NO. _____

In the Supreme Court of the United States

SCOTT R. WILLIAMS,

Petitioner,

v.

COMMONWEALTH OF PENNSYLVANIA,

Respondent.

On Petition for a Writ of Certiorari to the Superior Court of Pennsylvania, Middle District — Harrisburg Office

APPENDIX VOLUME II
App.655a-App.1095a

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May 5, 2026 *Counsel for Petitioner*

SUPREME COURT PRESS ♦ (888) 958-5705 ♦ BOSTON, MASSACHUSETTS

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POLICE CRIMINAL COMPLAINT (DE 4)
(MARCH 29, 2000)

COMMONWEALTH OF PENNSYLVANIA

POLICE CRIMINAL COMPLAINT

COMMONWEALTH OF PENNSYLVANIA,

v.

JOHN DOE, Unknown Male with Matching Deoxyribonucleic Acid (DNA) Profile developed at genetic locations: D2S44, D17S79, D1S7, D4S139, D10S28, D5S110,

Defendant.

Magisterial District Number: 49-1-01
District Justice: Carmine W. Prestia
224 S. Fraser Street, P.O. Box 238
State College, PA 16804-0238
Telephone: 231-1420

Docket No.: CR-0000193-00
LTN: 3/29/00
OTN: H206742-4

Defendant's Sex: Male
Defendant's SSN: Unknown
Defendant's SID: Unknown
Complainant/Incident Number: 3295-06687
Complainant/Incident Number if other participants: None

UCRINIBRS Code: PA0140300

District Attorney's Office: Approved

I, Detective Thomas N. Jordan (Affiant) of State College Police Department Officer Badge No.: 3232, Police Agency ORI No.: PA0140300 do hereby state:

1. ☑ The affiant accuses the defendant whose name is unknown to him but who is described as:

Male, with matching DNA profile developed at genetic locations D2S44, D17S79, D1S7, D4S139, D10S28, and D5S110 with violating the penal laws of Pennsylvania at the 900 block of South Pugh Street, State College, PA 16801 in Centre County on or about May 13, 1995 between 0200 and 0300 hours

Participants were:

John Doe, Male with Matching DNA Profile developed at genetic locations D2S44, D17S79, D1S7, D4S139, D10S28, and D5S110.

The acts committed by the accused were:

See attached document.

POLICE CRIMINAL COMPLAINT

Defendant: John Doe (Unknown Male with Matching Description)

Docket Number: CR-0000197-00

RAPE – Sec. 3121(a)(1) (1 count) (F-1): In that the defendant engaged in sexual intercourse with T.L. by forcible compulsion.

AGGRAVATED ASSAULT – Sec. 2702(a)(1) (1 count) (F-1): In that the defendant attempted to cause, or did cause, serious bodily injury under circumstances manifesting extreme indifference to human life. The defendant beat T.L. about the head, causing skull and numerous facial and nasal fractures.

ROBBERY – Sec. 3701(a)(1)(ii) (1 count) (F-1): In that the defendant inflicted serious bodily injury upon T.L. by beating her about the head and face, causing skull and facial fractures, and then stole her purse containing credit cards, MAC card, Pennsylvania driver's license, and PSU ID card.

INDECENT ASSAULT – Sec. 3126(a)(2) (1 count) (M-2) In that the defendant had indecent contact with T.L. by forcible compulsion, including touching her genital area.

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all of which were against the peace and dignity of the Commonwealth of Pennsylvania and contrary to the Act, of Assembly, or in violation of

1. 3121(a)(1) of the Title 18 – PACC 1

2. 2702(a)(1) of the Title 18 - PACC 1

3. 3701(a)(1)(ii) of the Title 18 PACC 1

4. 3126(a)(2) of the Title 18 – PACC 1

3. I ask that a warrant of arrest or as summons be issued and that the defendant be required to answer the charges I have made. (In order for a warrant of arrest to issue, the attached affidavit of probable cause must be completed and sworn to before the issuing authority.)

4. I verify that the facts set forth in this complaint are true and correct to the best of my knowledge or information and belief. This verification is made subject to the penalties of Section 4904 of the Crimes Code (18 PA. C.S. § 4904) relating to unsworn falsification to authorities,

/s/ Detective Thomas N. Jordan
(Signature of Affiant)

March 29, 2000

AND NOW, on this date 3/29 2000, I certify that the complaint has been properly completed and verified. An affidavit of probable cause must be completed in order for a warrant to Issue.

49.2.01
(Magisterial District)

/s/ {Illegible}
(Issuing Authority)

SEAL

POLICE CRIMINAL COMPLAINT

Defendant: John Doe (Unknown Male with Matching Description)

Docket Number: CR-0000197-00

SIMPLE ASSAULT – Sec. 2701(a)(1) (1 count) (M-2): In that the defendant caused bodily injury to T.L. by beating her about the head, resulting in facial and nasal fractures and a skull fracture.

RECKLESSLY ENDANGERING ANOTHER PERSON – Sec. 2705 (1 count) (M-2): In that the defendant recklessly engaged in conduct placing T.L. in danger of death or serious bodily injury by beating her about the head and face.

THEFT BY UNLAWFUL TAKING – Sec. 3921(a) (1 count) (M-2): In that the defendant unlawfully took property belonging to T.L., including a purse containing an apartment key, credit cards, MAC card, PSU student ID, and driver's license.

RECEIVING STOLEN PROPERTY – Sec. 3925(a) (1 count) (M-2) In that the defendant received, retained, or disposed of stolen property knowing it was stolen, namely the purse and its contents belonging to T.L.

Affiant: Detective Thomas N. Jordan

Date: March 29, 2000

/s/ Thomas N. Jordan

---

all of which were against the peace and dignity of the Commonwealth of Pennsylvania and contrary to the Act of Assembly, or in violation of

1. 2701 (a)(1) of the Title 18 – PACC 1

2. 2705 of the Title 18 - PACC 1

3. 3921(a) of the Title 18 PACC 1

4. 3925(a) of the Title 18 – PACC 1

3. I ask that a warrant of arrest or as summons be issued and that the defendant be required to answer the charges I have made. (In order for a warrant of arrest to issue, the attached affidavit of probable cause must be completed and sworn to before the issuing authority.)

4. I verify that the facts set forth in this complaint are true and correct to the best of my knowledge or information and belief. This verification is made subject to the penalties of Section 4904 of the Crimes Code (18 PA. C.S. § 4904) relating to unsworn falsification to authorities,

/s/ Detective Thomas N. Jordan
(Signature of Affiant)

March 29, 2000

AND NOW, on this date 3/29 2000, I certify that the complaint has been properly completed and verified. An affidavit of probable cause must be completed in order for a warrant to Issue.

49.2.01
(Magisterial District)

/s/ {Illegible}
(Issuing Authority)

SEAL

AFFIDAVIT OF PROBABLE CAUSE

The affiant of this document, Detective Thomas N. Jordan swears that he is a Detective with the State College Police Department and has been so employed for over 20 years. The affiant is basing this affidavit on statements of Ms. T.L. in addition to facts gathered during the Investigation conducted as well as the forensic examination of scientific evidence gathered from the scene of the assault. The affiant believes that this all of this information is true and correct.

On 13 May, 1995 Officer W. C. Muse of the State College Police Department was dispatched to the 900 block of South Pugh Street responding to a report of a female down in the roadway, Upon Officer Muse's arrival he was met by two females who were kneeling beside a woman who was lying on the grass beside Pugh Street. Officer Muse noticed that the "victim" was not wearing any pants or underwear and her face and head were covered with blood and her right eye was swollen shut. He immediately requested an ambulance.

Officer Muse interviewed Ms. Carey Moser who stated that she was walking southbound on the 800 block of S. Pugh St. when she saw what she thought to be a shirt lying in the middle of the 900 block of Pugh St. As she drew closer she realized that it was a person lying in the middle of the road. Ms. Moser said that this woman was mumbling incoherently so Moser carried her off of the roadway to the grassy area. She was joined by Ms. Sylvia Feldman who was driving by and stopped to render assistance. Moser then got to a phone and called SCPD. The victim, Ms. T.L., was transported to Centre Community Hospital

where it was determined that her head injuries needed specialized care and she was flown by helicopter to Gelsinger Medical Center.

Sgt. D. Leonard and Off, Muse began checking the area for pieces of evidence to help determine what happened to T.L., Blood stains on the sidewalk and grass and a lack of evidence on the roadway (no skid-marks, no debris, and nothing heard by neighbors) led officers to believe that Ms. was likely the victim of an assault. Sgt. Leonard summoned Del. R. Ralston and Det. T. Jordan to come to the scene. A search of the surrounding area revealed that several articles of clothing (pants, underwear and shoes) were lying in a flower bed near apartment # 921 S. Pugh Street. As this area was being processed, blood spatter found all over the side of the apartment building and on the vegetation near the building. Evidence at the scene indicates that the assault an Ms. T.L. continued in this area.

Due to the nature of of the evidence discovered in this area, Officer Weaver, who was with Ms. T.L. at the hospital, was contacted and told to have hospital personnel treat this case as a sexual assault and gather evidence from her clothing and body, Officer Weaver contacted Geisinger Medical Center and made this request and then drove to Danville, PA to pick up the evidence gathered by medical personnel.

Ms. T.L. was admitted to the Geisinger Medical Center on 05/13/1995 and examined in the Emergency Department. As part of this examination, John J. Skiendzielowski, M.D, obtained two sets of vaginal swabs as well as pubic hair combings and pluckings. This evidence was placed in the appropriate

specimen envelopes and along with other evidence gathered from her body sealed in a Sex Crimes Evidence Collection Kit. This kit along with the clothing that she was wearing and blood samples from were given to Officer C. Weaver of the State College Police Department, He then returned to State College PD with the evidence and secured the Sox Crimes Kit and blood in the evidence refrigerator and the clothing, which contained dried blood, was secured in an evidence locker.

Interviews with the victim, T.L., were conducted by this affiant between May 16 and May 22, 1995. could recall very little about the events of 0611311-995 in the early AM hours. She did know that she was attacked from behind and struck in the head. She also did not have consensual sexual intercourse with anyone that morning.

On May 16, 1995, I prepared a forensic laboratory request outlining certain forensic examinations be performed on the evidence gathered from the body and clothing of T.L. as well as on Items gathered from the scene of the attack. This request and the evidence were forwarded to the Federal Bureau of Investigations Crime Laboratory 10th Street and Pennsylvania Ave., NA, Washington, D.C, On June 19, 1996,1 telephonically spoke to Agent Richard Reem who is assigned to the Serology/DNA unit of the FBI. Agent Ream reported that semen was found on the vaginal swabs contained In the Sex Crimes Evidence Collection Kit. I was informed by Agent Room that these semen samples, along with another semen sample found an evidence from case, would now be sent to the DNA Section of the Lab for DNA Analysis. DNA Forensic Examiner Melissa Smrz was

assigned to perform DNA analysis on the semen located on the vaginal swabs and the genital swabbing. In a report dated January 2, 1996, Ms. Smrz reported that Deoxyribonucleic acid (DNA) profiles for genetic loci D2S44, D17S79, D1S7, 00139, D10S28, and D5S110 were developed from HAE III digested high molecular weight DNA extracted from specimens Q-1 and Q-2 (vaginal swabs) and Q-5 (genital swabbing). This DNA profile, which was developed from semen taken from the vaginal area of T.L. was foreign to the DNA profile of T.L.. On 03/22/2000 Ms. Smrz confirmed that this foreign DNA profile is being maintained in a nationwide database known as the Combined DNA Index System (CODIS) for the purpose of searching and comparing against other DNA profiles within or added to this system, CODIS serves as a repository for DNA profiles submitted by participating states.

On 03/20/00 your affiant interviewed Forensic Scientist Supervisor Michael Kurtz of the Pennsylvania State Police, DNA Lab located at 80 N. Westmoreland Ave. Greensburg, PA. Mr. Kurtz stated that in 1995 Pennsylvania enacted Act 14 which mandates that a DNA profile be developed from blood samples provided by certain violent offenders. These DNA profiles are maintained in a database for comparisons with unidentified DNA profiles foreign to the victims that have been entered into the system. CODIS also acts as a database index comprised of DNA profiles from unsolved sexual assault cases as well as other serious, violent criminal offenses. Smrz stated that the unnamed person involved in the sexual assault of can be expected to have a DNA profile that matches the foreign DNA profile from the

semen taken from the vaginal and genital swabs taken from an 05/13/1995, It is therefore expected that if the unknown assailant In the case has ever, or will ever have his DNA profile entered into the PA system, any other state's Indexing system that participates in the Combined DNA Indexing System (CODIS) operated by the FBI, or the federal database, this system would identify and indicate that a possible match exists and a comparison for positive identification would be done.

I, Det. Thomas N. Jordan # 3232, 3232, BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT THE FACTS SET FORTH IN THE FOREGOING AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, I NFORMATION AND BELIEF.

/s/ Det. Thomas N. Jordan
Signature of Affiant

Sworn to me and subscribed before me this 29th

day of March, 2000 3/29/2000

{Not Legible}

Signature

My commission expires first Monday of January, 2002

LDIS CASE REVIEW SHEET/CALCULATED FRAGMENT LENGTHS (DE 12) (SEPTEMBER 24, 1999)

LDIS CASE REVIEW SHEET

FBI LABORATORY NUMBER: 50519026 SBO

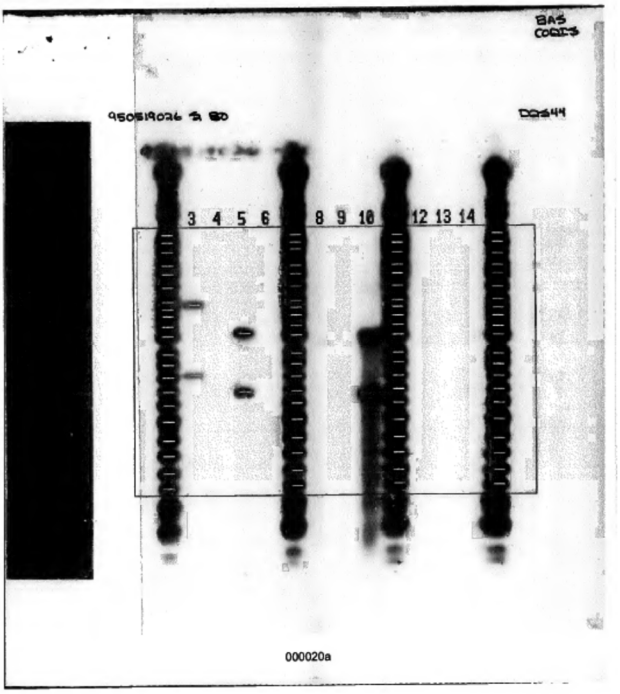
The CODIS data pertaining to this FBI Laboratory number for LDIS entry has been reviewed by Melissa A. Smrz and the interpretation of this data has been agreed upon.

Some of the CODIS sizing data may not be reflected in the original laboratory report.

Signature of reviewer:

/s/ Melissa A. Smrz

Date: 9-24-99



CALCULATED FRAGMENT LENGTHS
(LOG MODEL)

Autoradiogram: 950519026A

DNA Probe: D2S44

MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS

Im. Analysis: 28-OCT-1997

Markers used: 21

Lane 3: Control/Digest,, K562
Band 1 MW = 2962 bp
Band 2 MW = 1807 bp

Lane 4: /, , Empty lane
(No bands detected)

Lane 5: Blood/Stain, Unknown B0950519026K1/0
Band 1 MW=2392 bp
Band 2 MW=1632 bp

Lane 6: /, , Empty lane
(No bands detected)

Lane 8: MaleFr/Stain, Unknown B0950519026 Q1-Q2M/0
Band 1 MW=2230 bp
Band 2 MW=1615 bp
Band 3 MW=1212 bp

Lane 9: /, , Empty lane
(No bands detected)

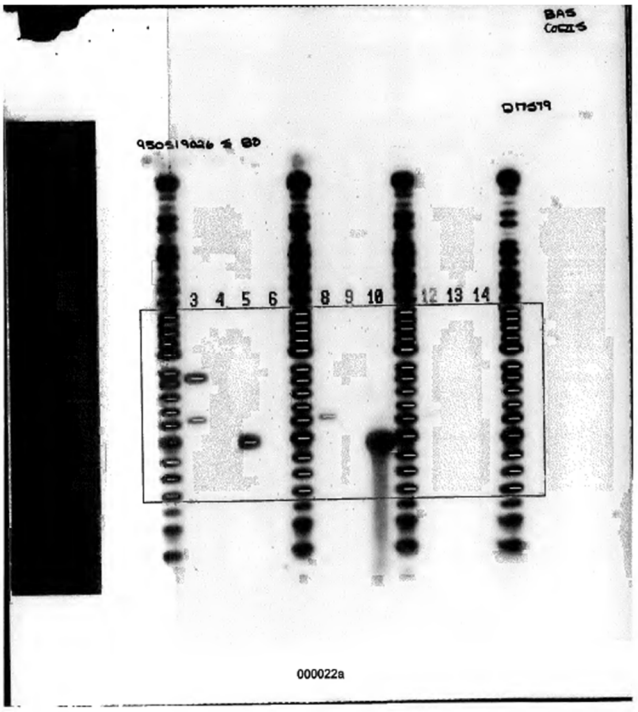
Lane 10: FemaleF/Stain, Unknown B0950519026 Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr/Stain, Unknown B0950519026 Q5M/0
(No bands detected)

Lane 13: /, , Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown B0950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



Autoradiogram: 950519026B

DNA Probe: D17S79

MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS

Im. Analysis: 28-OCT-1997

Markers used: 14

Lane 3: Control/Digest, , K562
Band 1 MW = 2001 bp
Band 2 MW = 1550 bp

Lane 4: /, , Empty lane
(No bands detected)

Lane 5: Blood/Stain, Unknown B0950519026K1/0
Band 1 MW=1338 bp

Lane 6: /, , Empty lane
(No bands detected)

Lane 8: MaleFr/Stain, Unknown B0950519026Q1-Q2M/0
Band 1 MW=1537 bp
Band 2 MW=1328 bp
Band 3 MW=1212 bp

Lane 9: /, , Empty lane
(No bands detected)

