as evidence, the party intending to offer the evidence shall notify the opposing party, in writing, of the intent to offer the analysis and shall provide or make available copies of the profiles and the report or statement to be introduced.

A blood sample submitted for analysis and use as provided in this section and the results of the analysis performed shall not be included in the DNA data bank established by the Bureau pursuant to § 19.2-310.5 or otherwise used in any way with identifying information on the person whose sample was submitted.

Article 1.1.

DNA Analysis and Data Bank.

§ 19.2-310.2. Blood sample required for DNA analysis upon conviction of certain

sample of his blood taken for DNA (deoxyribonucleic acid) analysis to determine identification characteristics specific to the person. The analysis shall be performed by the Bureau of Forensic Science within the Division of Consolidated Laboratory Services, Department of General Services. The identification characteristics of the profile resulting from the DNA analysis shall be stored and maintained by the Bureau in a DNA data bank and shall be made available only as provided in § 19.2-310.5.

After July 1, 1990, the blood sample shall be taken prior to release from custody.

Notwithstanding the provisions of § 53.1-159, no person convicted of one of the specified offenses who is in custody shall be released from custody after July 1, 1990, until such a blood sample has been provided. Every person so convicted after July 1, 1990, who is not sentenced to a term of confinement shall provide a blood sample as a condition of such sentence.

§ 19.2-310.3. Procedures for withdrawal of blood sample for DNA analysis.—Each sample required pursuant to § 19.2-310.2 from persons who are to be incarcerated shall be withdrawn at the receiving unit or at such other place as is designated by the Department of Corrections. The required samples from persons who are not sentenced to a term of confinement shall be withdrawn at a time and place specified by the sentencing court. Withdrawal of the samples shall conform to the procedures authorized in § 19.2-270.5. The samples shall be transported to the Bureau of Forensic Science not more than fifteen days following withdrawal and shall be analyzed and stored in the DNA data bank in accordance with §§ 19.2-310.4 and 19.2-310.5.

§ 19.2-310.4. Procedures for conducting DNA analysis of blood sample. - Whether or not the results of an analysis are to be included in the data bank, the Bureau shall conduct the DNA analysis in accordance with procedures adopted by the Bureau to determine identification characteristics specific to the individual whose sample is being analyzed. The Director or his designated representative shall complete and maintain on file a form indicating the name of the person whose sample is to be analyzed, the date and by whom the blood sample was received and examined, and a statement that the seal on the tube had not been broken or otherwise tampered with. The remainder of a blood sample submitted for analysis and inclusion in the data bank pursuant to § 19.2-310.2 may be divided, labeled as provided for the original sample and securely stored by the Bureau in accordance with specific procedures adopted by regulation of the Bureau to ensure the integrity and confidentiality of the samples. All or part of the remainder of that sample may be used only (i) to create a statistical data base provided no identifying information on the individual whose sample is being analyzed is included or (ii) for retesting by the Bureau to validate or update the original analysis.

A report of the results of a DNA analysis conducted by the Bureau as authorized, including the profile and identifying information, shall be made and maintained at the Bureau. A certificate and the results of the analysis shall be admissible in any court as provided in § 19.2-270.5 as evidence of the facts therein stated. Except as specifically provided in this section and § 19.2-310.5, the results of the analysis shall be securely stored and shall remain confidential.

§ 19.2-310.5. DNA data bank exchange.—It shall be the duty of the Bureau to receive blood samples and to analyze, classify, and file the results of DNA identification characteristics profiles of blood samples submitted pursuant to § 19.2-310.2 and to make such information available as provided in this section. The results of an analysis and comparison of the identification characteristics from two or more blood samples shall be made available directly to federal, state and local law-enforcement officers upon request made in furtherance of an official investigation of any criminal offense. A request may be made by personal contact, mail, or electronic means. The name of the requestor and the purpose for which the information is requested shall be maintained on file with the Bureau.

Upon his request, a copy of the request for search shall be furnished to any person identified and charged with an offense as the result of a search of information in the data

bank. Only when a sample or DNA profile supplied by the requestor satisfactorily matches a profile in the data bank shall the existence of data in the data bank be confirmed or identifying information from the data bank be disseminated.

The Bureau shall adopt regulations governing (i) the methods of obtaining information from the data bank in accordance with this section and (ii) procedures for verification of the identity and authority of the requestor. The Bureau shall specify the positions in that agency which require regular access to the data bank and samples submitted as a necessary function of the job.

The Bureau shall create a separate statistical data base comprised of DNA profiles of blood samples of persons whose identity is unknown. Nothing in this section or § 19.2-310.6 shall prohibit the Bureau from sharing or otherwise disseminating the information in the statistical data base with law-enforcement or criminal justice agencies within or without the Commonwealth.

The Bureau may charge a reasonable fee to search and provide a comparative analysis of DNA profiles in the data bank to any authorized law-enforcement agency outside of the Commonwealth.

§ 19.2-310.6. Unauthorized uses of DNA data bank; forensic samples; penalties.—Any person who, without authority, disseminates or receives information contained in the data bank shall be guilty of a Class 3 misdemeanor. Any person who disseminates, receives, or otherwise uses or attempts to so use information in the data bank, knowing that such use is for a purpose other than as authorized by law, shall be guilty of a Class 1 misdemeanor.

Except as authorized by law, any person who, for purposes of having DNA analysis performed, obtains or attempts to obtain any sample submitted to the Bureau of Forensic Science for analysis shall be guilty of a Class 5 felony.

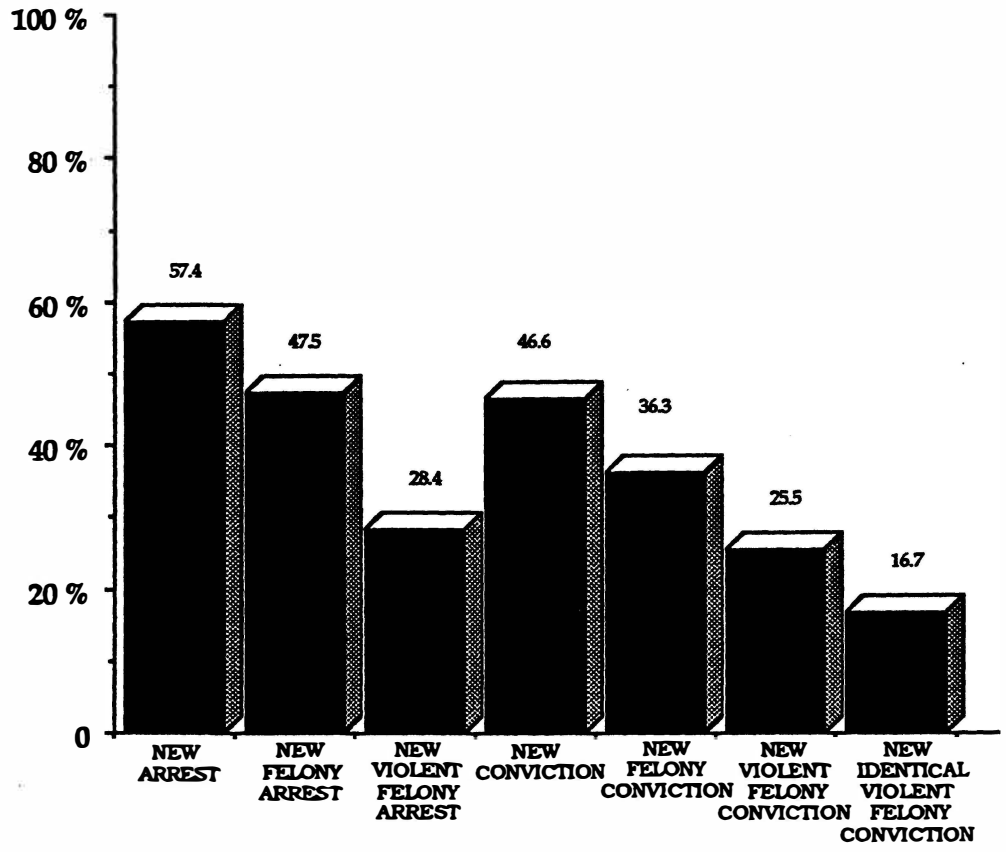
§ 19.2-310.7. Expungement.—A person whose DNA profile has been included in the data bank pursuant to this chapter may request expungement on the grounds that the felony conviction on which the authority for including his DNA profile was based has been reversed. The Bureau shall purge all records and identifiable information in the data bank pertaining to the person and destroy all samples from the person upon receipt of (i) a written request for expungement pursuant to this section and (ii) a certified copy of the court order reversing the conviction.

§ 19.2-387. Exchange to operate as a division of Department of State Police; authority of Superintendent of State Police.—A. The Central Criminal Records Exchange shall operate as a separate division within the Department of State Police and shall be the sole criminal record-keeping agency of the Commonwealth, except for the Department of Corrections pursuant to Chapter 10 of Title 16.1 (§ 16.1-222 et seq.) and the Department of Motor Vehicles *and, for purposes of the DNA data bank, the Bureau of Forensic Science within the Division of Consolidated Laboratory Services* .

B. The Superintendent of State Police is hereby authorized to employ such personnel, establish such offices, and acquire such equipment as shall be necessary to carry out the purposes of this chapter and is also authorized to enter into agreements with other state agencies for services to be performed for it by employees of such other agencies.

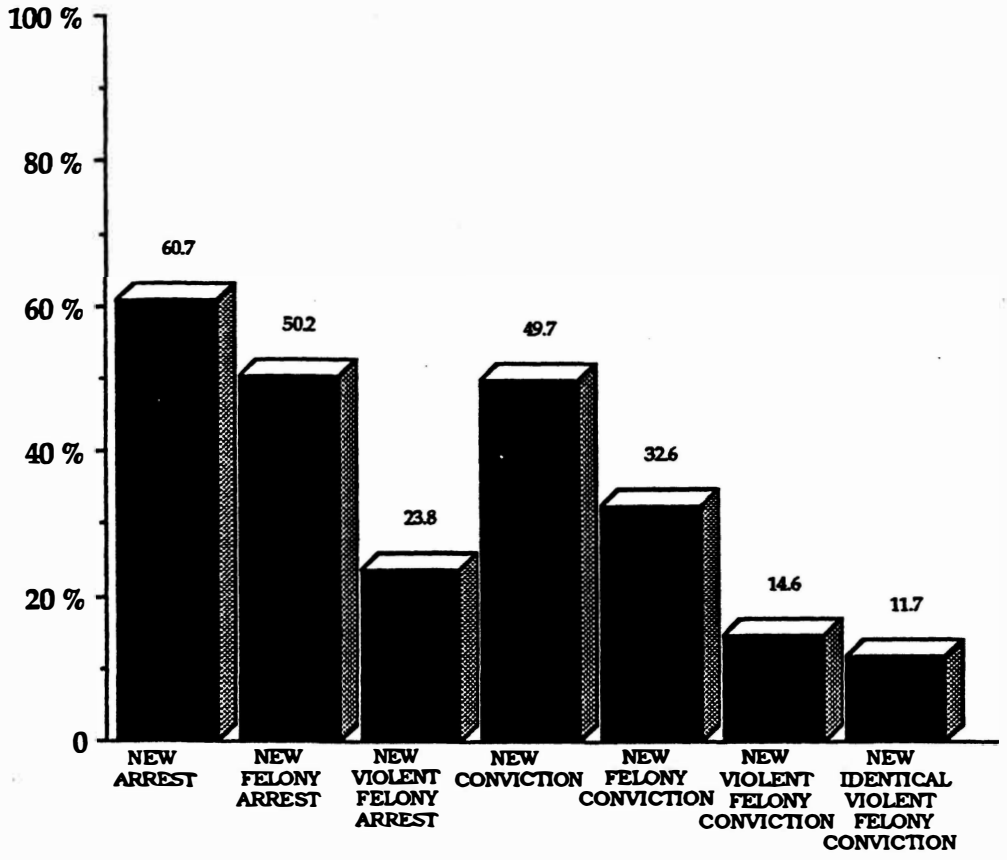
2. That § 53.1-23.1 of the Code of Virginia is repealed.