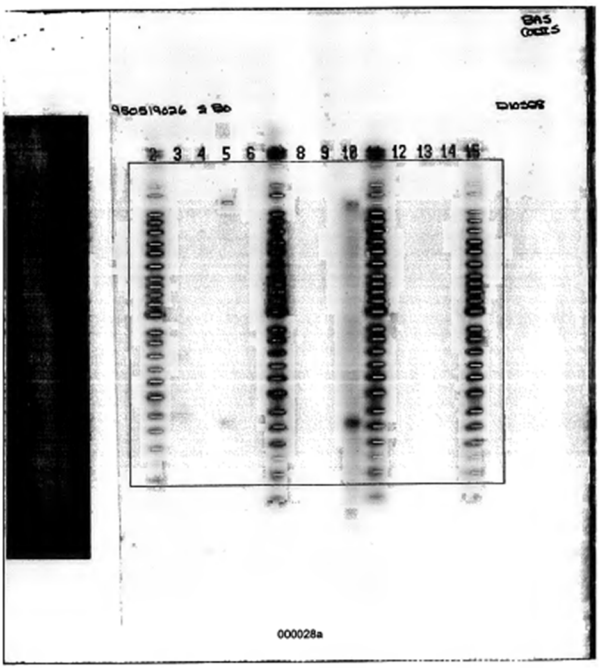
Lane 10: FemaleF/Stain, Unknown B0950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr/Stain, Unknown B0950519026 Q5M/0
(No bands detected)

Lane 13: /, , Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown B0950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



Autoradiogram: 950519026E

DNA Probe: D10S28

MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS

Im. Analysis: 28-OCT-1997

Markers used: 27

Lane 3: Control/Digest, , K562
Band 1 MW = 1773 bp
Band 2 MW = 1200 bp

Lane 4: /, , Empty lane
(No bands detected)

Lane 5: Blood/Stain, Unknown B0950519026K1/0
Band 1 MW=5874 bp
Band 2 MW=1130 bp

Lane 6: /, , Empty lane
(No bands detected)

Lane 8: MaleFr/Stain, Unknown B0950519026Q1-Q2M/0 Manual Placement Band 2
Band 1 MW=3221 bp
Band 2 MW=987 bp
Band 3 MW=1212 bp

Lane 9: /, , Empty lane
(No bands detected)

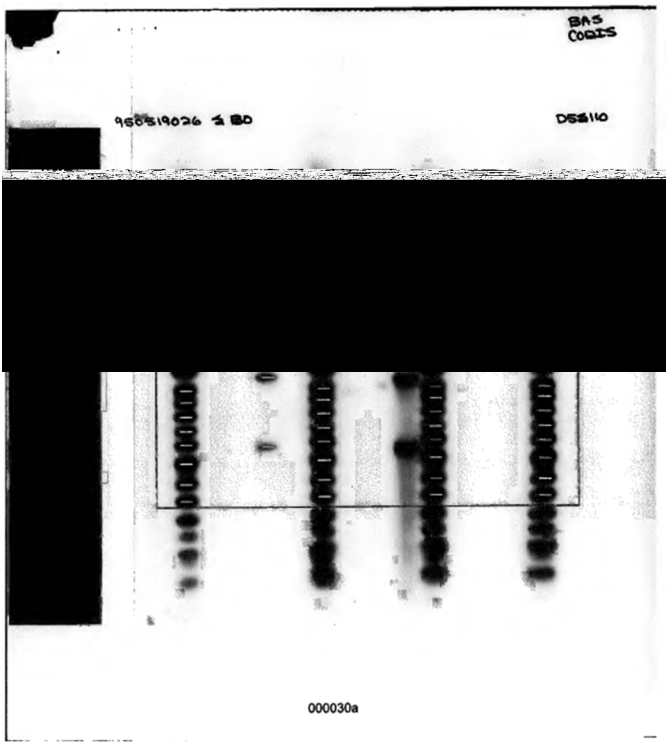
Lane 10: FemaleF/Stain, Unknown B0950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr/Stain, Unknown B0950519026 Q5M/0
(No bands detected)

Lane 13: /, , Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown B0950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



Autoradiogram: 950519026F

DNA Probe: D5S110

MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS

Im. Analysis: 28-OCT-1997

Markers used: 19

Lane 3: Control/Digest, , K562
Band 1 MW = 3805 bp
Band 2 MW = 3003 bp

Lane 4: /, , Empty lane
(No bands detected)

Lane 5: Blood/Stain, Unknown B0950519026K1/0

Band 1 MW=2240 bp
Band 2 MW=1474 bp

Lane 6: /, , Empty lane
(No bands detected)

Lane 8: MaleFr/Stain, Unknown B0950519026Q1-Q2M/0
Band 1 MW=3282 bp
Band 2 MW=2226 bp
Band 3 MW=2009 bp

Lane 9: /, , Empty lane
(No bands detected)

Lane 10: FemaleF/Stain, Unknown B0950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr/Stain, Unknown B0950519026 Q5M/0
(No bands detected)

Lane 13: /, , Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown B0950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder

FBI LABORATORY REPORT (CE 3)
(JANUARY 2, 1996)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To:

T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser Street
State College, Pennsylvania 16801

FBI File No.: 95A-HQ-1122440

Lab No.: 50519026 S/D ZJ UF QJ BO

Reference: Communication dated May 16, 1995

Your No.: 3295-06687

Re: UNKNOWN SUSPECT;
T.L. — VICTIM;
RAPE/ASSAULT

Specimens received: May 19, 1995

RESULT OF EXAMINATION:

This report supplements and completes the FBI Laboratory reports dated September 20, 1995 and October 4, 1995. Please refer to the September 20, 1995 report for a listing of the specimens.

No blood was identified on specimens Q1, Q2, or Q5.

Semen was identified on specimens Q1, Q2, and Q5. Specimens Q3 and Q4 were examined for the presence of semen; however, none was found.

Deoxyribonucleic acid (DNA) profiles for genetic loci: D2S44, D17S79, D1S7, D4S139, D10S28, D5S110 were developed from Hae III digested high molecular weight DNA extracted from specimens Q1/Q2 (combined for analysis), Q5, and K1. These profiles were compared to DNA profiles obtained from specimen K5 (blood sample from Mike Winters) in FBI Laboratory case number 50130021 S ZJ UF BO. Based on the results, the DNA profiles from specimens Q1/Q2 and Q5 do not match the DNA profile from the blood sample of Mike Winters and therefore could not have been contributed by this individual.

Specimens Q1 through Q48 and K1 through K3 are being returned under separate cover by registered mail. The probed membrane and any remaining processed DNA from specimens analyzed by DNA analysis are also being returned to you. The processed DNA can be found in a plastic ziplock package marked: "PROCESSED DNA: SHOULD BE REFRIGERATED/FROZEN". It is recommended that this package be kept refrigerated/frozen and isolated from evidence which has not yet been examined.

LETTER FROM STATE COLLEGE POLICE DEPARTMENT (CE 4) (SEPTEMBER 8, 1999)

BOROUGH OF STATE COLLEGE
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
118 South Fraser Street State College, PA 16801
814 / 234-7150 FAX 814 / 231-3070

THOMAS R, KING
Chief of Police

Dr. Jennifer Lindsay-Smith
Federal Bureau of Investigations
DNA Analysis -Unit # 1
935 Pennsylvania Ave., NW
Washington, D. C. 20535

Re: SCPD Inc. # 3295-06687
Victim: T.L.
FBI File # 95A-HQ-1122440
Lab # 50519026 S/D ZJ OF QJ BO

Dear Dr. Smith:

I am writing this letter with expectations that you can assist me with this case investigation. Back in the spring of 1995 I sent the above case to you for forensic examinations. As per your report dated 01/02/1996 your examiners developed DNA profiles from specimens believed to have been deposited by the unidentified suspect in this case. I have included a copy of that report.

My request is simply this, can you assist me in having the DNA prints developed in this case entered

into the Combined DNA Identification System (CODIS). I am aware that the FBI is currently entering this data into the system but am unaware if this specific case has been entered. The statute of limitations for this rape case will expire in the spring of 2000. My fear is that if the case is not entered until later and a comparison is found that sufficient time will not exist to prosecute this violent crime. Can you forward this request to the appropriate department with some personal encouragement to enter this case into CODIS so that the DNA can be compared to the suspect database?

Any assistance you can provide will be greatly appreciated. If you have any questions feel free to call me at (814) 278-4741.

Sincerely,

THOMAS R. KING
CHIEF OF POLICE

Thomas N. Jordan
Detective

LETTER FROM DETECTIVE R.W. RALSTON
(CE 6)
(NOVEMBER 19, 2002)

BOROUGH OF STATE COLLEGE
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

THOMAS R, KING
Chief of Police

Assistant Director
Federal Bureau of Investigations
10th Street and Pennsylvania Ave., NW
Washington, D. C. 20535

Re: SCPD Inc. # 3295-06687
Victim: T.L.
FBI File # 95A-HQ-1122440
Lab # 50519026 S/D ZJ OF QJ BO

Sexual Assault -VVO
Assault - VVO

Dear Sir:

In May 1991, T.L. was brutally beaten and raped in State College. Evidence was obtained from T.L. at that time, and the FBI was able to locate and identify a DNA profile for the suspect. The following DNA profile for genetic loci D2S44, D17S79, D1S7, D10S28 and D5S110 was developed from HAE III digested high molecular weight DNA from specimens

Q1/Q2 and Q5, which are vaginal/genital swabbings. DNA was also developed from specimen K1, whole blood from victim T.L. As the result of this examination, a John Doe warrant, which was based on the suspect DNA profile, was obtained by Det. T.N. Jordan. The DNA profile was also entered in CODIS.

As per a telephone conversation with Alan Guisti on 11/14/02, I am resubmitting specimens Q1/Q2 and Q5 for additional DNA testing utilizing the STR procedure so that the STR profile can be entered into CODIS. Also included is a known specimen of whole blood obtained on 11/14/02 from T.L.'s former boyfriend, Todd Kirsten. In addition, will the new STR result be entered into CODIS by your agency?

Please analyze and compare the DNA profiles obtained from specimens Q1/Q2, Q5 and compare with the DNA profile obtained from the known sample from Todd Kirsten.

Any questions regarding this matter should be directed to Det. Ralph W. Ralston at 814/278-4742.

Sincerely,

THOMAS R. KING
CHIEF OF POLICE

/s/ R.W. Ralston
Detective R.W. Ralston
Detective

FBI ACKNOWLEDGMENT LETTER (CE 7)
(NOVEMBER 19, 2002)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535
Rm. 3905

To:

Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Date: November 21, 2002

Reference: Communication dated November 14, 2002

Your No.: 3295-06687

Title: UNSUB;
T.L. — VICTIM;
SEXUAL ASSAULT;

Date specimens received: November 19, 2002

The FBI Laboratory has received your request for examination. The accompanying items of evidence have been inventoried. The provided listing and description of the submitted items may be subject to change when the examination phase begins. If changes are made, they will be reflected in the Report of Examination issued by the examiner making the change.

Each examiner assigned to your request will issue a separate Report of Examination that will address the results of their expertise. If there is a change in the status of your investigation that would

have an effect on the prioritization of your request, such as court deadlines, dismissal of charges, or guilty pleas, please notify Heather Seubert at (202) 324-6047.

Specimens:

K1 — Blood sample from Todd Kirsten

RESUBMISSION OF SPECIMENS FROM FBI LABORATORY NUMBER 950519026 ZJ UF QJ BO:

Q1-Q2 — Vaginal Swabs

Q5 — Genital swabbing

FBI LABORATORY RESULTS FROM RESUBMISSION OF SPECIMENTS FROM (CE 8) (JANUARY 21, 2004)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To:

Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440-9

Lab No.: 021119008 NR

Reference: Communication dated November 14, 2002

Your No.: 3295-06687

Title: UNSUB;
T.L. — VICTIM;
SEXUAL ASSAULT;

Date specimens received: November 19, 2002

Specimens received into the DNA Analysis Unit I under cover of communication dated November 14, 2002 and Laboratory number 021119008 NR:

K1 — Blood sample from Todd Kirsten

RESUBMISSION OF SPECIMENS FROM F.B.I. LABORATORY NUMBER 950519026 ZJ UF QJ BO:

Q1-Q2 — Vaginal swabs

Q5 — Genital swabbing

Results of Examinations:

Deoxyribonucleic acid (DNA) was isolated from specimens Q1-Q2F (female fraction from specimens Q1 and Q2, which were combined for analysis), and Q1-Q2M (male fraction from specimens Q1 and Q2, which were combined for analysis) and subjected to DNA typing by the polymerase chain reaction (PCR) at the thirteen (13) short tandem repeat (STR) loci and amelogenin sex typing locus of the AmpFlSTR® Profiler Plus™ ID and AmpFlSTR® COfiler™ PCR Amplification Kits. DNA amplification via the PCR of the nine (9) AmpFlSTR® Profiler Plus™ ID STR loci was only performed on DNA obtained from specimen K1 (KIRSTEN). The DNA typing results are detailed below.

AmpFlSTR® Profiler Plus™ ID

SPECIMEN	Q1-Q2F mc	Q1-Q2M	K1 (KIRSTEN)
D3S1358	15, 17	15, 18	15, 18
vWA	16, 18	17, 17	14, 19
FGA	23, 24	21, 22	22, 22.2
D8S1179	13, 15	13, 15	12, 14
D21S11	30, 31.2	28, 31.2	31, 32.2
D18S51	16, 19	12, 12	10, 12
D5S818	12, 13	12, 13	9, 12
D13S317	8, 13	8, 12	12, 12
D7S820	10, 11	11, 11	7, 12

mc = major contributor

SPECIMEN	Q1-Q2F mc	Q1-Q2M
D3S1358	15, 17	15, 18
D16S539	11, 12	9, 12
THO1	8, 9.3	6, 7
TPOX	8, 11	9, 11
CSF1PO	10, 11	11, 12
D7S820	10, 11	11, 11

The STR typing results from specimen Q1-Q2M do not match specimen K1 (KIRSTEN) and could not have been contributed by this individual.

The STR typing results for specimen Q1-Q2F indicate the presence of DNA from more than one individual. The profile from the major contributor is listed in the above table. The source of specimen K1 (KIRSTEN) can be excluded as a contributor of the DNA obtained from specimen Q1-Q2F.

The typing results from the amelogenin locus (for gender determination) indicate the presence of male DNA in the DNA obtained from specimens Q1-Q2M and K1 (KIRSTEN).

The typing results from the amelogenin locus indicate the presence of female DNA in the DNA obtained from specimen Q1-Q2F; however, the typing results were inconclusive for the presence of male DNA obtained from specimen Q1-Q2F.

These results will be maintained by the FBI Laboratory for possible future comparisons if requested. A known blood sample from the victim and suspect(s) should be submitted for comparison. Also, the DNA profile from Q1-Q2M will be entered

into the Combined DNA Index System (CODIS) and maintained by the FBI Laboratory for future comparisons.

No other DNA examinations were conducted.

Remarks:

This report contains the results of the DNA examinations, and completes the requested examinations. The submitted items and the probed DNA membrane will be returned to you under separate cover by overnight express. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis is also being returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a refrigerator/freezer and isolated from evidence that has not been examined.

Heather Seubert
DNA Analysis Unit I
703-632-7488

/s/ Anthony {last name illegible}
Reviewer

Date: January 22, 2004

LETTER FROM DETECTIVE R.W. RALSTON (FEBRUARY 21, 2003)

BOROUGH OF STATE COLLEGE
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

THOMAS R, KING
Chief of Police

U.S. Department of Justice
Federal Bureau of Investigation Laboratory
Evidence Control Center
2501 Investigation Parkway
Quantico, VA 22135

ATTN: DNA Laboratory

RE: SCPD Inc. #3295-06687
FBI File No. 95A-HQ-1122440
Case No. 021119008 NR

To whom it may concern:

Recently I received the results of DNA testing on evidence that was resubmitted on 11/19/02. As a result of that testing, a new STR DNA profile was developed for the suspect. At that time, Heather Seubert of FBI DNA Analysis Unit I requested a new whole blood sample from victim T.L. so that T.L.'s known blood could be analyzed and compared with the earlier findings.

Enclosed find two EDTA vacutainers containing known samples of T.L.'s whole blood. Please analyze for DNA and compare with Q1-Q2F mc and Q1-Q2M obtained in the prior analysis.

Any questions regarding this matter should be directed to Det. Ralph W. Ralston at 814/278-4742.

Sincerely,

/s/ R.W. Ralston
Detective R.W. Ralston
Detective

[handwritten text:

900 Block of the South Pugh Street

Sex Offenses V.0

Assault Offenses V.0

95A-HQ-1122440-10]

FBI BLOOD SAMPLE REPORT (CE 10)
(MARCH 16, 2004)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

RECORDED trm
Wright Seubert

To:

Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440

Lab No.: 040224003 PG NR

Reference: Communication dated February 21, 2003

Your No.: SCPD INC. #3295-06687

Title:

T.L. — VICTIM;
SEX OFFENSES

[HANDWRITTEN: K2 to PCR 3/14/04 RPW]

Date specimens received: February 24, 2004

Specimens:

K2 — Blood sample from T.L.

FBI RESULT EXAMINATION (CE 11)
(OCTOBER 20, 2004)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

RECORDED trm
Wright Seubert

To:

Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Reference: Communication dated February 21, 2003

Case ID No.: 95A-HQ-1122440

Lab No.: 040224003 PG NR

Date specimens received: February 24, 2004

The following specimen was examined in the DNA Analysis Unit I:

K2 — Blood sample from T.L.

This report includes the results of the DNA examinations.

Results of Examinations:

Deoxyribonucleic acid (DNA) was isolated from specimen K2 and subjected to DNA typing by the polymerase chain reaction (PCR) at the amelogenin sex typing locus, the nine (9) short tandem repeat (STR) loci of the AmpFlSTR® Profiler Plus™ ID and

the six (6) STR loci of the AmpFlSTR® COfiler™ PCR Amplification Kits.

The STR typing results from specimen K2 (T.L.) were compared to the STR typing results from specimen Q1-Q2F [submitted under FBI Laboratory Number 021119008 NR and reported in FBI Laboratory report dated January 21, 2004] (results reproduced in the table below for reference purposes).

AmpFlSTR® Profiler Plus™ ID

SPECIMEN	Q1-Q2F mc	K2
D3S1358	15, 17	15, 17
vWA	16, 18	16, 18
FGA	23, 24	23, 24
D8S1179	13, 15	13, 15
D21S11	30, 31.2	30, 31.2
D18S51	16, 19	16, 19
D5S818	12, 13	12, 13
D13S317	8, 13	8, 13
D7S820	10, 11	10, 11

mc = major contributor

AmpFlSTR® COfiler™

SPECIMEN	Q1-Q2F mc	K2
D3S1358	15, 17	15, 17
D16S539	11, 12	11, 12
THO1	8, 9.3	8, 9.3
TPOX	8, 11	8, 11
CSF1PO	10, 11	8, 11
D7S820	10, 11	10, 11

Based on the typing results from the amelogenin locus (for sex determination), female DNA is present in the DNA obtained from specimen K2 (T.L.).

The STR typing results for specimen Q1-Q2F indicate the presence of DNA from more than one individual. Based on the STR typing results and to a reasonable degree of scientific certainty, the source of specimen K2 (T.L.) is the major contributor of the DNA obtained from specimen Q1-Q2F.