Recidivism Rates: Rape



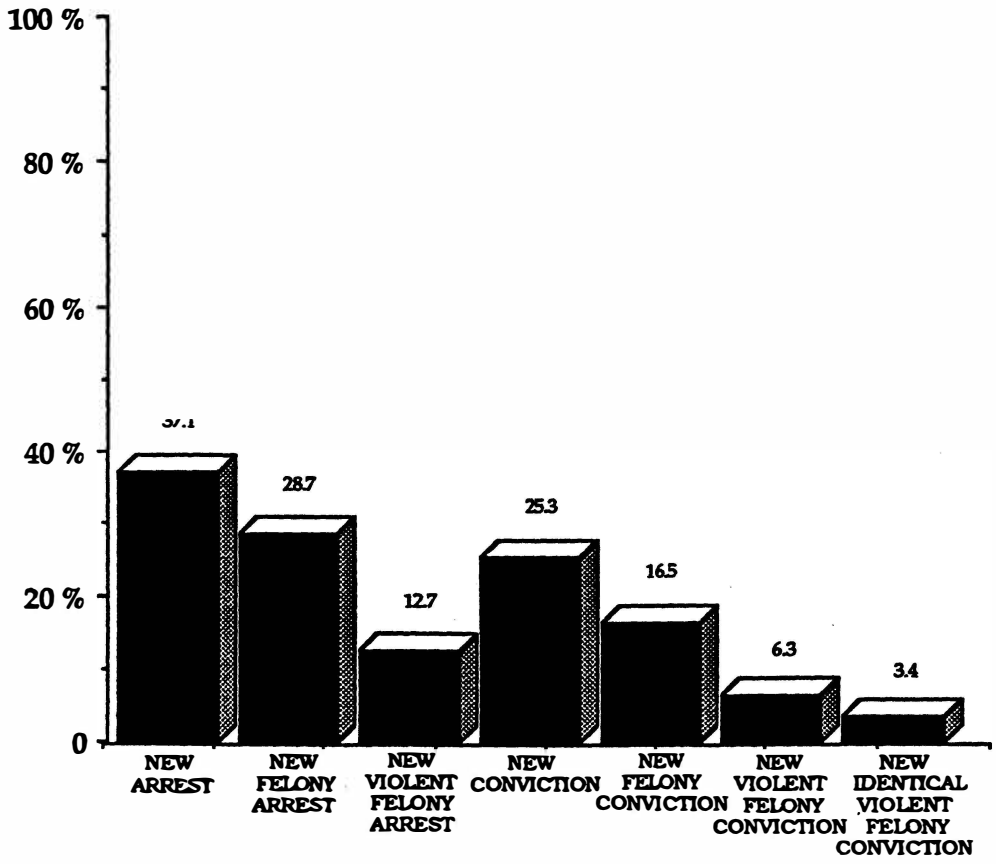
SOURCE: Violent Crime in Virginia, May 1989, Department of Criminal Justice Services