No other DNA examinations were performed.

Remarks:[1]

Upon completion of all the requested examinations, the submitted items will be returned to you

[1] This opinion is based upon the outcome of a statistical calculation in which the probability of selecting an unrelated individual at random from an African American, Caucasian, Southeastern Hispanic, or Southwestern Hispanic population having a DNA profile matching the major contributor of the DNA obtained from the questioned specimen(s) was determined to be equal to, or less than 1 in 280,000,000,000 individuals.

under separate cover. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis will also be returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a refrigerator/freezer and isolated from evidence that has not been examined.

/s/ Heather Seubert
DNA Analysis Unit I
703-632-7488

STATE COLLEGE POLICE DEPARTMENT
INITIAL RFLP RESULTS
(CE 14)
(MARCH 3, 2004)

BOROUGH OF STATE COLLEGE
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

FAXOGRAM

To:

Heather Seubert
Company: DNA Unit
Fax No.: 703-632-7481

MESSAGE:

Heather—

Following are the RFLP results that were initially obtained in the T.L. case. The arrest warrant is based upon that DNA profile. Can you interpret the new STR results into a format that I can use to amend the warrant?

and

Also following are FBI lab reports from a 1987 murder that remains unsolved. I am interested in determining what they mean. At issue is a pair of sneakers (Q71 and Q72; SCPD Item #84) that were obtained from a suspect. The FBI found blood on one

of the shoes and determined that "preliminary blood workups reveal that this blood is the same type and RH factor as the blood of the victim; however for a more definitive analysis, blood in its liquid form is needed." The other lab report dated the same day says, "Human blood of group Hp 2-1" was identified on the shoe.

Can you or anyone else shed some light on the blood analysis? I would hate to think that this case was solved years ago.

My direct number is 814/278-4742. My e-mail address is rralston@statecollegepa.us

Thanks in advance.

Signed:

/s/ Det. R.W. Ralston

Company:

State College Police Department
243 South Allen Street
State College, PA 16801
Fax No.: (814) 231-3070
Phone No.: (814) 234-7150

Date: 3/3/04
Time: 1500

This Faxogram has a total of 15 pages including the cover page.

FBI LABORATORY REPORT
(JANUARY 2, 1996)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To:

T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser Street
State College, Pennsylvania 16801

FBI File No.: 95A-HQ-1122440

Lab No.: 50519026 S/D ZJ UF QJ BO

Reference: Communication dated May 16, 1995

Your No.: 3295-06687

Re: UNKNOWN SUSPECT;
T.L. — VICTIM;
RAPE/ASSAULT

Specimens received: May 19, 1995

Result of Examination:

This report supplements and completes the FBI Laboratory reports dated September 20, 1995 and October 4, 1995. Please refer to the September 20, 1995 report for a listing of the specimens.

No blood was identified on specimens Q1, Q2, or Q5.

Semen was identified on specimens Q1, Q2, and Q5. Specimens Q3 and Q4 were examined for the presence of semen; however, none was found.

Deoxyribonucleic acid (DNA) profiles for genetic loci: D2S44, D17S79, D1S7, D4S139, D10S28, D5S110 were developed from Hae III digested high molecular weight DNA extracted from specimens Q1/Q2 (combined for analysis), Q5, and K1. These profiles were compared to DNA profiles obtained from specimen K5 (blood sample from Mike Winters) in FBI Laboratory case number 50130021 S ZJ UF BO. Based on the results, the DNA profiles from specimens Q1/Q2 and Q5 do not match the DNA profile from the blood sample of Mike Winters and therefore could not have been contributed by this individual.

[HANDWRITTEN: Heather this is the profile used to identify the suspect on arrest warrant.]

FBI SEROLOGICAL ANALYSIS REQUEST
(JUNE 3, 1987)

June 3, 1987

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To:

Mr. Elwood G. Williams, Jr.
Chief of Police
118 South Fraser Street
State College, Pennsylvania 16801

Attention:

Mr. Thomas N. Jordan
Investigator
Criminal Investigations

Re:

DANA J. BAILEY – VICTIM
HOMICIDE

FBI FILE NO. 70313049 S/D WK UF MW PR UI
LAB. NO. 70323009 S WK UF MW
YOUR NO. 687-02827

Examination requested: Serological Analysis

Specimen submitted:

One pair of high top Nike sneakers which appear to have blood stain on the left shoe near the third lace hole from bottom. Sneakers are the property of Anthony Eramo.

Specimen Number: Q84 — Nike high top sneakers

> This report outlines the preliminary results of the laboratory analysis of the dried blood which was found on the left sneaker of item Q84. Preliminary blood workups reveal that this blood is the same type and RH factor as the blood of the victim; however, for a more definitive analysis blood in its liquid state is needed. If more blood is provided a comprehensive enzyme-antibody analysis can be done.

[Handwritten note: Heather-- "I BELIEVE THIS IS A TYPO — IT SHOULD PROBABLY READ Q71. '84' is the number we assigned to the evidence."]

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To:

Mr. Elwood G. Williams, Jr.
Chief of Police
118 South Fraser Street
State College, Pennsylvania 16801

Attention:

Mr. Thomas N. Jordan
Investigator
Criminal Investigations

Re:

UNKNOWN SUBJECT
DANA J. BAILEY – VICTIM
HOMICIDE

FBI FILE NO. 70313049 S/D WK UF MW PR UI
LAB. NO. 70323009 S WK PR
70506055 S/D WK VQ UF UI
70514062 SWK UF UI MA
YOUR NO. 687-02827

Examination requested: Addressee

Reference: Letters dated 3/12/87, 3/21/87, 5/5/87 and 5/13/87

Examination requested: Hairs and Fibers – Serological Analysis – Materials Analysis – Toolmarks – Shoe Print – Fingerprint

Specimens personally delivered by Investigator Thomas M. Hart on March 23, 1987, under cover of letter dated March 21, 1987 (70323009 S WK PR):

Q48 — Screen

ALSO SUBMITTED:

Two (2) glass globes
Thirty-one (31) latent lifts

Specimens personally delivered by Investigator T. M. Hart on May 6, 1987, under cover of letter dated May 5, 1987 (70506055 S/D WK VQ UF UI):

Q49 — Sock (69)

Q50 — Sock (70)

Q51 — Toilet paper and dispenser (58-C)

Q52 — Sweater (25-G)

Q53 — Blouse (25-G)

Q54 — Sweater (67-D)

Q55 — Towel (67-C)

Q56 — Cigarette butt (67-B)

Q57 — Rope from victim's neck (71)

Q58 — Electrical cord from victim's left arm (72)

Q59 — Rope from victim's left ankle (73)

Q60 — Electrical cord from victim's right arm (74)

Q61 — Rope from victim's right ankle (75)

Q62-Q63 — Tennis shoes (77-B)

Q64 — Piece of molding (46-C)

Q65 — Knife (46-F)

Q66-Q70 — Photographs showing questioned shoe prints

ALSO SUBMITTED:

Tampon box (46-D)

Cellophane wrapper (46-E)

Plastic bag containing fecal matter (46-G)

Green piece of paper (46-H)

Flower (46-I)

Grave marker (67-B)

Photographs of crime scene

Negatives of questioned shoe prints and crime scene

Specimens received May 14, 1987, under cover of letter dated May 13, 1987 (70514062 S WK UF UI MW):

Q71-Q72 — Pair of sneakers (Item #84)

Q73-Q74 — Pair of sneakers (Item #85)

Result of examination:

This report supplements information previously furnished to your department under Laboratory number 70313049 S/D WK UF MW PR UI. For a listing of the items submitted under that Laboratory number please refer to the report dated May 19, 1987.

No hairs or fibers of apparent evidentiary value were found on the Q48 screen.

As indicated in Laboratory number 70313049 S/D WK UF MW PR UI, report dated May 19, 1987 and per discussion between Supervisory Special Agent Wayne W. Oakes and Investigator Hart, no specific hair examinations were conducted on the items submitted under Laboratory number 70506055 S/D WK VQ UF UI. Debris possibly containing hairs and/or textile fibers removed from certain of these items has been placed in pillboxes and will be preserved for possible comparisons.

The light brown hairs of Caucasian origin found on the bottom of the Q71 shoe are not suitable for significant comparison purposes. No hairs were found on Q72 through Q74.

No fibers like those comprising the Q1 section of carpet were found on Q71 through Q74.

It should be noted that with regard to the shoe print examination results, specimens Q45 through Q123, K5 and K6 were submitted under Laboratory number 70325049 D UI and are listed in report dated May 15, 1987.

It was determined that the following questioned shoe prints were not made by the following listed known shoe(s):

Pring Known Shoe

Questioned Print	Known Shoe
Q20	Q73, Q74
Q52 through Q55	Q73, Q74
Q93, Q94	Q71, Q73, Q74
Q95	Q72, Q73, Q74

Q96	Q71, Q73, Q74
Q97	Q72, Q73, Q74
Q98	Q71, Q73, Q74
Q99	Q72, Q73, Q74
Q100, Q101	Q72, Q74
Q102, Q103	Q71, Q73, Q74
Q104, Q105	Q73, Q74
Q106, Q107	Q72, Q73, Q74
Q110, Q111	Q72, Q73, Q74
Q123	Q73, Q74

The following specimens lack sufficient detail and clarity or are too limited for adequate shoe print comparisons:

Q22

Q108

Q109

Q112 through Q166

Q118 through Q122

Due to the lack of sufficient detail, the limited nature of the questioned shoe prints, or the lack of a sufficient quantity of identifying characteristics, it could not be definitely determined whether the remaining shoe prints on specimens Q20, Q21, Q49 through Q55, Q93 through Q107, Q110, Q111, Q117 and Q123 were made by the Q71 through Q74 shoes. However, from the examinations conducted, it was determined that:

1) the number one shoe print on specimens Q20 and Q52 through Q55 and Q123 corresponds in design and approximate size to the Q72 right shoe

2) the number two shoe print on specimens Q20, and Q52 through Q55 and Q123 corresponds in design and approximate size to the Q71 left shoe

3) the Q21 shoe print corresponds in limited design to the Q71 through Q74 shoes

4) the Q49 through Q51 and Q117 shoe print corresponds in limited design to the Q71 through Q74 shoes

5) The Q93, Q94, Q102 and Q103 shoe print corresponds in design and approximate size to the Q72 right shoe

6) the Q95 and Q99 shoe print correspond in design and approximate size to the Q71 left shoe

7) the Q96 and Q98 shoe print correspond in limited design to the Q72 right shoe

8) the Q97, Q110, and Q111 shoe print correspond in design and approximate size to the Q71 left shoe

9) the Q100 and Q101 shoe print correspond in design to the Q71 and Q73 left shoes

10) the Q104 and Q105 number one shoe print corresponds in design, approximate size and general wear indicating the Q72 right shoe could have made this shoe print

11) the Q104 and Q105 number two and three shoe prints correspond in design and approximate size to the Q71 left shoe

12) the Q106 and Q107 shoe prints correspond in design and approximate size to the Q71 left shoe

Photographs of the submitted evidence have been retained.

Due to a lack of sufficient gross and microscopic characteristics, the damaged areas of the Q33 through Q35 specimens are of no value for toolmark identification purposes. Therefore, it was not possible to determine if the Q47 screwdriver marked these specimens. The Q48 screen has been cut by a sharp-bladed tool(s), such as a knife. These cuts could not have been produced by the Q47 screwdriver.

Human blood of group "Hp 2-1" was identified on specimen Q71. No blood was found on specimen Q72.

The white material adhering to the sole of specimen Q71 exhibits characteristics that indicate that this material is consistent with having originated from a source of joint compound.

This material is of limited value for significant comparison purposes.

You will be advised of the results of the other examinations as well as the disposition of the submitted items by a subsequent report.

LETTER FROM DETECTIVE R.W. RALSTON (JUNE 22, 2004)

BOROUGH OF STATE COLLEGE
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

THOMAS R, KING
Chief of Police

U.S. Department of Justice
Federal Bureau of Investigation Laboratory
Evidence Control Center
2501 Investigation Parkway
Quantico, VA 22135

ATTN: DNA Laboratory

RE: SCPD Inc. #3295-06687
FBI File No. 95A-HQ-1122440
Case No. 021119008 NR

To whom it may concern:

Recently I received the results of DNA testing on evidence that was resubmitted on 11/19/02. As a result of that testing, a new STR DNA profile was developed for the suspect and entered into CODIS. On 2/21/04, new samples of the victim's blood were submitted for DNA analysis. Heather Seubert was the analyst that performed the earlier analyses.

Recently, a tip on a potential suspect, Joshua Hettinger, was received. Hettinger was contacted and agreed to be interviewed. He also provided two saliva samples for DNA analysis and eventual comparison to the DNA profile of the known suspect.

Enclosed find two collection containers containing known samples of Hettinger's saliva. Please analyze for DNA and compare with existing results.

Any questions regarding this matter should be directed to Det. Ralph W. Ralston at 814/278-4742.

Sincerely,

/s/ R.W. Ralston
Detective R.W. Ralston
Detective

[HANDWRITTEN 95A-HQ-1122440-11

VI0 #1-Sex Offenses

VI0 #2-Assault Offenses]

SALIVA SAMPLE FROM JOSHUA HETTINGER
(CE 16)
(JUNE 29, 2004)

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

RECORDED trm
Wright Seubert

To:

Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440
Lab No.: 040624016 PG NR

Date: June 29, 2004

Reference: Communication dated June 22, 2004

Your No.: 3295-06687

Title: JOSHUA HETTINGER — SUSPECT;
T.L. — VICTIM;
SEXUAL ASSAULT;

Date specimens received: June 24, 2004

Specimens:

K3 — Saliva sample from JOSHUA HETTINGER

"[Handwritten notes :

"K3 rec'd from ECC 6/28/04"
"K3 from CAO to PRL 8/30/04 / HSB"
"K3 extracts sent to CAG 9/24/04 / HSB"]

FBI SPECIMEN DNA ANALYSIS REPORT (CE 17) (JUNE 27, 2004)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
QUANTICO, VA 22135

To:

Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440-13

Lab No.: 040624016 PG NR

Date: June 29, 2004

Reference: Communication dated June 22, 2004

Your No.: 3295-06687

Title: JOSHUA HETTINGER — SUSPECT;
T.L. — VICTIM;
SEXUAL ASSAULT;

Date specimens received: June 24, 2004

The following specimen was received into the DNA Analysis Unit I:

K3 — Saliva sample from JOSHUA HETTINGER

This report includes the results of the DNA examinations.

Results Of Examinations:

Deoxyribonucleic acid (DNA) isolated from specimen K3 was subjected to DNA typing by the polymerase chain reaction (PCR) at the amelogenin sex typing locus, the nine (9) short tandem repeat (STR) loci of the AmpFlSTR®[1] Profiler Plus™ ID and the six (6) STR loci of the AmpFlSTR® COfiler™ PCR Amplification Kits.

The STR typing results from specimen K3 were compared to the STR typing results from specimen Q1-Q2M [submitted under FBI Laboratory Number 021119008 NR and reported in FBI Laboratory report dated January 21, 2004].

Based on the typing results from the amelogenin locus (for sex determination), male DNA is present in the DNA obtained from specimen K3.

Based on the STR typing results, the source of specimen K3 is excluded as a potential contributor to the DNA obtained from specimen Q1-Q2M.

No other nuclear DNA examinations were conducted.

---

[1] The AmpFlSTR® Profiler Plus™ ID PCR Amplification Kit includes the loci D3S1358, vWA, FGA, D8S1179, D21S11, D18S51, D5S818, D13S317, and D7S820. The AmpFlSTR® COfiler™ PCR Amplification Kit includes the loci D3S1358, D16S539, TH01, TPOX, CSF1PO, and D7S820. Due to differences in sample condition and quantity, amplification may not be attempted using both kits.

Remarks:

The submitted specimen will be returned under separate cover of communication. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis will also be returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a refrigerator/freezer and isolated from evidence that has not been examined.

/s/ Heather Seubert
DNA Analysis Unit I
703-632-7488

PARABON SNAPSHOT DNA PHENOTYPING (CE 19)

PARABON NANOLABS
SNAPSHOT DNA PHENOTYPING

A. Submitting Organization Information

Submitting Organization: State College Police Department
Your Name: Det. Stephen Bosak
Tel: (814) 234-7150
Email: sbosak@statecollegepa.us
Submitting on Behalf of Agency/Company: State College Police Department
Agency Contact: Det. Stephen Bosak

B. Snapshot Request

Client: Parabon NanoLabs, Inc.
Contact: Kaitlin Echols
Tel: 703-689-9689 x205
Fax: 703-689-9695
Email: snapshot-cases@parabon.com

Request For:

☑ Forensic Sample Genotyping Protocol

D. Sample Description

Agency Case ID: 95SC06687

Forensic Lab Case ID: 95SC06687

Evidence ID: FBI Item #Q1-Q2M

DNA Extract Vial ID: Q1-Q2M

Method & Date of Extraction: Organic Differential — 8/8/2003

Method & Date of Quantitation: Slot Blot — 8/11/2003

Original DNA Origin: Vaginal Swabs

Sample is: dsDNA

Elution Buffer: ☑TE Buffer

Concentration: ☑1 ng/µl

Volume: ☑16 µl

Total ng's Submitted: ~16

Permission to consume ENTIRE submitted extract:

☑ NO, please subsample 4 ng and return the remaining DNA to the following address.

Return Shipment Info:

Attention: Det. Stephen Bosak
Email: sbosak@statecollegepa.us
Phone: 814-408-7150
Address: 243 South Allen Street, State College, PA 16801

Returned Sample Storage Preference:

☑TE Buffer

E. Sample Shipping Instructions

Instructions for Sample Submission Form:

1. Complete submission form and place a copy inside the shipping container.

2. Email the tracking number and a copy of this completed form to:

snapshot-cases@parabon.com

dnas@dnasolutionsusa.com

Instructions for Specimen:

1. Label each tube/sample with Snapshot Case ID and date of sample preparation.

2. Each sample should be sealed properly and placed inside it's own sterile plastic bag. (Double bagging is recommended)

3. Samples and storage materials should then be properly packaged and stabilized to prevent moving inside the shipping container during transit. (Double boxing is also recommended).

4. Send shipment to the address below via a traceable carrier for overnight delivery. Do not ship over weekends, holidays or during weather delays. It is recommended to use FedEx Overnight service whenever possible within the US. For international shipments, it is recommended to use World Courier Services or FedEx Worldwide whenever possible.

Ship to:

DNA Solutions
755 Research Parkway
Suite 510
Oklahoma City, OK 73104
Phone: (405) 271-6033

Shipping conditions for DNA:

All efforts should be made to keep the sample's current storage temperature consistent during the entire shipment process. (Shipping samples overnight at - 20°C, 2-8°C or ambient temperatures are all recommended shipment temperatures)

F. DNA Solutions Testing & Data Release Requirements

Parabon is requesting DNA Solutions to:

(1) Genotype the sample.

(2) Use Illumina's GenomeStudio software to convert the raw data to Top Allele format, which reports the genotypes as A/C/G/T and send this data to Parabon NanoLabs via a secure upload site that will be provided by Parabon via email.

(3) Send Parabon the following: (a) Raw data (iScan data), (b) Final report (LogRR, BAF), (c) Full Data Table (Top Allele Format), (d) Sample Table (with Call Rate and gender estimate), (e) Export file for the internal control, (f) GenomeStudio file.

PARABON SNAPSHOT
DATA FILE TRANSFER REQUEST (CE 20)
(NOVEMBER 24, 2020)

PARABON® SNAPSHOT® DATA FILE TRANSFER REQUEST & AUTHORIZATION FORM

Snapshot Case ID:SCPD-PA-95SC06687-Snapshot
Agency Name: State College Police
Agency Address: 243 South Allen Street, State College, PA 16801

The raw genotype data produced during the Snapshot analysis contains federally protected medical data. Particularly because there are individuals and organizations that are critical of the use of such data for investigative genetic genealogy, Parabon has established strict policies and procedures to help protect these data from unintended disclosure and/or misuse. Accordingly, Parabon will transfer the raw genotype data file associated with the referenced Case via Parabon's secure portal to one of the following Agency Representatives: (1) the agency's cognizant executive who was elected, appointed or hired into the leadership position, (2) the agency's forensic laboratory DNA supervisor, (3) the agency's criminal investigations representative who has oversight for the case, such as a detective/ investigator or division supervisor.

To ensure the Agency's senior-most leadership is aware that the Agency has requested, and upon transfer is going to be responsible for the proper use, handling and storage of a raw genetic data file, please have the cognizant executive for your Agency,

who was elected, appointed or hired into the leadership position, sign this document. For this document, we define a Cognizant Executive to be the Chief of Police, Sheriff, Attorney General, District Attorney, or Forensic Director, who is ultimately responsible for the actions of the Agency.

Cognizant Executive Acknowledgement & Request

I, John F. Gardner, am the Cognizant Executive for the aforementioned Agency. I hereby request Parabon NanoLabs, Inc. release the raw genotype data file for the case referenced above to the following representative associated with my Agency:

☑ Agency's Criminal Investigations Representative (e.g., Detective, Investigator or Supervisor)

Printed Name: Detective Stephen M. Bosak
Official Title: Detective
Official Email Address: sbosak@statecollegepa.us
Official Phone Number: (814) 234-3160

Printed Name of Cognizant Executive: John F. Gardner
Official Title of Cognizant Executive: Chief of Police
Signature of Cognizant Executive: /s/ John F. Gardner
Date: 11/24/20
Email Address: jgardner@statecollegepa.us
Phone Number: 814-234-7150

PARABON SNAPSHOT PHENOTYPE REPORT (NOVEMBER 23, 2020)

#SCPD-PA-95SC06687-Snapshot

Agency: **State College Police Department**
Agency Case #: 95SC06687
Evidence ID #: FBI Item #Q1-Q2M
DNA Vial #: Q1-Q2M
Report Preparation Date: November 23, 2020

Introduction

For additional information about the contents of this report, please refer to the Parabon Snapshot Phenotype Report Guide.

Sample Description and Genotyping Results

~16 ng of DNA extracted from vaginal swabs was sent to DNA Solutions for genotyping on the Illumina CytoSNP-85oK chip at the 01dahoma Medical Research Foundation. The overall genotyping call rate for this sample was 87.2%. Within the SNPs needed for Snapshot, 88.8% had called genotypes. Confidence intervals were calculated using this same set of SNPs.

The genetic genealogy (GG) assessment resulted in a top match sharing 45.5 cM with the subject. A centimorgan (cM) is a measure of genetic distance. Closer relatives share larger amounts of DNA (more cM).

This sample was assigned a Level 4 on Parabon's genetic genealogy assessment scale. Please see pages 4-6 for a full description of the assessment levels.

Based on this assessment, Parabon will not proceed with genetic genealogy analysis.

Basic Ancestry

The map and tables below show this subject's predicted ancestry proportions (bottom left) and the populations in the Snapshot ancestry database where those proportions are most common (bottom right). Population similarity is expressed as the number and percentage of individuals in each population who have ancestry proportions similar to the subject. If no populations are listed, or all the percentages are small, the subject is likely admixed or from a population not yet sampled by Parabon.

Region	Percent
Europe-West:	68.47%
Europe-Northeast:	16.03%
Europe-North:	10.89%

Population	Num	Percent
Europe-West	317	25.10%
Europe-Admixed	51	14.90%
Europe-Central East	2	4.00%
Europe-North	10	1.20%
Europe-South	3	0.50%

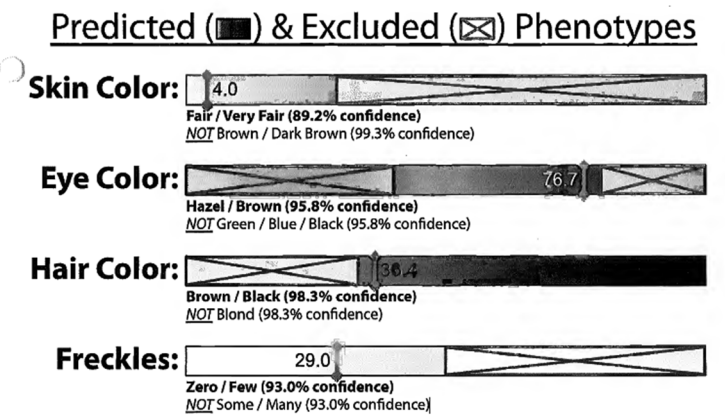
Basic Pigmentation

As part of our service, Parabon is providing basic phenotyping information for the person-of-interest in this case. This includes predictions and exclusions regarding: skin color, eye color, hair color, and level of facial freckling, as well as percentages indicating the level of confidence for each trait prediction based

on cross-validation using the corresponding subset of SNPs.

These predictions may be used to provide information about an unknown individual, e.g., to generate new leads, narrow/prioritize a suspect list, and/or jog witnesses' memories, etc.

NOTE: This report does not contain predictions for facial morphology, nor does it include a composite image of the person-of-interest. If you are interested in a full Snapshot Phenotyping Report, please contact a Snapshot Case Manager.



Predicted & Excluded Phenotypes

Skin Color: 4.0

Fair /Very Fair (89.2% confidence)
NOT Brown / Dark Brown (99.3% confidence)

Eye Color: 78.1

Hazel /B rown (95.8% confidence)
NOT Green / Blue / Black (95.8% confidence)

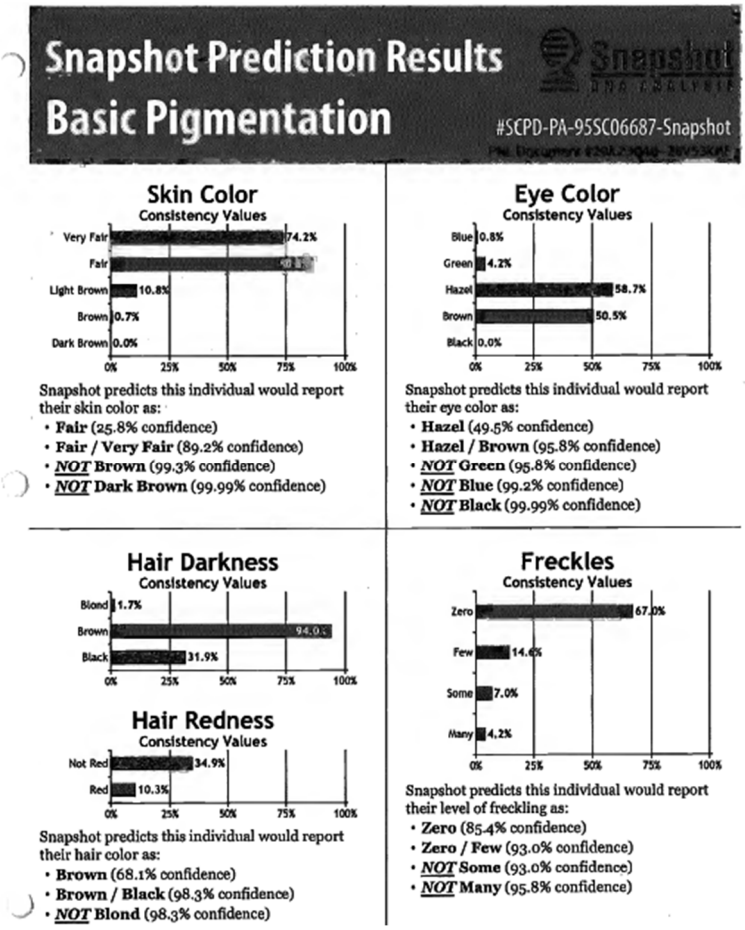
Hair Color: 36.4

Brown /Black (98.3% confidence)

NOT Blond (98.3% confidence)

Freckles: 29.0

Zero /Few (93.0% confidence)
NOT Some / Many (93.0% confidence)



Skin Color:

Snapshot predicts this individual would report their skin color as:

- Fair (25.8% confidence)
- Fair / Very Fair (89.2% confidence)
- NOT Brown (99.3% confidence)
- NOT Dark Brown (99.99% confidence)

Eye Color:

Snapshot predicts this individual would report their eye color as:

- Hazel (49.5% confidence)
- Hazel / Brown (95.8% confidence)
- NOT Green (95.8% confidence)
- NOT Blue (99.2% confidence)
- NOT Black (99.99% confidence)

Hair Darkness:

Snapshot predicts this individual would report their hair color as:

- Brown (68.1% confidence)
- Brown / Black (98.3% confidence)
- NOT Blond (98.3% confidence)

Freckles:

Snapshot predicts this individual would report their level of freckling as:

- Zero (85.4% confidence)
- Zero / Few (93.0% confidence)
- NOT Some (93.0% confidence)
- NOT Many (95.8% confidence)

GG Assessment Guide

Your case has been assigned a Genetic Genealogy (GG) assessment level ranging from 1-5, depending on our estimation of whether it can be solved using GG analysis—i.e., result in a list of highly promising candidate subjects—with one (1) being the most promising and five (5) being the least promising;

1. Extremely high probability
2. High probability
3. High probability of being solved by GG analysis, with some potential challenges
4. Medium probability of being solved by GG analysis with agency collaboration
5. Low probability of generating actionable information

+ If your assessment includes a plus sign—e.g., "4+"—this indicates that your case is more promising than most cases at this level.

- If your assessment includes a minus sign—e.g., "4-"—this indicates that your case is less promising than most cases at this level. For these, additional research is needed to confidently determine if it belongs in this category or not.

e If your assessment includes an "e"—e.g., "4e"—this means that the subject was found to come from an endogamous population (one in which there has historically been a higher than average degree of inter-marrying). Endogamy is the high background relatedness present in small, isolated populations, which increases the amount of DNA shared by

unrelated people. This means that many of the matches are more distantly related than would be expected from the amount of shared DNA observed, decreasing the informativeness of each match.

Purpose of the Assessment, Unforeseen Challenges, and Results

Parabon's assessments are based on the number and relatedness of the promising and potentially helpful matches found during the GG screening process. These assessments are intended as estimates to help you decide whether or not to proceed, but they are not guarantees, as it is very difficult to know how challenging a case will be until significant genealogy work is undertaken. If you approve a GG analysis and we find unforeseen obstacles that halt our progress or otherwise cause a significant reassessment, we will inform you immediately, and you will only be charged a pro rata amount based on the time expended.

If you authorize Parabon to proceed with the GG research, Parabon's expert genetic genealogists will combine genetic analysis with traditional genealogical research to trace the family tree of the unknown subject. A custom report will be created for your case that includes a summary of Parabon's research methods and findings, as well as sources and documentation to support the findings. This may include family trees, contact information for distant and close relatives, and/or names within the subject's family tree. All cases come with the caveat that there is a chance that the subject may have been adopted, abandoned, or of unknown paternity and the subject's existence may be unknown to those with whom there is a close genetic relationship.

For cases that are not solved, Parabon will continue to monitor the case on your behalf at no charge in the hope that closer matches will turn up over time as new people join the genetic genealogy databases. If new, promising matches appear, GG analysis for this case may become workable in the future.

Level 1: Extremely high probability of being solved by GG analysis

There is a very close relative—e.g., a child—in the GG database with an available name and family history. This case therefore has a very high probability of being solved—i.e., resulting in an identification of the person-of-interest.

Level 2: High probability of being solved by GG analysis

This case is expected to produce highly actionable information for your agency. It has an above average probability of identifying the unknown subject or narrowing down their identity to a list of possibilities from within a specific extended family through GG analysis alone. This case has an above average probability of being solved (i.e., resulting in an identification of the person-of-interest).

Level 3: High probability of being solved by GG analysis, with some potential challenges

This case is expected to produce actionable information for your agency. It may even be possible to identify the unknown subject or narrow down their identity to a list of possibilities from within a specific extended family through GG analysis alone.

However, this analysis has additional risk, either because 1) the number of unique, potentially informative matches is small, increasing the probability that detailed family information may not be discoverable—e.g., due to adoption, or 2) a significant amount of family tree building will be required, which likely will not be able to be completed within a standard GG analysis.

Level 4: Medium probability of being solved by GG analysis with agency collaboration

This case was determined to be workable and may even be solvable with standard GG analysis alone. A collaborative investigation that combines Parabon's genetic genealogy expertise with your investigative capabilities is likely to generate actionable information for your case. We will begin GG analysis and produce the richest set of family trees possible with our resources to kickstart your investigation. Periodically, we may ask you for information to advance the GG analysis—e.g., searching records to which we do not have access.

After this initial research, we will write a report with our findings. This may include ancestors who have been identified for the person-of-interest, the likely regional origin of the subject, contact information for distant and/or close relatives, and/or surnames likely to be present in the subject's family tree. In some cases, we may even be able to provide a list of one or more potential persons-of-interest. We will also provide concrete recommendations for how your agency can work with our genetic genealogists to continue this research, such as suggestions for contacting relatives, and/or additional tests needed

to include or exclude individuals and/or branches of the family tree. In such cases, Snapshot DNA Phenotyping and Kinship Inference services may optionally be employed to help significantly narrow the list of potentially matching individuals.

Level 5: Low probability of generating actionable information

Based on our experience, an extraordinary level of effort would be required to make meaningful progress on this case, and the probability of failure is very high. Either the matches were all very distant, which implies that any common ancestor lived so long ago that there could be many thousands of living descendants, or all closer matches lacked sufficient family history information to build a viable family tree, which could be due to factors such as adoption or recent immigration.

It is highly likely that a large amount of time would be spent on this research with little in the way of results. However, there is a possibility that, with Parabon's GG expertise and your agency's investigative skills, we may be able to work together to generate useful information on this case. If you would like, we can start with a preliminary GG analysis to more fully determine the amount of genealogical information available and establish the best path forward. The initial results will be delivered in a report with concrete recommendations for how we can collaborate with your agency to continue this research. As you use these recommendations to make progress, Parabon's genetic genealogists will be available to guide you and ensure you stay on the most efficient path.

Regardless, Parabon will continue to monitor the case on your behalf at no charge in the hope that closer matches will turn up over time as new people join the genetic genealogy databases. If new, promising matches appear, GG analysis for this case may become more workable in the future. If you would like to discuss how Parabon's Snapshot DNA Phenotyping or Kinship Inference services might assist you in your investigation, please contact a Snapshot Case Manager to discuss additional DNA analysis options.

Autosomal DNA Statistics

{ Data not legible }

Disclaimer

The Parabon® Snapshot® DNA Phenotyping Service provides predictions of human appearance from DNA. The Snapshot phenotype prediction models are derived from the application of statistical methods and machine learning algorithms to Parabon's reference database of genotype and phenotype (trait) information, which has been provided by self-consented individuals representing a diverse set of ancestry groups. The Snapshot composite images presented in this report are algorithmic predictions of face morphology, based on the sex, ancestry and genotype of the tested subject, onto which individually predicted pigmentation traits are superimposed. The shape of the head is inferred from the predicted face shape and ear shape is currently not predicted. The predictions depict the tested subject at approximately twenty-five (25) years of age and average body-mass index (BMI), unless otherwise indicated. Trait variations due to age,

weight, or personal choice, such as dyed hair or facial hair, are not captured.

The Snapshot reference database and the Snapshot prediction models derived therefrom do not represent the full range of human genetic diversity, as they do not include subjects from all human populations and necessarily reflect only a subset of the total genetic variation within any given population. Moreover, environmental factors, such as nutrition, can affect appearance in ways that are inherently unpredictable. Accordingly, discretion should be used when attempting to include or exclude individuals in an investigation by comparison of appearance with Snapshot predictions. Confidence intervals have been calculated using the corresponding subset of SNPs during cross-validation.

Terms of Service

Parabon® Snapshot® services ("Service" or "Services") provided by Parabon NanoLabs, Inc. ("Parabon") are subject to the following terms and conditions. Last updated 7 Jun 2019.

Acknowledgements

By requesting or ordering Services, whether acting individually or on behalf of your organization, you acknowledge the following: (1) You are responsible for knowing and complying with the laws of your jurisdiction, if any exist, pertaining to the use of DNA for the following forensic purposes: genetic genealogy, kinship inference, and phenotyping; and (2) the products resulting from the Services are strictly limited to reports in PDF format for genetic genealogy, kinship inference, and phenotyping ("Materials"),

No Warranties

THE SERVICES ARE PROVIDED TO YOU ON AN AS IS/AS AVAILABLE BASIS WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANT-ABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. PARABON MAKES NO WARRANTY AS TO THE RELIABILITY OF THE SERVICES OR MATERIALS, ANY USE OF THE MATERIALS, INCLUDING ANY RELIANCE THEREON, IS AT YOUR SOLE RISK.

PARABON MAKES NO REPRESENTATIONS OR WARRANTIES THAT THE SERVICES WILL BE UNINTERRUPTED OR THAT THE MATERIALS WILL BE ERROR-FREE.

Limitations and Intended Use

Snapshot Materials are intended to help investigators operate more efficiently, for example, by providing information about an unknown subject that has the potential to generate new leads, narrow a suspect list, or jog witnesses' memories. It is your obligation, ac ting individually or on behalf of your organization, to use the information provided to you responsibly and only for lawful purposes.

IMPORTANT: Snapshot Materials are for Lead Generation Only.