Recidivism Rates: Robbery



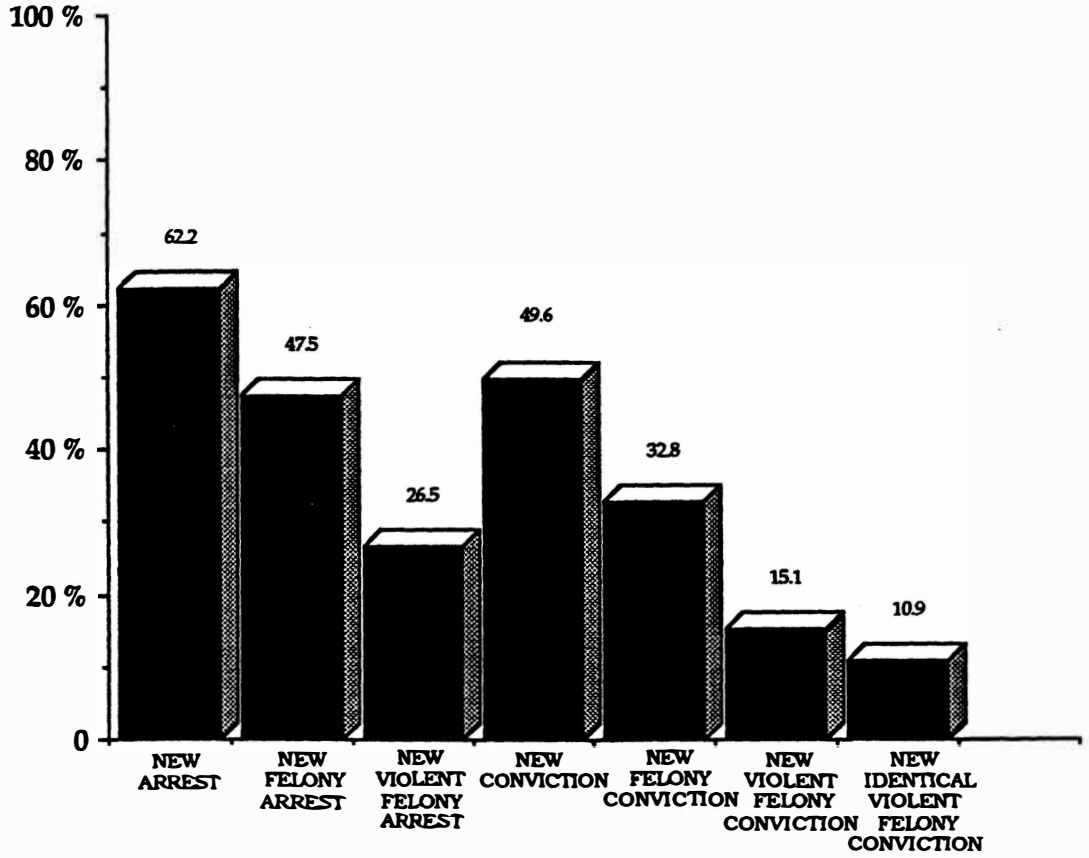
SOURCE: Violent Crime in Virginia, May 1989, Department of Criminal Justice Services

Recidivism Rates:
Murder and Non-negligent Manslaughter



SOURCE: Violent Crime in Virginia, May 1989,
Department of Criminal Justice Services

Recidivism Rates: Aggravated Assault



SOURCE: Violent Crime in Virginia, May 1989, Department of Criminal Justice Services

COMMONWEALTH of VIRGINIA

Office of the Attorney General

Mary Sue Terry
Attorney General

H. Lane Kneedler
Chief Deputy Attorney General

R. Claire Guthrie
Deputy Attorney General
Human & Natural Resources Division

Gail Starling Marshall
Deputy Attorney General
Judicial Affairs Division

Walter A. McFarlane
Deputy Attorney General
Finance & Transportation Division

Stephen D. Rosenthal
Deputy Attorney General
Public Safety & Economic Development Division

Deborah Love-Bryant
Executive Assistant

September 26, 1989

The Honorable Edward M. Holland
Chairman
Joint Subcommittee Studying Creation of
a DNA Test Data Exchange
General Assembly Building
Richmond, Virginia 23219

Dear Senator Holland:

As I am sure you are aware, on September 22, 1989, the Supreme Court of Virginia decided two cases of great significance, both dealing with the admissibility of results of DNA print identification tests: Spencer v. Commonwealth, 238 Va. _____, _____ S.E. 2d _____ (Record Nos. 881268 and 881288) (September 22, 1989) ("Spencer I"); Spencer v. Commonwealth 238 Va. _____, _____ S.E. 2d _____ (Record Nos. 890096 and 890097) (September 22, 1989) ("Spencer II"). The holdings in these cases are virtually identical:

> Because the undisputed evidence supports the trial court's conclusion that DNA testing is a reliable scientific technique and that the tests performed in the present case were properly conducted, we hold that the trial court did not err in admitting this evidence.

Spencer I, Slip Op. at 19.

The significance of these cases cannot be overestimated. Virginia is the first state in the country whose highest appellate court has reviewed this issue in depth. I am gratified that my Office was able to contribute to this new and important body of law by arguing both cases. We have also argued a third case in this series and a decision is pending.

The timing of these cases could not have been more appropriate given the existence of your Joint Subcommittee. I want to take this opportunity to recommend strongly to both the Joint Subcommittee and the General Assembly codification of the Court's holding that makes DNA testing admissible in evidence. While

defendants should always have the right to challenge whether DNA tests were properly conducted in particular situations, there should no longer be any argument over whether the concept of DNA testing is a reliable scientific technique. Such a statute would say, as the Virginia Supreme Court has said, that the results of a DNA test are admissible in evidence. Then, the only remaining issue is the weight the trier of fact should give to such evidence based upon the testimony ellicited at trial as to how the tests were performed and analyzed.

Appropriate safeguards, of course, should be built into the statutory framework, such as those concerning notice of the use of such a test, procedures for testing, and confidentiality.

I am very pleased that the Commonwealth is at the forefront of this issue which is so important to both victims and law enforcement. Virginia needs to continue to take the lead, and that is why I strongly urge that the Joint Subcommittee and the General Assembly adopt an appropriate statute on the admissibility of DNA tests.