Snapshot DNA phenotyping composites are provided as approximations of appearance that summarize predicted ancestry and traits. Because many environmental influences can affect an individual's appearance that tire not contained within DNA (and

thus cannot be predicted through DNA phenotyping), Snapshot composites cannot be expected to represent a subject's exact appearance. Examples of environmental influences that affect an individual's appearance include, but are not limited to age, weight, scars, exposure to smoking, exposure to sun, tattoos, hairstyles, and presence of facial hair.

By default, Snapshot composites are generated at a target age of 25 years and a body mass index (BMI) of 22, which is the average of the 'Normal' BMI range. However, if additional information about the lifestyle or age of the unknown subject is known, such information can be incorporated into a composite by Parabon' s Forensic Art Department.

IMPORTANT: Snapshot composites are NOT intended for use with facial recognition software.

Furthermore, Snapshot composites must be used, at all times, in conjunction with their associated phenotype and ancestry predictions. Accordingly, Snapshot composites may NOT be distributed as standalone images ("faces"), either within your organization or externally to any third party.

Limitation of Liability

PARABON SPECIFICALLY DISCLAIMS ANY LIABILITY, WHETHER BASED IN CONTRACT, TORT, STRICT LIABILITY, OR OTHERWISE, FOR ANY DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE SERVICES AND/OR MATERIALS, EVEN IF PARABON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INCLUDING

WITHOUT LIMITATION DAMAGES ARISING FROM RELIANCE BY ANY PARTY ON THE CONTENTS OF THE MATERIALS, OR DAMAGES ARISING IN CONNECTION WITH MISTAKES OR OMISSIONS IN, OR DELAYS IN TRANSMISSION OF, MATERIALS OR OTHER INFORMATION SENT TO OR BY YOU, AS APPLICABLE, WHETHER CAUSED IN WHOLE OR IN PART BY NEGLIGENCE, FORCE MAJEURE, TELECOMMUNICATIONS FAILURE, THEFT, OR DESTRUCTION OF, OR UNAUTHORIZED ACCESS TO THE MATERIALS.

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Materials, without prior written consent from Parabon, to the public and/or news media for distribution for the purpose of aiding an investigation or reporting on a crime provided that, in all cases, Parabon NanoLabs is credited with production of the Materials.

Under no circumstances may the Materials be altered by a third party, including non-Parabon forensic artists.

Confidentiality and Media Inquiries

It is Parabon's policy to maintain confidentiality about its working relationship with you and only discuss case details with you, the designated forensic laboratory representative working on your case, and any criminal justice representatives whom you authorize to participate in email/telephone discussions and/or briefings. If you decide to release the Snapshot Materials to the public, you agree to use the language provided in the Snapshot Media Kit when describing the Snapshot technology and Service. Further, you agree to notify Parabon at least three (3) days in advance of the planned media release and allow Parabon to edit any press releases and/or associated press conference scripts that describe the Snapshot Materials. At your request, Parabon will provide you with a complimentary, media-friendly poster of any Snapshot DNA phenotyping results in PDF format that can be distributed to the public and/or media. By default, Parabon will not review or explain the Snapshot Materials specific to your case with the media unless directed to do so by you or an authorized agent of your organization. Notwithstanding the foregoing, Parabon reserves the right to speak with

and be interviewed by any media outlet at any time concerning the Snapshot technology and Service.

Modification of Terms of Services

Parabon reserves the right to modify these terms and conditions at any time. Such modifications will be posted on the Parabon Snapshot Web Site. Parabon may make charges in the Services described on the Web Site at any time.

Account Access and Protection

You acknowledge that the Materials are accessible by you via aw eb-based account. You are responsible for providing all hardware, system software, access devices, networks and telecommunications or other connections required to access the account and for paying all telephony, data transmission and other costs associated with such access. You are responsible for maintaining the confidentiality of your account password and you are solely responsible for all activities that occur through your account, including the activities of others, regardless of whether such activities are authorized. You agree to immediately notify Parabon of any breach or unauthorized use of your account. Parabon reserves the right to require you to alter your password if Parabon believes that your password is no longer secure. You agree that you will be solely responsible for any loss or damage you suffer as a result of your failure to adequately safeguard your account information.

Governing Law and General Provisions

Any claims relating to the Services ("Claim") will be governed by the laws of the Commonwealth of

Virginia, U.S.A., excluding the application of its conflicts of law rules. You hereby agree that those state and federal courts located in Fairfax, Virginia, shall have exclusive jurisdiction over all Claims.

Indemnification

You shall defend, indemnify and hold harmless Parabon and its affiliates, and their respective officers, directors, employees and advisors, from and against any and all claims, demands, suits or proceedings brought against Parabon by any third party based upon or arising out of your request for, access to and use of the Services and/or the Materials, and any breach by you of these terms and conditions.

Violations and Additional Policies

Parabon reserves the right to seek all remedies available at law and in equity for violations of these terms and conditions, including the right to refuse to fulfill your requests for Services and/or Materials.

LETTER FROM CERTIFIED FORENSIC ARTIST (NOVEMBER 23, 2020)

Subject: Re: T.L. — Case SCPD-PA-95SC06687-Snapshot

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Steve,

Regarding case #95SC0668, I have uploaded a preliminary report containing the initial genetic genealogy assessment results as well as basic phenotyping information for your person-of-interest to a secure folder for you to access.

In order to download the report, you can use your existing password or, if you need it, I can re-set your password. Please go to the link at the bottom of this message. Once a password is input or re-set, you will be able to view the report in your account for downloading purposes. Please let me know if you have any questions or trouble accessing your account.

As you will see, the genealogy matches were assessed at a Level 4, so we will proceeding into the genetic genealogy analysis stage.

http://snapshot.parabon-nanolabs.com/reports/SCPD-PA-95SC06687-Snapshot/

*http://snapshot.parabon-nanolabs.com/reports/SCPD-PA-95SC06687-Snapshot/SCPD-PA-95SC06687-Snapshot.pdf

Best,

Thom Shaw
IAI Certified Forensic Artist & Snapshot Case Manager
Parabon NanoLabs
Phone: (703) 689-9689 Ext. 261
Email: thom@parabon.com
https://snapshot.parabon-nanolabs.com/
FBINA 230

PARABON SNAPSHOT REPORT (CE 21) (DECEMBER 24, 2020)

#SCPD-PA-95SC06687-Snapshot[1]
Agency: State College Police Department
Agency Case #: 95SC06687
Evidence ID #: FBI Item #Q1-Q2M
DNA Vial #: Q1-Q2M
Report Preparation Date: December 24, 2020

Lead Analysts: B2GG2[2]

Crime: Sexual assault, 13 May 1995 in State College, PA

[1] Parabon encourages agency officials working this case to review the United States Department of Justice (USDOJ) Interim Policy for Forensic Genetic Genealogical DNA Analysis and Searching: https://www.justice.gov/olp/page/file/1204386/download

[2] Analyst codes are used to help preserve the privacy and security of our genetic genealogy (GG) analysts. Please do not publicly release the name of the Parabon analyst assigned to your case unless it is CeCe Moore. CeCe is Parabon's GG spokesperson; the rest of the Parabon GG team wish to work anonymously. Of course, you are welcome and encouraged to acknowledge Parabon's Genetic Genealogy Team if we have been able to assist your investigation.

A. Procedure & Match Results[3]

The term "Subject" in this report refers to the suspected perpetrator whose DNA was found at the crime scene associated with case number SCPD-PA-95SC06687-Snapshot. The Subject's raw data DNA file was uploaded to the FamilyTreeDNA (FTDNA) and GEDmatch databases as a Law Enforcement kit. Match lists were generated from comparisons to the individuals participating in the databases, and there were two potentially helpful matches over 70 cM and many more distant matches under 70 cM, some of which were found to be informative. No matches were contacted during the course of this block of research.

A.1. Table of Genetic Matches

#	Shared DNA	Most Probable Relationships[4]	Database	Genetic Network
1	88.23 cM	• Second cousin once removed (31 %)	FTDNA only[5]	#1

[3] Parabon requests that the names of the genetic matches found in the genetic genealogy database be protected by you and your agency. Please do not release or use the names of these individuals in any open forums or documents, including court documents, which can be accessed by the press or the public.

[4] Includes genetically equivalent relationships.

[5] In order to have a uniform comparison with other testing company results and accurately predict relationships, when working with FTDNA matches, it is necessary to deduct small segments (below 7 cM) from the total centimorgans shared.

		• Third cousin (30%) • Third cousin once removed (25%) • Fourth cousin (10%)		
2	71.16 cM	• Third cousin once removed (32%) • Third cousin (28%) • Second cousin once removed (19%) • Fourth cousin (15%)	FTDNA + GEDmatch	#2
3	62.64 cM	• Third cousin once removed (32%) • Third cousin (23%) • Fourth cousin (17%) • Fourth cousin once removed to distant cousin (15%)	FTDNA only	#1
4	51.86 cM	• Third cousin once removed	FTDNA only	#3

		(30%) ● Fourth cousin once removed to distant cousin (24%) ● Fourth cousin (21%) ● Third cousin (18%)		
5	45.5 cM	● Fourth cousin once removed to distant cousin (32%) ● Third cousin once removed (26%) ● Fourth cousin (22%)	FTDNA + GEDmatch	Unk
6	43.36 cM	● Fourth cousin once removed to distant cousin (39%) ● Third cousin once removed (23%) ● Fourth cousin (22%)	FTDNA	#1
7	43.34 cM	● Fourth cousin once removed	FTDNA	Unk

		to distant cousin (39%) • Third cousin once removed (23%) • Fourth cousin (21%)		
8	39.79 cM	• Fourth cousin once removed to distant cousin (39%) • Third cousin once removed (19%) • Fourth cousin (19%)	FTDNA	#1

A.2. Genetic Sharing Between Matches

Although most of the top matches are at FTDNA, where we are not able to determine how much autosomal DNA (atDNA) the matches share with one another, we can use their "In Common With" (ICW) tool to determine whether or not they share any DNA at all. Matches # 1, #3, #6 and #8 appear to all share DNA, and therefore they are likely to all be related to the Subject on the same ancestral line and form a "genetic network" of related cousins.

Matches #2, #4 and #7 do not share DNA with any of the other top matches or each other at either database, so they are all likely to be related to the Subject on distinct ancestral lines.

The Subject must therefore descend from common ancestor(s) present in each of their respective family trees. The goal is to find the intersection between descendants of each match's ancestors, typically a marriage, but possibly an out-of-wedlock birth.

A.3. Geographic and Population Observations

Based on analyzing the pedigrees built for many of the top and more distant matches, as well as trees attached to other matches, the Subject appears to have ancestral roots in several distinct areas. The first is Monongalia & Preston Counties, WV, just south of the PA border. The second is Huntingdon & Mifflin Counties, PA, just to the south/southeast of State College. The third is either the UK or Canada (likely a relatively recent immigrant to the US). The genetic networks of cousins who share DNA with each other were found to be distinct, without evidence of overlap, so it is likely the Subject's parents and/or grandparents/great grandparents are from somewhat distinct geographic areas.

B. Parabon's Working Hypothesis Based on Its Research

It is Parabon's hypothesis that the Subject is likely to descend from the following ancestral couple:

- John Christopher, b. 1814 and his second wife, Delilah Walls, b. 1834

On a line that intermarried (or otherwise procreated) with a descendant of the following ancestral couple:

- Clarence Homer "Jake" Reiharf, b. 1881 and Ella Jane Bishop, b. 1891

Despite considerable research, no intersection has yet been found between any of the descendants of these two ancestral couples.

One possible candidate to be the Subject was found to descend from the second, ancestral couple, who is the right age, the right genetic distance from the second match, and has previous addresses in the county adjacent to the crime. However, without any evidence of his connection to the first ancestral couple, he is not a high confidence candidate. Continued descendancy research of the families identified by the analyst, together with targeted DNA testing within these families is highly recommended, and details are included in Section E.

C. Genetic Genealogy Research

The analyst constructed extensive family trees for the top matches, as well as for several more distant matches, searching for intersections and commonalities between them. The trees were documented through census records, vital records, newspaper archives, public "people search" databases, public social media data and well-documented public family trees.

C.1. Matches # 1, #3, #6 and #8 - Christopher/Walls Genetic Network

When the analyst built pedigrees for Matches #1, #3, #6 and #8 (as well as one additional more distant match), they were all found to share a common ancestral couple, John Christopher, b. 1814 and his second wife, Delilah Walls, b. 1834, from Preston County, WV [Figure 1]. This discovery is significant because It means it is very likely the Subject also

descends from this same ancestral couple, or possibly through John's first wife, Mary Lawson, b. 1804.

In addition to Match #2's close family members, she shares DNA at GEDmatch with two maternal half siblings, in the range of about a first cousin once removed through second cousin once removed (122 cM and 268 cM), but unfortunately their exact relationship to Match #2 could not be established. Based on their shared matches with Match #2, it is likely they share DNA with the Subject as well, so it would be very helpful to first determine how they are related to Match #2. Once again, the agency may wish to consider making contact with either Match #2 or the half siblings to see if their relationship is known or share family information which could help the analyst to confirm the link. It is possible that the half siblings are linked biologically to this family, but were not raised with them because of misattributed parentage or adoption. If the half siblings need assistance confirming their biological family, Parabon can help by connecting them to a trusted volunteer search angel. Details regarding this recommendation are included in Section E.

C.3. Match #4 - Possible UK Genetic Network

Match #4 attached a pedigree to his FTDNA match results, which allowed the analyst to see that his family tree is based entirely in the UK, and the match himself is likely to also live there based on his email address. His family is from Liverpool, Penrith, Burnley and Preston in the UK, at his grandparent level, and his shared FTDNA matches with the Subject all appear to have UK or Canadian immigrant ancestry. Although no common ancestors

were found to link this genetic network of matches, it appears to be evidence that the Subject may have recent UK or Canadian ancestry on at least one ancestral line.

C.4. Descendancy Research

Descendancy research was then performed on both genetic networks, but the majority of the time was spent on the Cramer-Reed genetic network because of its geographic proximity to the crime and the age of Match #2, since she is likely to be two generations removed from the Subject, so the common ancestors are not likely to be as distant. The goal of the descendancy research is to attempt to identify males who fit at the right genetic distance from both Match # 1 and Match #2, who are in the right approximate age range and who lived in the area of the crimes, and may therefore be candidates to be the Subject. Spousal lines are also built out during the descendancy research in an attempt to connect the spouses' lines to the ancestral lines of the other top matches, specifically the "Christopher/Walls" and "Cramer/Reed" genetic networks.

C.4.a. Christopher/Walls Genetic Network

Based on the amount of shared DNA, as well the estimated age of the Subject, we can predict the most likely positions the Subject can occupy within the tree relative to Match # 1 [Figure 3].

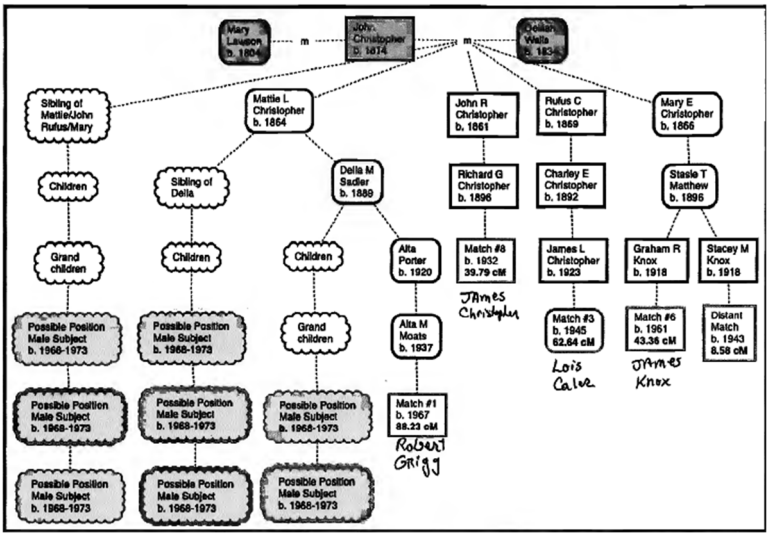

Figure 3:S hared pedigree of the top match and four other matches (red boxes, including the amount of atDNA shared with the Subject in bold), showing the likely positions the Subject can occupy (yellow clouds). Bold borders show the most likely statistically (-73%) and thin borders show the next most likely statistically (-25%). Known common ancestors to the Subject are shown in green boxes.

Although there are a number of possible positions where the Subject can fit into the tree relative to the matches within this genetic network, the most statistically likely are:

- Great grandson of a sibling of Alta Porter (b. 1920), making the Subject a second cousin once removed to Match # 1
- Great grandson of a sibling of Della Sadler (b. 1889), making the Subject a third cousin to Match #1

- Great great grandson of a sibling of Della Sadler (b. 1889), making the Subject a third cousin once removed to Match # 1
- Great great grandson of a sibling of Mattie Christopher (b. 1864), making the Subject a fourth cousin to Match # 1.

The analyst did some descendancy work on both Mattie Christopher's line and her daughter Della Sadler's descendants, but so far has not been able to identify anyone relocating closer to the area of the crime, or a marriage that would link this line to the Cramer/Reed genetic there are fewer possibilities overall based on the likely age of the Subject. The most statistically likely are as follows:

- Great great grandson of a sibling of Clarence Reihart (b. 1881), making the Subject a second cousin twice removed to Match #2
- Great grandson of a sibling of Clarence Reihart (b. 1881), making the Subject a second cousin once removed to Match #2
- Great grandson of a sibling of Harold Reihart (b. 1917), making the Subject a first cousin twice removed to Match #2

The analyst did much more descendancy research within this genetic network, both on descendants of Sara Cramer Reihart (b. 1862) and Clarence Reihart (b. 1881), but so far has not been able to identify anyone who intermarried with the Christopher/Walls genetic network. However, one possible candidate was identified who is in the right age range, with previous addresses In the Lewistown, PA area in 1995. Because no connection was found to the other genetic

network, or any addresses in the immediate State College area, he may not be a particularly strong candidate, but because of his position in the tree relative to Match #2, he has been included as a possible candidate as follows:

- **Daniel Travis Stitt**, b. Sep 1975 (19 years old at the time of the crime). Currently living in Hopewell, VA. Daniel is a first cousin twice removed to Match #2, and a great grandson of Gladys Reihart Weyant (1910-1996). Daniel is also a fourth cousin once removed to the distant match who shares the Cramer/Reed common ancestors with Match #2. The amount of atDNA Match #2 shares with Daniel is on the very low end of the sharing range for a first cousin twice removed, but is still statistically possible. It is also possible that Daniel and Match #2 are instead half first cousins twice removed, but for that to be true, Match #2's father Harold Reihart and his sister Gladys would have to be paternal half siblings, which may be less likely circumstantially than if they were maternal half siblings.