With kindest regards, I am

Very sincerely,

Mary Sue Terry

MST:m

cc: The Honorable W. Roscoe Reynolds, Vice Chairman
The Honorable Robert C. Scott
The Honorable C. Hardaway Marks
The Honorable Warren G. Stambaugh

COMMONWEALTH of VIRGINIA

DEPARTMENT OF GENERAL SERVICES

DIVISION OF
CONSOLIDATED LABORATORY SERVICES

1 NORTH 14TH STREET
RICHMOND, VIRGINIA 23219-3691

DATE: December 18, 1989

TO: Mary Devine

FROM: Paul B. Ferrara, Ph.D

SUBJECT: **Revised Resource Needs For DNA Program**

As requested by the SJR 127 Subcommittee at its December 14, 1989 meeting, I have revised our Resource Needs Statement to reflect a phased implementation of a comprehensive DNA program and to identify the current pending 90-92 Budget Addendum Request as the first phase. For purposes of clarity, I have broken the costs down into DNA Data Banking (i.e., samples from convicted felons) and DNA stain work (samples from crime scenes) in our Central and Regional Forensic Laboratories. These are the two complementary and essential elements of a comprehensive DNA program. Obviously, a DNA Data Bank would be of no value without first having the ability to conduct DNA testing on stains/swabs, etc. from crime scenes.

The stain work involves direct comparisons of evidence from a crime scene to samples from (a) suspect(s). Our only existing funded DNA testing activity is limited to 2 forensic scientists and a lab assistant (unfunded) in our Tidewater Regional Forensic laboratory in Norfolk with a capacity of 400-500 samples per year. This proposal essentially provides for creation of similarly sized stain work operations in our other two regional forensic laboratories as well as a larger stain operation in our Central Laboratory in Richmond to be established in conjunction with the Data Bank operation. Thus this proposal, if funded, would provide for stain operations in all three Regional Forensic laboratories commensurate with current workload and a combined Data Bank/Stain operation in Richmond (Central Forensic Laboratory).

I should emphasize that these costs are estimates based upon best available current technology and our actual experience with costs associated with DNA testing. Personnel costs are calculated at Step 5 of Grade with 25% of salary added for benefits and are increased by 10% above 90-91 costs for 91-92. Otherwise, no inflation factors are applied.

Phase I (Pending 90-92 Budget Addendum Request, attached)

Provides resources to establish DNA Data Bank limited to convicted sex offenders pursuant to existing legislation (Section 53.1-23.1 and 2.1-429, COV as amended), beginning July, 1990.

Phase II

Provides resources to establish DNA testing for stain casework in our Central and Northern Virginia Forensic Laboratories in 90-91 and in the Western Regional Forensic Laboratory in 91-92.

Phase III

Provides resources to expand DNA Data Bank to all convicted felons pursuant to proposed legislation (Article 1.1, Section 19.2-310.2) in FY 91-92. Implementing the expanded DNA Data Bank during the second year of the 90-92 biennium would provide a year with a smaller volume of samples (limited to approximately 2,500 convicted sex offenders) before expanding to all 15,000 convicted felons. In the meantime, samples can be collected and stored until resources are in place to allow actual analyses. As an option, we could defer Phase III until the 92-94 biennium and thereby defray those costs until then. This would have the further advantage of providing more time to find a suitable facility large enough to house such an operation.

Finally, this proposal, like the pending 90-92 Budget Addendum Request submitted pursuant to the present DNA Data Bank Statute (effective 7-1-89), does not include renovation costs associated with space in which to perform this function. Plans are in progress, however, to provide a suitable, albeit limited, space in which to conduct this work.

Estimated Resource Needs for DNA Testing Program

Phase I (Pending Addendum Request)

	FY 90-91	91-92	90-92
FTE	8.00	8.00	8.00
Pers. Services (Appendix E)	$ 270,300.00	$282,050.00	$552,350.00
Equipment (Appendix A)	260,000.00	20,000.00	280,000.00
Supplies	144,000.00	42,000.00	186,000.00
Other M & O	25,700.00	5,950.00	31,650.00
	$ 700,000.00	350,000.00	1,050,000.00

Phase II (Stain Casework)

FTE	11.00	14.00	14.00
Pers. Servs. (Appendices F&G)	$413,400.00	$574,200.00	$987,600.00
Equipment (Appendices B&C)	261,200.00	180,300.00	441,500.00
Supplies	262,500.00	325,000.00	587,500.00
Other M & O	40,000.00	45,000.00	85,000.00
	$977,100.00	1,124,500.00	2,101,600.00
Sub-Total Phases I & II	$1,677,100.00	1,474,500.00	3,151,600.00

Phase III (Expanded DataBank)

FTE	----------	11.00	11.00
Pers. Services (Appendix H)	----------	$ 335,600.00	335,600.00
Equipment (Appendix D)	----------	233,200.00	233,200.00
Supplies	----------	420,000.00	420,000.00
Other M & O	----------	15,000.00	15,000.00
		$1,003,800.00	1,003,800.00
Total Phases I & II	$1,677,100.00	$2,478,300.00	4,155,400.00

APPENDIX A

REQUIREMENTS FOR DATA BANK/EXISTING ADDENDUM (RICHMOND)

ITEM	NUMBER	COST/EACH	TOTAL COST
Autoclave, Model SSR-3A	1	20,000.00	20,000.00
Beta Workshield	3	130.00	390.00
Centrifuge, Hi Speed with Rotor Heads	2	1,970.00	3,940.00
Centrifuge, Micro	1	1,173.00	1,173.00
Centrifuge, Refrigerated	2	5,500.00	11,000.00
Centrifuge Rotor	2	1,200.00	2,400.00
Fixed Head Rotor	2	1,200.00	2,400.00
Computer Imaging System	2	35,000.00	70,000.00
Dewar Flask	1	315.00	315.00
Freezer, -70 deg.	2	5,300.00	10,600.00
Geiger Counter	2	465.00	930.00
Gel Box, 14 x 5.25 in.	12	600.00	7,200.00
Gel Box, 8 x 5.25 in.	6	600.00	3,600.00
Hood, Captair	0	5,500.00	0.00
Hood, Laminar Flow	1	7,500.00	7,500.00
Ice Machine	1	3,000.00	3,000.00
Incubator	4	1,320.00	5,280.00
Micropipettor, 100-1000 ul	8	200.00	1,600.00
Micropipettor, 10-100 ul	8	200.00	1,600.00
Micropipettor, 1-20 ul	8	200.00	1,600.00
Micropipettor, 20-200 ul	8	200.00	1,600.00
Microwave Oven	1	500.00	500.00