In addition to one potential candidate (above), the analyst was able to identify a number of owners of public family trees and others within this family who would be good candidates for targeted DNA testing. Testing any of those individuals (or asking them to transfer their results to GEDmatch/FTDNA, if they have already tested) would be very helpful to the investigation as it should help to confirm that we have the correct set of common ancestors, and further

narrow the search for the Subject. Details are provided in Section E.

D. Conclusions

The analyst was able to build family trees for most of the top matches, and also identify two likely sets of common ancestors for the Subject. Descendancy research from one set of common ancestors identified one possible candidate to be the Subject within the Reihart family, but for various genetic and circumstantial reasons, he may not be a strong candidate.

Parabon recommends investigating the identified candidate, but also looking more closely at identified areas of the Reihart family and considering potential interviews and/or target testing within the family which should help to narrow the focus of the investigation.

It should be noted that during the research, some evidence of pedigree collapse (intermarriage between the same families over several generations) was found within this mostly "Pennsylvania Dutch" population group from south-central Pennsylvania. It is very possible that the Subject may share multiple more distant relationships with some of the matches, rather than one single closer relationship. This possibility could affect the hypothesized positions in the tree that the Subject can occupy relative to the top matches, and should be taken into consideration when continuing the descendancy research.

E. Recommendations for Next Steps

The following recommendations are based on the genetic genealogy analysis performed so far in this case:

E.1. Investigate the Identified Candidate

Investigate the individual detailed in Section C.4.b. to determine if there are any possible connections between him and the crime that may make him a particularly strong candidate to be the Subject.

E.2. Obtain and Compare DNA

If it is determined that the identified individual is a strong candidate to be the Subject:

E.2.a. Determine if an STR profile exists for the identified individual and, if so, compare it to the STR profile for the Subject.

E.2.b. If it does not exist, then investigate whether there are existing sources of DNA from the included individual to compare against the STR profile on file for this case.

E.2.c. If neither exists, then, if allowed, obtain DNA from the candidate, and compare it to the STR profile in your case.

E.2.d. If the tester's DNA is not a match, then, if allowed, provide an extract of the DNA sample to Parabon to run through its Kinship Inference models to determine the degree of relatedness or unrelatedness to the Subject. This will enable us to eliminate and/or focus on the pertinent branch(es) of the family tree.

E.3. Target DNA Testing and Interviews of Identified Family

If it is determined the identified individual is not a strong candidate to be the Subject, investigate the Reihart family to determine if there are other male family members who are genetically connected to them and fit in the right position relative to Match #2. Interviews with family members may be able to uncover additional family members who are linked to this family, but have not yet been identified.

Additionally, target testing one or more of the following individuals within the Reihart family may help determine if there is a genetic relationship to the Subject. In that way, we may be able to determine which, if any, is connected to the Subject, based on the amount of DNA they are found to share with the Subject. Collect a DNA sample and provide it to Parabon for a Kinship Inference test, which will provide a highly accurate prediction of the relationship range between the Subject and the new tester.

Please note that many individuals have already undergone testing at one of the consumer genetic companies (AncestryDNA, 23andMe, FamilyTreeDNA or MyHeritage) but have not submitted their DNA file to GEDMatch (several known commercial testers are noted below). If those who have already tested are willing to upload their raw data file to GEDmatch for comparison, it would be very helpful to the investigation. If needed, Parabon can supply an instruction sheet to assist them with the upload to GEDMatch. Possible candidates for interviews and/or target testing are as follows [Figure 5 included for reference]:

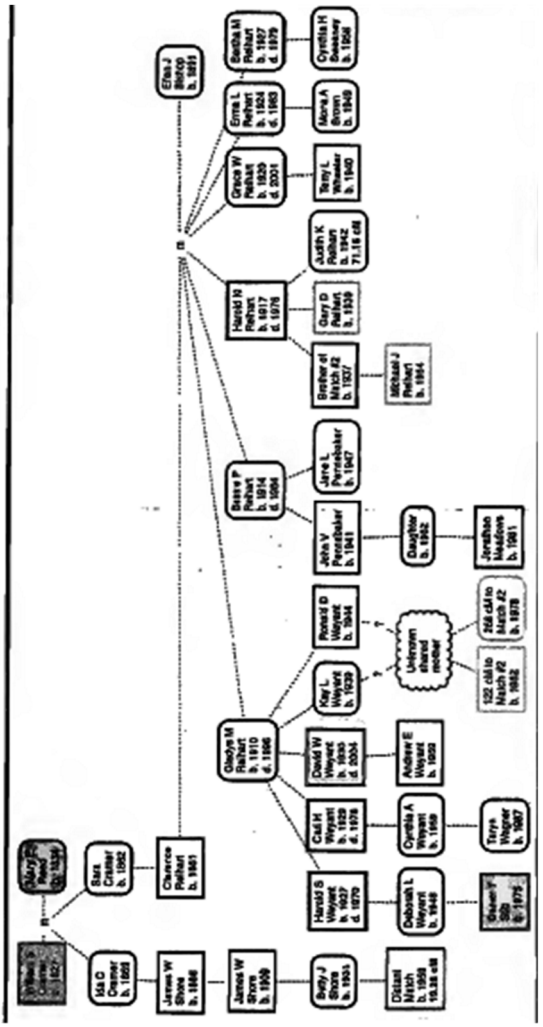

Figure 5: Family tree of Match #2 and a distant match (red boxes), showing those individuals included as potential interviewees and/or target testers (blue boxes) and known DNA testers (orange boxes) In Section E.3, One possible candidate to be the Subject is also shown (yellow box). Common ancestors are shown in purple boxes and hypothesized connections are shown with "?",

Name, DOB and Relationship	Address and Social Media
Descendants of Gladys Reihart Weyant; Target Tester Deborah Lynn Weyant Hile, b. 24 Oct 1948 Target Tester Cynthia Ann Weyant Wagner, b. 1 Aug 1959 Public Tree owner Taryn Wagner. b, Jul 1987 (daughter of Cynthia, above) Target Tester Andrew Edward Weyant b. 26 Sep 1959 Target Tester Kay Lavonne Weyant Dobry, b.3 Mar 1939 Target Tester Ronald D Weyant, b. 24 Dec 1944	Possible current address (Deborah): 3009 Sherwood Ln Hopewell, VA 23860 (both Cynthia and Taryn): 392 Wellington Point Dt, Lawrence-ville, GA 30043 Taryn's robust public family tree (indicating she has a strong Interest in genealogy and may have already tested her DNA): {URL excluded } (Andrew): 157 Angle Rd Grantville, PA 17028 (Kay): 2602 Faust Rd Gilbertsville, PA 19525 (Ron): 59 Old Mill Rd Dillsburg, PA 17019

Note:

Glady's branch of the Reihart tree contains some of the only descendant who are old enough to have a child in the right age range to be in the Subject.

Additional Information:

Testing any of these individuals (or asking them to transfer and opt-in at GEDmatch) should help to confirm whether the Subject descends from Gladys Reihart on Match #2's paternal side and potentially provide a much closer DNA match to help refine the possible relationship to the Subject.

Additional Information:

Note that the preferred testers are those of the oldest generation (Kay and Ronald), but if any (such as Taryn) have already tested their DNA, they can simply be asked to transfer to GEDmatch and/or FTDNA and opt-in to law enforcement matching.

Caution: All of those listed in this section are potentially very closely related to Subject-mother/f ather, aunt/uncle, first cousin/once removed

Descendants of Bessie Reihart Pennker; Target Tester John Vincent Pennebaker Jr, b. 16 Dec 1941 Target Tester Jane L Pennebaker Cutshall, b. Aug 1947 Public Tree Owner Jonathon Meadows, b. Apr 1981 Bessie's obituary noted that she had three grandchildren, but none of them are old enough to be the parent of the Subject. It is possible that Bessie has descendants who were left out of the obituary or are unknown to the family because of adoption or misattributed parentage.	Possible current address (John): 20 Tavern Ln Lebanon, PA 17042 (Jane): 314 W Main St Camp Hill, PA 17011 Possible current address (Jonathon): 1243 Cambridge Rd Warminster, PA 18974 Jonathon owns a small public family tree which may indicate an interest in genealogy and that he may have already DNA tested: https://www.ancestry.com/family-tree/tree/111011301/family/familyview

Additional Information:

Testing any of these individuals should help to confirm whether the Subject descends from Bessie Reihart on Match #2's paternal side and potentially

provide a much closer DNA match to help refine the possible relationship to the Subject.

Caution - All of those listed in this section are potentially very closely related to Subject-grandmother/grandfather, first cousin, sibling

Descendants of Harold Reihart:	Possible current address
Match #2 Judith K Reihart, b. Feb 1942 Brother of Match #2 Gary Daniel Reihart, b. 26 Aug 1939 Nephew of Match #2 Michael John Reihart, Sr, b. Dec 1964 The Subject cannot descend from Harold because Match #2 only shares 71 cM, but since Match #2's brother and nephew are known DNA testers, it would be very helpful for them to opt-in at GEDmatch so that we can see the amount of DNA they share with the Subject.	(Judith): 503 E Keller St, Mechanicsburg, PA 17055 reihia.aol.com Judith's very robust public family tree: https://www.publicfamily.com/family-tree/tree/46020764? cfpid=6464007468&dtid=100 https://www.facebook.com/iudi.reihart (Judith) https://www.facebook.com/reihartg (Gary) https://www.facebook.com/michael.reihart.3 (Michael)

Additional Information:

Asking this family grouping (all managed by Judith) to opt-in at GEDmatch may be very helpful to the investigation as it will provide additional data points to inform the likely relationship they have to the Subject.

Judith is managing DNA kits at GEDmatch for herself, Michael, Gary and one of Gary's daughters, Deborah, so she is the best contact. None of the kits Judith is managing are currently opted-in to law enforcement matching, but they have been on GEDmatch since before the change in the ToS, so they likely became opted-out when the change happened in May 2019. It is also possible that they consciously chose to remain opted-out, so caution is advised. Need to know: Is Judith Is willing to opt-in her own kit and the kits she manages? And does she know how she is connected to the maternal half siblings with whom she shares 122 cM and 268 cM?

Neither Gary nor Michael can be very closely related to the Subject because they are so closely related to Judith, who only shares 71 cM with the Subject, so should be relatively low risk to contact.

Descendant of Grace Relhart Wheeler: Target Tester Terry L Wheeler, b. 27 Aug 1940 Grace's obituary noted that she had two	Possible current address: 4942 William Penn Hwy, Mifflintown, PA 17059

granddaughters, but neither is old enough to be the parent of the Subject. It is possible that Grace has descendants who were left out of the obituary or are unknown to the family because of adoption or misattributed parentage.	

Additional Information:

Testing Terry should help to confirm whether the Subject descends from Grace Reihart on Match #2's paternal side and potentially provide a much closer DNA match to help refine the possible relationship to the Subject.

Caution: Terry is potentially very closely related to Subject - grandfather, great uncle

Descendant of Erma Reihart Brown Thompson: Target Tester/Public Family Tree owner Mona Annelle Brown Fickes, b. May 1949 Erma's obituary listed only one daughter (Mona) and no grandchildren as survivors, and based on her year of birth it is likely	Possible current address: 730C Menno Village Chambersburg, PA 17201 Mona's very robust public family tree may indicate a strong interest in genealogy, and that she may have

not possible she has any great grandsons in the right age range to be the Subject. But her daughter may have already tested her DNA, so it may be worthwhile to make contact.	already tested her DNA, but not yet transferred to GEDmatch/FTDNA: https://www.ancestry.com/family-tree/tree/111995508/family/pedigree? cfi) id= 280093841041

Additional Information:

Testing Mona (or asking her to transfer to GEDmatch/FTDNA and opt-in if she has already tested) should help to confirm whether the Subject descends from Match #2's paternal side and potentially provide a much closer DNA match to help refine the possible relationship to the Subject.

Caution: Mona is not likely to be closely related to the Subject so should be of relatively low risk to contact.

Descendant of Bertha Reihart McKee Sweeney; Target Tester/Public Family Tree owner Cynthia Helen Sweeney Malone, b. 14 Jul 1958 Based on Bertha's year of birth it is likely not possible she has any great grandsons in the right age range to be the Subject, but she has a daughter who may have already DNA tested, so may be worth making contact.	Possible current address: 121 N Derry Ave Yeagertown, PA 17099 Cynthia's very robust public family tree may indicate a strong interest In genealogy, and that she may have already tested her DNA, but not yet transferred to GEDmatch/FTDNA: https://www.ancestry.com/family-tree/tree/62093850?cfr)id=30084656457

Additional Information:

Testing Cynthia (or asking her to transfer to GEDmatch/FTDNA and opt-in if she has already tested) should help to confirm whether the Subject descends from Match #2's paternal side and potentially provide a much closer DNA match to help refine the possible relationship to the Subject.

Caution: Cynthia is not likely to be closely related to the Subject so should be of relatively low risk to contact.

E.4. Continue Research

Once one or more of the Kinship testing recommendations (or transfer of existing DNA data) above is completed, then additional genetic genealogy research may be needed to continue to enumerate additional descendants of the identified ancestral couples and find others who intersect with the pedigrees of more distant matches, were old enough, and live in proximity to the crime.

Additional research time may allow our analyst to further narrow the identity of the Subject. The agency may be able to assist with the descendancy research through greater access to records for living individuals.

E.5. Monitor GEDmatch and FTDNA for New Matches

Parabon will continue to monitor the Subject's GEDmatch and FTDNA files and if additional significant matches appear for the Subject, the agency will be notified.

F. Concluding Notes/Disclaimers

This report details the results found during a portion of the initial block of genealogy analysis. It is possible that additional analysis would find more information.

Our conclusions are based on the assumption that the identity provided by the promising matches, i.e., the owners of the DNA file uploaded to GEDmatch or FTDNA, is accurate. If these are inaccurate, then our conclusions will be as well. This possibility becomes much less likely when significant common-

alities are found between the matches' family trees, such as in this case.

Parabon utilizes information provided on public family trees, but does strive to document, confirm, and correct this information through research of public records and other documentary resources. Therefore, the family trees that are built are largely dependent on the accuracy of the documents accessed. In some cases, there may be unrecorded adoptions and misattributed parentage events that are not revealed through documentary research, and those could affect the conclusions reached.

In some cases, in the absence of solid, documentary evidence, it may be necessary to make reasoned deductions based on our extensive experience in the genetic genealogy field. When this is the case, we will fully explain how we reached these conclusions and the limitations of such in our written report. Please note that the Subject could have been illegally adopted or abandoned, and his existence could be unknown to those closely related to him and not revealed through official records.

Parabon has established strict policies and procedures for how it handles genetic data and conducts genetic genealogy research in order to protect the genetic genealogy and law enforcement communities. There are individuals and organizations that are critical of using genetic genealogy for law enforcement purposes and want to curtail its usage. With this in mind, please use the information provided in this report responsibly. Due to the importance of maintaining privacy, please do not share the information with any individual who does not have a demonstrated need to know. If you decide to contact

Individual/s listed in this report aside from those specifically recommended by Parabon (if any), please do not do so without 1) consulting with Parabon and 2) making a best effort to positively identify the contributor of the DNA, e.g., using a reverse email address lookup for matches with common names and aliases and/or a search for the name in a database like Lexis-Nexis or TLO for those with less common names (note that kits are often managed by individuals other than the person whose DNA is represented, which can make identification of the DNA owner more difficult). Any contact with a match (including those recommended by Parabon) should include notifying the individual that the request is in regard to a law enforcement investigation so he or she has an opportunity to choose whether or not to participate in a dialogue.

SNAPSHOT PREDICTION RESULTS
TERMS OF SERVICE

#SCPD-PA-95SC06687-Snapshot

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DNA SOLUTIONS
CERTIFICATE OF ANALYSIS (CE 22)
(FEBRUARY 4, 2021)

DNA Solutions, Inc.
755 Research Parkway, Suite 510
Oklahoma City, OK 73104
Phone: (866) 362-9778
Fax: (405) 271-6034Agency:

Agency:

State College Police
243 South Allen Street
State College, PA 16801

Testing Dates: January 29 – February 2, 2021

DNAS Case Number: 2021-036392

Submitted by: Det. S.M. Bosak

Agency Case Number: Not Provided

Date Received: 1/28/2021

DNAS Sample ID: 2021-036392 MO1

Sample Description: Item #10 Bode DNA Collector with Wanda K. Williams' Sample

DNAS Sample ID: 2021-036392 CH1*

Sample Description: Q1-Q2M (Externally Provided DNA Typing Results)

*Items not tested

DNA ANALYSIS:

The extracted Deoxyribonucleic acid (DNA) from the above listed samples was characterized using polymerase chain reaction (PCR) and capillary elec-

trophoresis. Genetic profiles were developed at the 23 Short Tandem Repeat (STR) loci and amelogenin (a gender-specific locus) contained in the Promega PowerPlex Fusion amplification kit. DYS391 and amelogenin are not used for statistical purposes. The loci tested and the results obtained for each tested sample are listed in Table 1. All laboratory control samples yielded expected results.

Analysis Results:

2021-036392 MOI

A single source, female DNA profile was obtained.

Frequency Estimates:

Based on results of the thirteen genetic systems tested:

The Combined Maternity Index is 6,881.0733 and the relative chance of maternity, assuming a 50% prior chance, is 99.9854% as compared to an untested, unrelated woman in the Caucasian population. The Combined Maternity Index is 594.6004 and the relative chance of maternity, assuming a 50% prior chance, is 99.8321% as compared to an untested, unrelated woman in the African American population. The Combined Maternity Index is 50,147.6101 and the relative chance of maternity, assuming a 50% prior chance, is 99.9980% as compared to an untested, unrelated woman in the Hispanic population.

Conclusions:

Bode DNA Collector with Wanda K. Williams' Sample (2021-036392 MO1) cannot be excluded as the biological mother of Q1-Q2M (Externally

Provided DNA Typing Results) (2021-036392 CH1), as determined by the presence of an obligate maternal allele at the tested systems.

Disposition of Evidence:

The original package containing the evidence will be retained for 80 years or until notification of return or destruction is received.

Attest:

I certify that I performed the above analysis or examination as an employee of DNA Solutions, Inc. and that the above is an accurate record of the results and interpretation of that analysis or examination. This test is accredited under the laboratory's ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation (FT-0302). This test report shall not be reproduced except in full, without written approval of the lab.

/s/ Cortney Schartz, MS
DNA Analyst

2/4/2021
Date

DNAS Case Number: 2021-036392

Agency Case Number: Not Provided

Table 1 – DNA Profiles Obtained for the items tested.