MP 4 Camera System	1	3,500.00	3,500.00
Multi-block Heater	6	300.00	1,800.00
Multi-block Blocks	18	100.00	1,800.00
Nalgene Lowboy 15 L	15	60.00	900.00
Nalgene Carboy 20 L	10	65.00	650.00
Nutator, Clay Adams	4	277.00	1,108.00
Oven, Mech. Convection	1	1,617.00	1,617.00
Pipette, Repeater	2	260.00	520.00
Pipettor	8	165.00	1,320.00
Platform, Rocker	4	750.00	3,000.00
Power Supply PS250	6	1,200.00	7,200.00
Power Supply EC105	3	250.00	750.00
Pump, Oscillating	12	75.00	900.00
Refrigerator ET14JMXS	4	500.00	2,000.00
Refrig., Bloodbank dbl	1	8,900.00	8,900.00
Scintillation Counter	1	6,000.00	6,000.00
Sealer, Heat	2	125.00	250.00
Shaker, Platform Orbital	2	1,095.00	2,190.00
SpeedVac. System	2	8,400.00	16,800.00
Stirrer, Hot Plate	3	500.00	1,500.00
Stirrer, Magnetic	2	263.00	526.00
Trash Compacter	1	400.00	400.00
Type 1 Water System	1	4,000.00	4,000.00
UV Transilluminator	2	1,200.00	2,400.00
Viewer, Portable	1	220.00	220.00
Vortexer II Mixer	4	175.00	700.00

Waterbath, Large	2	1,100.00	2,200.00
Waterbath, Shkng, 65 deg.	2	2,983.00	5,966.00
X-ray, Ltng Plus Screens	16	230.00	3,680.00
X-ray Cassette, 14 x 17 in.	16	150.00	2,400.00
X-ray Film Duplicator	1	716.00	716.00
X-ray Processor, Kodak	1	10,000.00	10,000.00
pH Meter	1	1200.00	1,200.00
Balance, Kilogram cap.	1	2685.00	2,685.00
Balance, Milligram cap.	1	2000.00	2,000.00
Radioactive Waste Container	2	750.00	1,500.00
Walk-in Refrigerator	1	20000.00	20,000.00
Walk-in Freezer	0	20000.00	0.00
		TOTAL	279,926.00

APPENDIX B

REQUIREMENTS FOR STAIN CASEWORK (RICHMOND)

ITEM	NUMBER	COST/EACH	TOTAL COST
Autoclave, Model SSR-3A	0	20,000.00	0.00
Beta Workshield	2	130.00	260.00
Centrifuge, Hi Speed with Rotor Heads	1	1,970.00	1,970.00
Centrifuge, Micro	5	1,173.00	5,865.00
Centrifuge, Refrigerated	1	5,500.00	5,500.00
Centrifuge Rotor	1	1,200.00	1,200.00
Fixed Head Rotor	1	1,200.00	1,200.00
Computer Imaging System	0	35,000.00	0.00
Dewar Flask	0	315.00	0.00
Freezer, -70 deg.	1	5,300.00	5,300.00
Geiger Counter	2	465.00	930.00
Gel Box, 14 x 5.25 in.	6	600.00	3,600.00
Gel Box, 8 x 5.25 in.	2	600.00	1,200.00
Hood, Captair	2	5,500.00	11,000.00
Hood, Laminar Flow	2	7,500.00	15,000.00
Ice Machine	0	3,000.00	0.00
Incubator	2	1,320.00	2,640.00
Micropipettor, 100-1000 ul	5	200.00	1,000.00
Micropipettor, 10-100 ul	5	200.00	1,000.00
Micropipettor, 1-20 ul	5	200.00	1,000.00
Micropipettor, 20-200 ul	5	200.00	1,000.00
Microwave Oven	0	500.00	0.00

MP 4 Camera System	0	3,500.00	0.00
Multi-block Heater	2	300.00	600.00
Multi-block Blocks	6	100.00	600.00
Nalgene Lowboy 15 L	0	60.00	0.00
Nalgene Carboy 20 L	0	65.00	0.00
Nutator, Clay Adams	4	277.00	1,108.00
Oven, Mech. Convection	0	1,617.00	0.00
Pipette, Repeater	4	260.00	1,040.00
Pipettor	1	165.00	165.00
Platform, Rocker	2	750.00	1,500.00
Power Supply PS250	0	1,200.00	0.00
Power Supply EC105	1	250.00	250.00
Pump, Oscillating	6	75.00	450.00
Refrigerator ET14JMXS	1	500.00	500.00
Refrig., Bloodbank dbl	1	8,900.00	8,900.00
Scintillation Counter	0	6,000.00	0.00
Sealer, Heat	0	125.00	0.00
Shaker, Platform Orbital	2	1,095.00	2,190.00
SpeedVac. System	0	8,400.00	0.00
Stirrer, Hot Plate	0	500.00	0.00
Stirrer, Magnetic	1	263.00	263.00
Trash Compacter	0	400.00	0.00
Type 1 Water System	0	4,000.00	0.00
UV Transilluminator	0	1,200.00	0.00
Viewer, Portable	0	220.00	0.00
Vortexer II Mixer	3	175.00	525.00

Waterbath, Large	1	1,100.00	1,100.00
Waterbath, Shkng, 65 deg.	0	2,983.00	0.00
X-ray, Ltng Plus Screens	8	230.00	1,840.00
X-ray Cassette, 14 x 17 in.	8	150.00	1,200.00
X-ray Film Duplicator	0	716.00	0.00
X-ray Processor, Kodak	0	10,000.00	0.00
pH Meter	0	1200.00	0.00
Balance, Kilogram cap.	0	2685.00	0.00
Balance, Milligram cap.	0	2000.00	0.00
Radioactive Waste Container	0	750.00	0.00
Walk-in Refrigerator	0	20000.00	0.00
Walk-in Freezer	0	20000.00	0.00
		TOTAL	80,896.00

APPENDIX C

REQUIREMENTS FOR DNA FACILITIES IN EACH REGIONAL LAB (NORTHERN VIRGINIA/ROANOKE)

ITEM	NUMBER	COST/EACH	TOTAL COST
Autoclave, Model STM-E	1	5,000.00	5,000.00
Beta Workshield	4	130.00	520.00
Centrifuge, Hi Speed	2	1,970.00	3,940.00
Centrifuge, Micro	3	1,173.00	3,519.00
Centrifuge, Refrigerated	1	5,500.00	5,500.00
Centrifuge Rotor	1	1,200.00	1,200.00
Fixed Head Rotor	1	1,200.00	1,200.00
Computer Imaging System	1	35,000.00	35,000.00
Dewar Flask	1	315.00	315.00
Freezer, -70 deg.	2	5,300.00	10,600.00
Geiger Counter	2	465.00	930.00
Gel Box, 14 x 5.25 in.	12	600.00	7,200.00
Gel Box, 8 x 5.25 in.	4	600.00	2,400.00
Hood, Captair	1	5,500.00	5,500.00
Hood, Laminar Flow	1	7,500.00	7,500.00
Ice Machine	1	3,000.00	3,000.00
Incubator	2	1,320.00	2,640.00
Micropipetter, 100-1000 ul	4	200.00	800.00
Micropipetter, 10-100 ul	4	200.00	800.00
Micropipetter, 1-20 ul	4	200.00	800.00
Micropipetter, 20-200 ul	4	200.00	800.00
Microwave Oven	1	500.00	500.00

MP 4 Camera System	1	3,500.00	3,500.00
Multi-block Heater	3	300.00	900.00
Multi-block Blocks	9	100.00	900.00
Nalgene Stackable Lowboy	12	60.00	720.00
Nalgene Carboy 20 L	6	65.00	390.00
Nutator, Clay Adams	4	277.00	1,108.00
Oven, Mech. Convection	1	1,617.00	1,617.00
Pipette, Repeater	3	260.00	780.00
Pipettor	9	165.00	1,485.00
Platform, Rocker	2	750.00	1,500.00
Power Supply PS250	3	1,200.00	3,600.00
Power Supply EC105	2	250.00	500.00
Pump, Oscillating	12	75.00	900.00
Refrigerator ET14JMXS	5	500.00	2,500.00
Refrig., Bloodbank dbl	1	8,900.00	8,900.00
Scintillation Counter	1	6,000.00	6,000.00
Heat Sealer	2	125.00	250.00
Shaker, Platform Orbital	3	1,095.00	3,285.00
SpeedVac. System	1	8,400.00	8,400.00
Stirrer, Hot Plate	2	500.00	1,000.00
Stirrer, Magnetic	3	263.00	789.00
Trash Compacter	1	400.00	400.00
Type 1 Water System	1	4,000.00	4,000.00
UV Transilluminator	1	1,200.00	1,200.00
Viewer, Portable	1	220.00	220.00
Vortexer II Mixer	3	175.00	525.00

Waterbath, Large	1	1,100.00	1,100.00
Waterbath, Shkng, 65 deg.	1	2,83.00	2,983.00
X-ray, Ltng Plus Screens	16	230.00	3,680.00
X-ray Cassette, 14 x 17 in.	16	150.00	2,400.00
X-ray Film Duplicator	1	716.00	716.00
X-ray Processor, Kodak	1	7,000.00	7,000.00
pH Meter	1	1,200.00	1,200.00
Balance, Kilogram cap.	1	2,685.00	2,685.00
Balance, Milligram cap.	1	2,000.00	2,000.00
Radioactive Waste Cont.	2	750.00	1,500.00
Walk-in Refrigerator	0	20,000.00	0.00
Walk-in Freezer	0	20,000.00	0.00
		TOTAL FOR EACH LAB	180,297.00

APPENDIX D

REQUIREMENTS FOR EXPANDED DATA BANK (RICHMOND)