Sample ID	2021-036392 MOI Bode DNA Collector with Wanda K. Williams' Sample	2021-036392 CHI Q1-Q2M (Externally Provided DNA Typing Results)
Amelogenln	XX	NP
D3S1358	15.15	15.18
D1S1656	12.15.3	NP
D2S441	11.11.3	NP
D10S1248	13.16	NP
D13S317	11.12	8.12
Penta E	5.17	NP
D16S539	9.12	9.12
D18S51	12.13	12.12
D2S1338	18.23	NP
CSF1PO	12.12	11.12
Penta D	10.14	NP
TH01	7.53	6.7
VWA	16.17	17.17
D21S11	28.29	28.31.2
D7S820	9.11	12.12
D5S818	11.13	12.13
TPOX	8.9	9.11
DYS391	NR	NP
D8S1179	15.16	13.16

D12S391	20.22	NP
D19S433	13.16	NP
FGA	22.22	21.22
D22S1045	14.15	NP

NR = No Result

NP= Not Provided

STATE COLLEGE POLICE LABORATORY SERVICE REQUEST TO DNA SOLUTIONS (JANUARY 26, 2021)

DNA Solutions, Inc.
755 Research Parkway, Suite 510
Oklahoma City, OK 73104
Phone: (405)271-6033
Fax: (405)271-6034

SUBMITTING AGENCY

Agency: State College Police

Point of Contact: Detective S. M. Bosak

Phone: (814) 278-4735

E-mail: sbosak@statecollegepa.us

LABORATORY SERVICE REQUEST

Sample Item #: Item #10

Description: Bode DNA Collector with Wanda K. Williams' sample

Special Instructions/Incident Scenario:

See correspondence.

Authorization for Consumption of DNA Evidence: Some types of evidence may be consumed during DNA analysis. DNA Solutions makes every effort to preserve at least half of the evidence or DNA extract from the evidence. This form will be considered authorization for consumption of all case Items submitted, unless otherwise notified.

Confidentiality Statement: To maintain confidentiality, test results will only be released to the

agency contact listed on this form, unless otherwise notified in writing.

CODIS Upload: Any agency submitting evidence with the Intention of uploading DNA profile(s) obtained to CODIS/NDIS must have Inspected and approved the vendor facilities prior to commencing any laboratory analyses. Documented approval from the technical leader of the NDIS laboratory to the vendor laboratory is required prior to initiating any case analysis.

Disposition of Evidence: Upon completion of analysis, evidence Items may be returned to the submitting agency or destroyed by the laboratory. Notification and approval by the Technical Leader is required for return or destruction.

DNA Solutions maintains a right of refusal for items that pose a health and/or safety risk to personnel.

DNA SOLUTIONS CERTIFICATE OF ANALYSIS - ADDITIONAL TESTING (CE 23) (APRIL 5, 2021)

DNA Solutions, Inc.
755 Research Parkway, Suite 510
Oklahoma City, OK 73104
Phone: (866) 362-9778
Fax: (405) 271-6034

Agency:

State College Police
243 South Allen Street
State College, PA 16801

Testing Dates: March 2 – April 2, 2021

DNAS Case Number: 2021-036392

Submitted by: Det. S.M. Bosak

Agency Case Number: 95SC06687

DNAS Samples ID: 2021-036392 MO1

Sample Description: Item #10 Bode DNA Collector with Wanda K. Williams' Sample

Date Received: 1/28/2021

DNAS Sample ID: 2021-036392 CH1*

Sample Description: Q1-Q2M (Externally Provided DNA Typing Results)

Date Received: 3/2/2021

DNAS Sample ID: 2021-036392 CH2 / CH2.1

Sample Description:

Item #13 White Plastic Fork

Item #16 Used Napkin

Date Received: 3/16/2021

DNAS Sample ID: 2021-036392 CH2.2Sample Description: Item #11 Plastic Fork

Item not tested

Item previously tested

Remarks:

2021-036392 CH2 was labeled on the evidence packaging as "Item #13 Plastic Knife with DNA of Z. Williams" but submission paperwork listed the item as "Item #13 White Plastic Fork." The item received was confirmed to be a plastic knife.

DNA Analysis:

The extracted Deoxyribonuclelo acid (DNA) from the above listed samples was characterized using polymerase chain reaction (PCR) and capillary electrophoresis. Genetic profiles were developed at the 23 Short Tandem Repeat (STR) loci and amelogenin (a gender specific locus) contained in the Promega PowerPlex Fusion amplification kit. DYS391 and amelogenin are not used for statistical purposes. The loci tested and the results obtained for each tested sample are listed in Table 1. All laboratory control samples yielded the expected results (not shown).

Analysis Results:

2021-036392 CH2

No DNA profile was obtained.

2021-036392 CH2.1

No analysis was completed for this DNA profile. This DNA profile was not suitable for comparisons.

2021-036392 CH2.2

A single source, male DNA profile was obtained.

Frequency Estimates:

2021-036392 CH2.2 (Paternity)

Based on the results of the thirteen genetic systems tested:

The Combined Paternity Index is 12,719.2932. The relative chance of Paternity, assuming a 50% prior chance, is 99.9921% as compared to an untested, unrelated man in the Caucasian population.

The Combined Paternity Index is 202,748.9852. The relative chance of Paternity, assuming a 50% prior chance, is 99.9995% as compared to an untested, unrelated man in the African population.

The Combined Paternity Index is 805,477.4172. The relative chance of Paternity, assuming a 50% prior chance, is 99.9998% as compared to an untested, unrelated man in the Hispanic population.

Figure 1 – Avunoular Relationship Tested

Untested GP

Externally Provided, Q1-Q2M

Untested AP

Plastic Fork, Item #11

2021-036392 CH2.2 (Avuncular)

Based on the results of the thirteen genetic systems tested:

Using a Caucasian database, the Cumulative Relationship Index is 28,4104. It is 28,4104 times more likely that all individuals in Figure 1 are related as compared to the probability that only the relationships defined by the solid lines (if any) are biologically related. The probability that all individuals are related is 96.5998% (Prior probability = 0.5).

Using an African database, The Cumulative Relationship Index is 163.7065. It is 163.7065 times more likely that all individuals in Figure 1 are related as compared to the probability that only the relationships defined by the solid lines (if any) are biologically related. The probability that all individuals are related is 99.3928% (Prior probability = 0.5).

Using a Hispanic database, The Cumulative Relationship Index is 249.4781. It is 249.4781 times more likely that all individuals in Figure 1 are related as compared to the probability that only the relationships defined by the solid lines (if any) are biologically related. The probability that all individuals are related is 99.6007% (Prior probability = 0.5).

Conclusions:

Based on the thirteen genetic systems tested, Q1-Q2M (Externally Provided DNA Typing Results) (2021-036392 CH1) cannot be excluded as the biological father of Item #11 Plastic Fork (2021-036392 CH2.2) as determined by the presence of an obligate paternal allele at all these systems.

Based on the relationship defined in Figure 1, it is supported that all individuals are biologically related as defined. The ratio between the paternity and avuncular test is: 447.6985 using a Caucasian database, 1238.4907 using an African database, and 3228.6498 using a Hispanic database.

Disposition of Evidence:

The original package containing the evidence will be retained for 80 years or until a notification of return or destruction is received.

Attest:

I certify that I performed the above analysis or examination as an employee of DNA Solutions, Inc. and that the above is an accurate record of the results and interpretation of that analysis or examination. This test is accredited under the laboratory's ISO/IEC 17025 accreditation issued by the ANSI National Accreditation Board. Refer to certificate and scope of accreditation (FT-0302). This test report shall not be reproduced except in full, without written approval of the lab.

/s/ Cortney Schartz, MS
DNA Analyst

4/5/2021
Date

DNAS Case Number: 2021-036392

Agency Case Number: 95SC06687

Table 1. DNA profiles obtained for the items tested.

Sample ID 2021-036392 MO1 Item #10 Bode DNA Collector with Wanda K. Williams' Sample

Amelogenin	XX
D3S1358	15,15
D1S1656	12,15.3
D2S441	11,11.3
D10S1248	13,16
D13S317	11,12
Penta E	5,17
D16S539	9,12
D18S51	12,13
DZS1338	18,23
CSFIPO	11,12
Penta D	10,14
TH01	7,9.3
vWA	16,17
D21S11	28,29
D7S820	9,11
D5S818	11,13
TPOX	8,9
DYS391	NR
D8S1179	15,16

D12S391	20,22
D195433	13,16
FGA	22,22
D22S1045	14,15

Sample ID 2021-036392 CHI Q1-Q2M (Externally Provided DNA Typing Results)

Amelogenin	NP
D3S1358	15,18
D1S1656	NP
D2S441	NP
D10S1248	NP
D13S317	8,12
Penta E	NP
D16S539	9,12
D18S51	12,12
DZS1338	NP
CSFIPO	11,12
Penta D	NP
TH01	6,7
vWA	17,17
D21S11	28,31.2
D7S820	11,11
D5S818	12,13
TPOX	9,11
DYS391	NP

D8S1179	13,15
D12S391	NP
D195433	NP
FGA	21,22
D22S1045	NP

Sample ID 2021-036392 CH2 Item #13 White Plastic Fork (Evidence Item labeled "Item # 13 Plastic Knife with DNA of Z. Williams")

Amelogenin	NR
D3S1358	NR
D1S1656	NR
D2S441	NR
D10S1248	NR
D13S317	NR
Penta E	NR
D16S539	NR
D18S51	NR
DZS1338	NR
CSFIPO	NR
Penta D	NR
TH01	NR
vWA	NR
D21S11	NR
D7S820	NR
D5S818	NR

TPOX	NR
DYS391	NR
D8S1179	NR
D12S391	NR
D195433	NR
FGA	NR
D22S1045	NR

Sample ID 2021-036392 CH2.2 Item #11 Plastic Fork

Amelogenin	XY
D3S1358	18,18
D1S1656	14,25
D2S441	11,3.13
D10S1248	13,14
D13S317	8,11
Penta E	5,9
D16S539	9,9
D18S51	12,14
DZS1338	18,19
CSFIPO	11,17.2
Penta D	9,13
TH01	6,9.3
vWA	15,17
D21S11	(28),32.2
D7S820	9,11

D5S818	11,13
TPOX	9,12
DYS391	11
D8S1179	13,13
D12S391	23,24
D195433	(14),15
FGA	22,23
D22S1045	15,16

Sample ID 2021-036392 CH2.2 Item #11 Plastic Fork (RePCR)

Amelogenin	XY
D3S1358	18,18
D1S1656	14,15
D2S441	11,3.13
D10S1248	13,14
D13S317	8,11
Penta E	5,(9)
D16S539	9,9
D18S51	12,14
DZS1338	18,19
CSFIPO	11,17.2
Penta D	9,13
TH01	6,9.3
vWA	15,17
D21S11	28,(38),32.2

D7S820	9,11
D5S818	11,13
TPOX	12,12
DYS391	11
D8S1179	13,13
D12S391	23,24
D195433	14,15
FGA	22,23
D22S1045	15,16

NR = No Result

NP = Not Provided

Values contained in parenthesis () represent minor alleles with a peak height ratio less than the laboratory validated 95% confidence level.

Item previously tested

CERTIFICATE OF ANALYSIS - ADDITIONAL TESTING & AMENDED REPORT (APRIL 6, 2021)

DNA Solutions, Inc.
755 Research Parkway, Suite 510
Oklahoma City, OK 73104
Phone: (866) 362-9778
Fax: (405) 271-6034

Agency:

State College Police
243 South Allen Street
State College, PA 16801

Testing Dates: March 2 – April 2, 2021

DNAS Case Number: 2021-036392

Submitted by: Det. S.M. Bosak

Agency Case Number: 95SC06687

Date Received:1/28/2021

DNAS Samples ID: 2021-036392 MO1

Sample Description: Item #10 Bode DNA Collector with Wanda K. Williams' Sample

Date Received: 1/28/2021

DNAS Sample ID: 2021-036392 CH1*

Sample Description: Q1-Q2M (Externally Provided DNA Typing Results)

Date Received: 3/2/2021

DNAS Sample ID: 2021-036392 CH2/CH2.1

Sample Description:

Item #13 White Plastic Fork (Evidence Item labeled "Item #13 Plastic Knife with DNA of Z, Williams")

Item #16 Used Napkin

Date Received: 3/16/2021

DNAS Sample ID: 2021-036392 CH2.2

Sample Description: Item #11 Plastic Fork

Item not tested

Item previously tested

This report amends DNA Solutions' Certificate of Analysis for case number 2021-036392 issued on April 5, 2021. Amendments to the original report include updating the sample description for 2021-036392 CH2.

Remarks:

2021-036392 CH2 was labeled on the evidence packaging as "Item #13 Plastic Knife with DNA of Z. Williams" but submission paperwork listed the item as "Item #13 White Plastic Fork." The item received was confirmed to be a plastic knife.

DNA Analysis:

The extracted Deoxyribonucleic acid (DNA) from the above listed samples was characterized using polymerase chain reaction (PCR) and capillary electrophoresis. Genetic profiles were developed at the 23 Short Tandem Repeat (STR) loci and amelogenin (a gender specific locus) contained in the Promega PowerPlex Fusion amplification kit. DYS391 and amelogenin are not used for statistical

purposes. The loci tested and the results obtained for each tested sample are listed in Table 1. All laboratory control samples yielded the expected results (not shown).

Analysis Results:

2021-036392 CH2

No DNA profile was obtained.

2021-036392 CH2.1

No analysis was completed for this DNA profile. This DNA profile was not suitable for comparisons.

2021-036392 CH2.2

A single source, male DNA profile was obtained.

Frequency Estimates:

2021-036392 CH2.2 (Paternity)

Based on the results of the thirteen genetic systems tested:

The Combined Paternity Index is 12,719.2932. The relative chance of Paternity, assuming a 50% prior chance, is 99.9921% as compared to an untested, unrelated man in the Caucasian population.

The Combined Paternity Index is 202,748.9852. The relative chance of Paternity, assuming a 50% prior chance, is 99.9995% as compared to an untested, unrelated man in the African population.

The Combined Paternity Index is 805,477.4172. The relative chance of Paternity, assuming a 50% prior chance, is 99.9998% as compared to an untested, unrelated man in the Hispanic population.

Figure 1 – Avunoular Relationship Tested

Untested GP

Externally Provided, Q1-Q2M

Untested AP

Plastic Fork, Item #11

2021-036392 CH2.2 (Avuncular)

Based on the results of the thirteen genetic systems tested:

Using a Caucasian database, the Cumulative Relationship Index is 28,4104. It is 28,4104 times more likely that all individuals in Figure 1 are related as compared to the probability that only the relationships defined by the solid lines (if any) are biologically related. The probability that all individuals are related is 96.5998% (Prior probability = 0.5).

Using an African database, The Cumulative Relationship Index is 163.7065. It is 163.7065 times more likely that all individuals in Figure 1 are related as compared to the probability that only the relationships defined by the solid lines (if any) are biologically related. The probability that all individuals are related is 99.3928% (Prior probability = 0.5).

Using a Hispanic database, The Cumulative Relationship Index is 249.4781. It is 249.4781 times more likely that all individuals in Figure 1 are related as compared to the probability that only the relationships defined by the solid lines (if any) are biologically related. The probability that all individuals are related is 99.6007% (Prior probability = 0.5).

Conclusions:

Based on the thirteen genetic systems tested, Q1-Q2M (Externally Provided DNA Typing Results) (2021-036392 CH1) cannot be excluded as the biological father of Item #11 Plastic Fork (2021-036392 CH2.2) as determined by the presence of an obligate paternal allele at all these systems.

Based on the relationship defined in Figure 1, it is supported that all individuals are biologically related as defined. The ratio between the paternity and avuncular test is: 447.6985 using a Caucasian database, 1238.4907 using an African database, and 3228.6498 using a Hispanic database.

Disposition of Evidence:

The original package containing the evidence will be retained for 80 years or until a notification of return or destruction is received.

Attest:

I certify that I performed the above analysis or examination as an employee of DNA Solutions, Inc. and that the above is an accurate record of the results and interpretation of that analysis or exam ination. This test is accredited under the laboratory's ISO/IEC 17025 accreditation issued by the ANSI National Accreditation Board. Refer to certificate and scope of accreditation (FT-0302). This test report shall not be reproduced except in full, without written approval of the lab.

/s/ Cortney Schartz, MS
DNA Analyst

4/6/2021
Date

DNAS Case Number: 2021-036392

Agency Case Number: 95SC06687

Table 1. DNA profiles obtained for the items tested.

Sample ID 2021-036392 MO1 Item #10 Bode DNA Collector with Wanda K. Williams' Sample

Amelogenin	XX
D3S1358	15,15
D1S1656	12,15.3
D2S441	11,11.3
D10S1248	13,16
D13S317	11,12
Penta E	5,17
D16S539	9,12
D18S51	12,13
DZS1338	18,23
CSFIPO	11,12
Penta D	10,14
TH01	7,9.3
vWA	16,17
D21S11	28,29
D7S820	9,11

D5S818	11,13
TPOX	8,9
DYS391	NR
D8S1179	15,16
D12S391	20,22
D195433	13,16
FGA	22,22
D22S1045	14,15

Sample ID 2021-036392 CHI Q1-Q2M (Externally Provided DNA Typing Results)

Amelogenin	NP
D3S1358	15,18
D1S1656	NP
D2S441	NP
D10S1248	NP
D13S317	8,12
Penta E	NP
D16S539	9,12
D18S51	12,12
DZS1338	NP
CSFIPO	11,12
Penta D	NP
TH01	6,7
vWA	17,17
D21S11	28,31.2

D7S820	11,11
D5S818	12,13
TPOX	9,11
DYS391	NP
D8S1179	13,15
D12S391	NP
D195433	NP
FGA	21,22
D22S1045	NP

Sample ID 2021-036392 CH2 Item #13 White Plastic Fork (Evidence Item labeled "Item # 13 Plastic Knife with DNA of Z. Williams")

Amelogenin	NR
D3S1358	NR
D1S1656	NR
D2S441	NR
D10S1248	NR
D13S317	NR
Penta E	NR
D16S539	NR
D18S51	NR
DZS1338	NR
CSFIPO	NR
Penta D	NR
TH01	NR

vWA	NR
D21S11	NR
D7S820	NR
D5S818	NR
TPOX	NR
DYS391	NR
D8S1179	NR
D12S391	NR
D195433	NR
FGA	NR
D22S1045	NR

Sample ID 2021-036392 CH2.2 Item #11 Plastic Fork

Amelogenin	XY
D3S1358	18,18
D1S1656	14,25
D2S441	11,3.13
D10S1248	13,14
D13S317	8,11
Penta E	5,9
D16S539	9,9
D18S51	12,14
DZS1338	18,19
CSFIPO	11,17.2
Penta D	9,13

TH01	6,9.3
vWA	15,17
D21S11	(28),32.2
D7S820	9,11
D5S818	11,13
TPOX	9,12
DYS391	11
D8S1179	13,13
D12S391	23,24
D195433	(14),15
FGA	22,23
D22S1045	15,16

Sample ID 2021-036392 CH2.2 Item #11 Plastic Fork (RePCR)

Amelogenin	XY
D3S1358	18,18
D1S1656	14,15
D2S441	11,3.13
D10S1248	13,14
D13S317	8,11
Penta E	5,(9)
D16S539	9,9
D18S51	12,14
DZS1338	18,19
CSFIPO	11,17.2

Penta D	9,13
TH01	6,9.3
vWA	15,17
D21S11	28,(38),32.2
D7S820	9,11
D5S818	11,13
TPOX	12,12
DYS391	11
D8S1179	13,13
D12S391	23,24
D195433	14,15
FGA	22,23
D22S1045	15,16

NR = No Result

NP = Not Provided

Values contained in parenthesis () represent minor alleles or alleles with a peak height ratio less than the laboratory validated 95% confidence level.