ITEM	NUMBER	COST/EACH	TOTAL COST
Autoclave, Model SSR-3A	0	20,000.00	0.00
Beta Workshield	3	130.00	390.00
Centrifuge, Hi Speed with Rotor Heads	0	1,970.00	0.00
Centrifuge, Micro	6	1,173.00	7,038.00
Centrifuge, Refrigerated	1	5,500.00	5,500.00
Centrifuge Rotor	1	1,200.00	1,200.00
Fixed Head Rotor	1	1,200.00	1,200.00
Computer Imaging System	2	35,000.00	70,000.00
Dewar Flask	0	315.00	0.00
Freezer, -70 deg.	1	5,300.00	5,300.00
Geiger Counter	0	465.00	0.00
Gel Box, 14 x 5.25 in.	7	600.00	4,200.00
Gel Box, 8 x 5.25 in.	2	600.00	1,200.00
Hood, Captair	6	5,500.00	33,000.00
Hood, Laminar Flow	5	7,500.00	37,500.00
Ice Machine	0	3,000.00	0.00
Incubator	2	1,320.00	2,640.00
Micropipettor, 100-1000 ul	2	200.00	400.00
Micropipettor, 10-100 ul	2	200.00	400.00
Micropipettor, 1-20 ul	2	200.00	400.00
Micropipettor, 20-200 ul	2	200.00	400.00
Microwave Oven	1	500.00	500.00

MP 4 Camera System	1	3,500.00	3,500.00
Multi-block Heater	2	300.00	600.00
Multi-block Blocks	6	100.00	600.00
Nalgene Lowboy 15 L	0	60.00	0.00
Nalgene Carboy 20 L	0	65.00	0.00
Nutator, Clay Adams	2	277.00	554.00
Oven, Mech. Convection	1	1,617.00	1,617.00
Pipette, Repeater	4	260.00	1,040.00
Pipettor	0	165.00	0.00
Platform, Rocker	2	750.00	1,500.00
Power Supply PS250	0	1,200.00	0.00
Power Supply EC105	0	250.00	0.00
Pump, Oscillating	7	75.00	525.00
Refrigerator ET14JMXS	1	500.00	500.00
Refrig., Bloodbank dbl	1	8,900.00	8,900.00
Scintillation Counter	0	6,000.00	0.00
Heat Sealer	1	125.00	125.00
Shaker, Platform Orbital	2	1,095.00	2,190.00
SpeedVac. System	1	8,400.00	8,400.00
Stirrer, Hot Plate	1	500.00	500.00
Stirrer, Magnetic	1	263.00	263.00
Trash Compacter	0	400.00	0.00
Type 1 Water System	0	4,000.00	0.00
UV Transilluminator	0	1,200.00	0.00
Viewer, Portable	1	220.00	220.00
Vortexer II Mixer	2	175.00	350.00

Waterbath, Large	1	1,100.00	1,100.00
Waterbath, Shkng, 65 deg.	0	2,983.00	0.00
X-ray, Ltng Plus Screens	16	230.00	3,680.00
X-ray Cassette, 14 x 17 in.	16	150.00	2,400.00
X-ray Film Duplicator	0	716.00	0.00
X-ray Processor, Kodak	0	10,000.00	0.00
pH Meter	1	1200.00	1,200.00
Balance, Kilogram cap.	1	2685.00	2,685.00
Balance, Milligram cap.	1	2000.00	2,000.00
Radioactive Waste Container	2	750.00	1,500.00
Walk-in Refrigerator	1	20000.00	20,000.00
Walk-in Freezer	1	20000.00	20,000.00
		TOTAL	233,143.00

APPENDIX E

STAFFING REQUIREMENTS FOR DATABANK PER ADDENDUM

POSITION	GRADE	NUMBER	SALARY & BENEFITS (Step 1) (25%) 90-91	91-92
For. Sect. Chief	14	1	39,948.00	43,943.00
Forensic Sci. Supv.	13	1	36,537.00	40,191.00
Forensic Sci. Sr.	12	1	33,431.00	36,775.00
Forensic Sci.	11	2	61,145.00	67,260.00
Chemist's Assist.	8	1	23,404.00	25,744.00
Systems Analyst	15	1	43,666.00	48,033.00
Office Services Specialist	5	1	17,915.00	19,707.00
		8	256,046.00	281,653.00
			Total 90-92	537,699.00

APPENDIX F

STAFFING REQUIREMENTS FOR STAIN CASEWORK (RICHMOND)

POSITION	GRADE	NUMBER	SALARY & BENEFITS (Step 5) (25%) 90-91	91-92
Molecular Biologist	16	1	57,045.00	62,750.00
Forensic Sci. Supv.	13	1	43,666.00	48,033.00
Forensic Sci. Sr.	12	2	79,898.00	87,888.00
Chemist's Assist.	8	2	55,924.00	61,516.00
Office Services Specialist	5	1	21,406.00	23,546.00
		7	257,939.00	284,586.00
			Total 90-92	542,524.00

APPENDIX G

STAFFING REQUIREMENTS FOR DNA STAIN CASEWORK (REGIONAL LABORATORIES)

POSITION	GRADE	NUMBER	SALARY & BENEFITS (Step 5) (25%) 90-91	91-92
Forensic Sci. Sr.	12	2 (W)	0.00	87,879.00
		2 (N)	95,488.00	105,037.00
Chemist's Assist.	8	1 (W)	0.00	30,758.00
		1 (N)	31,965.00	35,162.00
		1 (T)	27,962.00	30,758.00
		7	155,415.00	289,594.00
			Total 90-92	445,009.00

APPENDIX H

STAFFING REQUIREMENTS FOR EXPANDED DATABANK

POSITION	GRADE	NUMBER	SALARY & BENEFITS (Step 5) (25%) 90-91	91-92
Forensic Sci. Sr.	12	3	119,847.00	131,832.00
Chemist's Assist.	8	7	163,828.00	180,211.00
Office Services Specialist	5	1	21,406.00	23,546.00
		11	305,081.00	335,589.00
			Total 90-92	640,670.00