Item previously tested.

CERTIFICATE OF ANALYSIS - ADDITIONAL TESTING (JULY 21, 2021)

DNA Solutions, Inc.
755 Research Parkway, Suite 510
Oklahoma City, OK 73104
Phone: (866) 362-9778
Fax: (405) 271-6034

Agency:

State College Police
243 South Allen Street
State College, PA 16801

Testing Dates: June 10 – July 7, 2021

DNAS Case Number: 2021-036392

Submitted by: Det. S.M. Bosak

Agency Case Number: 95SC06687

Date Received: 1/28/2021

DNAS Samples ID: 2021-036392 MO1

Sample Description: Item #10 Bode DNA Collector with Wanda K. Williams' Sample

Date Received: 1/28/2021

DNAS Sample ID: 2021-036392 CH1*

Sample Description: Q1-Q2M (Externally Provided DNA Typing Results)

Date Received: 3/2/2021

DNAS Sample ID: 2021-036392 CH2 / CH2.1

Sample Description:

Item #13 White Plastic Fork

Item #16 Used Napkin

Date Received: 3/16/2021

DNAS Sample ID: 2021-036392 CH2.2

Sample Description: Item #11 Plastic Fork

Date Received: 6/8/2021

DNAS Sample ID: 2021-036392 AFI

Sample Description: Item #27 Ice Tea Bottle believed to contain saliva and tobacco

Item not tested

Item previously tested

Remarks:

2021-036392 CH2 was labeled on the evidence packaging as "Item #13 Plastic Knife with DNA of Z. Williams" but submission paperwork listed the item as "Item #13 White Plastic Fork." The item received was confirmed to be a plastic knife.

DNA Analysis:

The extracted Deoxyribonucleic acid (DNA) from the above listed samples was characterized using polymerase chain reaction (PCR) and capillary electrophoresis. Genetic profiles were developed at the 23 Short Tandem Repeat (STR) loci and amelogenin (a gender specific locus) contained in the Promega PowerPlex Fusion amplification kit. DYS391 and amelogenin are not used for statistical purposes. The loci tested and the results obtained for each tested sample are listed in Table 1. All laboratory control samples yielded the expected results (not shown).

Analysis Results:

2021-036392 CH1 [Q1-Q2M (Externally Provided DNA Typing Results)]

This profile is concordant with the DNA profile obtained from Item # 27 Ice Tea Bottle believed to contain saliva and tobacco (2021-036392 AFI); therefore, Item # 27 Ice Tea Bottle believed to contain saliva and tobacco cannot be excluded as the contributor to this DNA profile

2021-036392 AFI [Item # 27 Ice Tea Bottle believed to contain saliva and tobacco]

A single source, male DNA profile was obtained.

Frequency Estimates:

2021-036392 CHI [Q1-Q2M (Externally Provided DNA Typing Results)]

This profile is 3.2967*10 15, 6.1595*10 16, or 1.4623*10 17 times more likely to be observed if Item # 27 Ice Tea Bottle believed to contain saliva and tobacco (2021-036392 AFI) is the contributor rather than if one random, unrelated person from the Caucasian, African American, or S.W. Hispanic population is the contributor, respectively.

Disposition of Evidence:

The original package containing the evidence will be retained for 80 years or until a notification of return or destruction is received.

Attest:

I certify that I performed the above analysis or examination as an employee of DNA Solutions, Inc.

and that the above is an accurate record of the results and interpretation of that analysis or examination. This test is accredited under the laboratory's ISO/IEC 17025 accreditation issued by the ANSI National Accreditation Board. Refer to certificate and scope of accreditation (FT-0302). This test report shall not be reproduced except in full, without written approval of the lab.

/s/ Cortney Schartz, MS
DNA Analyst

7/21/2021
Date

DNAS Case Number: 2021-036392

Agency Case Number: 95SC06687

Table 1. DNA profiles obtained for the items tested.

Sample ID 2021-036392 MO1 Item #10 Bode DNA Collector with Wanda K. Williams' Sample

Amelogenin	XX
D3S1358	15,15
D1S1656	12,15.3
D2S441	11,11.3
D10S1248	13,16
D13S317	11,12
Penta E	5,17

D16S539	9,12
D18S51	12,13
D2S1338	18,23
CSFIPO	11,12
Penta D	10,14
TH01	7,9.3
vWA	16,17
D21S11	28,29
D7S820	9,11
D5S818	11,13
TPOX	8,9
DYS391	NR
D8S1179	15,16
D12S391	20,22
D19S433	13,16
FGA	22,22
D22S1045	14,15

Sample ID 2021-036392 CH1 Q1-Q2M
(Externally Provided DNA Typing Results)

Amelogenin	NP
D3S1358	15,18
D1S1656	NP
D2S441	NP
D10S1248	NP
D13S317	8,12

Penta E	NP
D16S539	9,12
D18S51	12,12
D2S1338	NP
CSFIPO	11,12
Penta D	NP
TH01	6,7
vWA	17,17
D21S11	28,31.2
D7S820	11,11
D5S818	12,13
TPOX	9,11
DYS391	NP
D8S1179	13,15
D12S391	NP
D19S433	NP
FGA	21,22
D22S1045	NP

Sample ID 2021-036392 CH2 Item #13 White Plastic Fork

Amelogenin	NR
D3S1358	NR
D1S1656	NR
D2S441	NR
D10S1248	NR

D13S317	NR
Penta E	NR
D16S539	NR
D18S51	NR
D2S1338	NR
CSFIPO	NR
Penta D	NR
TH01	NR
vWA	NR
D21S11	NR
D7S820	NR
D5S818	NR
TPOX	NR
DYS391	NR
D8S1179	NR
D12S391	NR
D19S433	NR
FGA	NR
D22S1045	NR

Sample ID 2021-036392 CH2.2* Item #11 Plastic Fork

Amelogenin	XY
D3S1358	18,18
D1S1656	14,15
D2S441	11,3.13

D10S1248	13,14
D13S317	8,11
Penta E	5,9
D16S539	9,9
D18S51	12,14
D2S1338	18,19
CSFIPO	11,17.2
Penta D	9,13
TH01	6,9.3
vWA	15,17
D21S11	(28),32.2
D7S820	9,11
D5S818	11,13
TPOX	9,12
DYS391	11
D8S1179	13,13
D12S391	23,24
D19S433	(14),15
FGA	22,23
D22S1045	15,16

Sample ID 2021-036392 CH2.2 Item #11 Plastic Fork (RePCR)

Amelogenin	XY
D3S1358	18,18
D1S1656	14,15

D2S441	11,3.13
D10S1248	13,14
D13S317	8,11
Penta E	5,(9)
D16S539	9,9
D18S51	12,14
D2S1338	18,19
CSFIPO	11,17.2
Penta D	9,13
TH01	6,9.3
vWA	15,17
D21S11	28,(38),32.2
D7S820	9,11
D5S818	11,13
TPOX	12,12
DYS391	11
D8S1179	13,13
D12S391	23,24
D19S433	14,15
FGA	22,23
D22S1045	15,16

Sample ID 2021-036392 AFI Item #27 Ice Tea Bottle believed to contain saliva and tobacco

Amelogenin	XY
D3S1358	15,18

D1S1656	12,14
D2S441	10,11.3
D10S1248	13,15
D13S317	8,12
Penta E	5,10
D16S539	9,12
D18S51	12,12
D2S1338	18,18
CSFIPO	11,12
Penta D	10,13
TH01	6,7
vWA	17,17
D21S11	28,31.2
D7S820	11,11
D5S818	12,13
TPOX	(9),11
DYS391	11
D8S1179	13,15
D12S391	20,23
D19S433	13,15
FGA	21,22
D22S1045	11,15

NR = No Result

NP = Not Provided

Values contained in parenthesis () represent minor alleles with a peak height ratio less than the laboratory validated 95% confidence level.

Item previously tested

LETTER FROM DETECTIVE STEPHEN M. BOSAK (CE 26) (JUNE 4, 2021)

June 4, 2021

STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
www.statecollegepa.us
police@statecollegepa.us

Phone: 814-234-7150
Fax: 814-231-3070

John Gardner
Chief of Police

U.S. Department of Justice
Federal Bureau of Investigation Laboratory
Evidence Control Center
2501 Investigation Parkway
Quantico, VA 22135

ATTENTION: DNA Laboratory

RE: SCPD Incident # 95SCO6687
FBI File No. 95A-HQ-1122440
Case No. 021119008 NR

To Whom It May Concern,

My name is Detective Stephen M. Bosak of the State College Police Department and I have been assigned to investigate an assault/sexual assault case that occurred on May 13, 1995 on the 900 block of South Pugh Street in State College, Pennsylvania. The victim of this case is T.L. T.L. Detective Thomas

Jordan from the State College Police was the original lead investigator of this case and he worked with the FBI at the start of this investigation.

Recently I have been working with FBI Physical Scientist Erin Farais and FBI Forensic Examiner Jerrilyn Conway in regards to this investigation. During the early stages of this investigation the FBI had identified a DNA profile of the suspect using the RFLP method and the profile was later updated by the FBI using the STR method in 2002/2003.

When I was assigned this case I used genetic genealogy to try to ascertain a possible suspect. As a result I was able to focus my search to two men. One of the men lives in Reedsville, Pennsylvania while the other man lives in Fairbanks, Alaska.

Using a private laboratory it is believed that the suspect for this case is more likely the man who currently lives in Reedsville, Pennsylvania. On Wednesday, June 2, 2021 I traveled to 27 Edgewood Drive in Reedsville, Pennsylvania and collected garbage during a "trash pull" from suspect Scott William's residence. The trash was collected and brought to the State College Police Station. An examination of the collected trash bags revealed several bottles that contained substances believed to be saliva and tobacco. Six bottles were collected and placed into evidence.

Based on Facebook pictures it appears that Scott Williams chews tobacco and it is believed that the saliva contained in these bottles most likely originated from him.

As per a phone conversation I had with Physical Scientist Erin Farais I am sending the FBI one of these collected bottles and asking that a sample from

this bottle be analyzed and compared to the DNA profile that the FBI had developed of the suspect using STR in 2002/2003.

If you have any questions regarding this request feel free to contact me at my office phone which is (814) 278-4735 or our front desk phone which is (814) 234-7150. Thank you very much for your assistance.

Sincerely,

/s/ Detective Stephen M. Bosak
State College Police
Office (814) 278-4735
Front Desk (814) 234-7150

EMAIL FROM HUFF
(JUNE 14, 2021)

Lab # 2021-01196 #1; Case ID: HQ-1122440

Huff, Megan Christine (LD) (CON)
<MCHUFF@fbi.gov>

Mon 6/14/2021 8:54 AM

To: sbosak@statecollegepa.us
<sbosak@statecollegepa.us>

The evidence you submitted to the FBI Laboratory on June 8, 2021, was received by the DNA Casework Unit (DCU) on June 14, 2021, for serological, mitochondrial, and/or nuclear DNA testing. The DCU will use the information contained in your submittal letter to develop an examination plan and then place your case in our queue for examination. This email is not an acknowledgment that all items described in the request were received. As a part of this process, you may be contacted by one of our examiners, either via telephone or e-mail, for additional information regarding your submission, to include the resolution of any discrepancies encountered between the submitted request and the evidence received.

Upon completion of the DCU testing you will receive a report containing the results of our examinations. Please note, the DCU averages approximately a 90 day turn-around-time (TAT), however, that TAT can be affected by the number, and type, of items submitted and the examinations being requested.

If you have any questions regarding the status of the serological and/or DNA testing in this case or should you have additional information regarding

your submission, please contact the DCU at 703-632-8446. Additionally, please contact the DCU if the priority of this case changes or if the testing in this matter should become unnecessary.

FBI LABORATORY REPORT
(AUGUST 9, 2021)

2501 Investigation Parkway
Quantico, Virginia 22135
4940 Fowler Road
Huntsville, Alabama 35898

To:

Stephen M. Bosak
Detective
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: HQ-1122440

Lab No.: 2021-01196-2

Communication(s): June 4, 2021

Agency Reference(s): 95SC06687

Subject(s): Scott Williams

Victim(s): T.L.

Discipline(s): DNA

This document may contain personally identifiable information and must be afforded the protections required by applicable law, regulation, and policy. If you are not the intended recipient of this document, please destroy it promptly without further retention or dissemination, unless otherwise required by law.

FBI Laboratory Evidence Designator(s):

Item 1 Bottle with liquid contents

The item listed above was subjected to nuclear deoxyribonucleic acid (DNA) analysis.[1]

Results of Nuclear DNA Examinations:

Per incoming communication dated June 4, 2021 from Detective Stephen Bosak, item 1 is being used as an alternate reference sample for SCOTT WILLIAMS.

The DNA typing results from item 1 (S. WILLIAMS) were compared to the DNA typing results from items Q1-Q2M and Q1-Q2F [previously reported under FBI Laboratory Number 021119008 in the report dated January 21, 2004]. This report supplements the FBI Laboratory report 021119008, dated January 21, 2004.

Q1–Q2 (Vaginal swabs from T.L.)

Items Q1 and Q2 were previously combined for analysis. Item Q1–Q2 was previously extracted in two fractions, which will be designated as items Q1–Q2M and Q1–Q2F.

Q1–Q2M (male fraction from items Q1 and Q2)

Male DNA is present in item Q1–Q2M. Item Q1–Q2M was interpreted as originating from one individual. The DNA profile from item Q1–Q2M matches S. WILLIAMS. The random match probability

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[1] DNA analysis was performed using the Quantifiler™ Trio DNA Quantification Kit for the quantitation of human DNA and the GlobalFiler™ PCR Amplification Kit for the DNA typing of short tandem repeats (STRs).

calculated for item Q1–Q2M is approximately 2.0 quadrillion.[2]

Q1–Q2F (female fraction from items Q1 and Q2)

Male and female DNA is present in item Q1-Q2F. DNA from two or more individuals was obtained from item Q1-Q2F. A major female contributor can be discerned and is suitable for matching purposes. The STR typing results for the minor contributor(s) to item Q1-Q2F may only be used for exclusionary purposes.[3] S. WILLIAMS is excluded as a potential major contributor; however, S. WILLIAMS is inconclusive with regards to the comparison to the minor contributor to item Q1-Q2F.[4]

---

[2] The random match probability is defined as the chance of selecting an unrelated individual at random having an STR profile matching the DNA obtained from the evidence item. The uncertainty associated with a random match probability has been empirically demonstrated to be less than 10-fold in either direction. Calculations were performed using the African American, Caucasian, Hispanic, and Southeastern Hispanic and Southwestern Hispanic populations. The most common random match probability is reported.

[3] When the potential exists that not all of the genetic information in a biological sample has been detected, the results are not suitable for matching purposes; however, they may be used for exclusionary purposes. For STR typing results to be used for matching purposes, sufficient DNA quality and/or quantity is necessary.

[4] A comparison is inconclusive when the reference sample can be neither included nor excluded as a potential contributor.

Database Entry Information:

The DNA results obtained from the tested item are not eligible for entry into the Combined DNA Index System (CODIS).

No other nuclear DNA examinations were conducted.

Methods/Limitations:

The following methods and limitations apply to the results/conclusions provided in the results section(s) of this report and are referenced by number in the body of the text for clarity.

Remarks:

If future comparisons are requested, a known blood or buccal (saliva) sample from the subject and/or victim should be submitted.

The work described in this report was conducted at the Quantico Laboratory, and the results will be maintained by the FBI Laboratory for possible future comparisons. This report contains the opinions and interpretations of the issuing examiner and is supported by records retained in the FBI Laboratory file. This report conforms to the Department of Justice Uniform Language for Testimony and Reports for Forensic Autosomal DNA Examinations Using Probabilistic Genotyping Systems. For questions about the content of this report, please contact Forensic Examiner Jerrilyn M. Conway at (505) 241-5163 or jmconway@fbi.gov.

The submitted item will be returned to you under separate cover. In addition to the evidence in

the case, secondary evidence was generated that will also be returned to you. The secondary evidence can be found in a package marked DNA Secondary Evidence.

Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to provide the related materials. The FBI cannot ensure timely delivery of discovery requests received in less time.

Jerrilyn M. Conway
DNA Casework Unit

FBI LABORATORY REPORT (CE 29)
(AUGUST 18, 2021)

2501 Investigation Parkway
Quantico, Virginia 22135
4940 Fowler Road
Huntsville, Alabama 35898

To:

Stephen M. Bosak
Detective
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: HQ-1122440

Lab No.: 2021-01196-3

Communication(s): June 4, 2021

Agency Reference(s): 95SC06687

Subject(s): Scott Williams

Victim(s): T.L.

Discipline(s): DNA

This document may contain personally identifiable information and must be afforded the protections required by applicable law, regulation, and policy. If you are not the intended recipient of this document, please destroy it promptly without further retention or dissemination, unless otherwise required by law.

FBI Laboratory Evidence Designator(s):

Item 1 — Bottle with liquid contents

Item Q1-Q2M — Male fraction from items Q1 and Q2 (Vaginal swabs from T.L.)

The items listed above were previously subjected to nuclear deoxyribonucleic acid (DNA) analysis.

This report amends the FBI Laboratory report 2021-01196-2, dated August 9, 2021.

RESULTS OF NUCLEAR DNA EXAMINATIONS:

In the report dated August 9, 2021, the statistic for item Q1-Q2M was stated:

The random match probability calculated for item Q1-Q2M is approximately 2.0 quadrillion.

This report amends this statement to:

The random match probability calculated for item Q1-Q2M is approximately 1 in 2.0 quadrillion.

REMARKS:

The work described in this report was conducted at the Quantico Laboratory, and the results will be maintained by the FBI Laboratory for possible future comparisons. This report contains the opinions and interpretations of the issuing examiner and is supported by records retained in the FBI Laboratory file. This report conforms to the Department of Justice Uniform Language for Testimony and Reports for Forensic Autosomal DNA Examinations Using Probabilistic Genotyping Systems. For questions about the content of this report, please contact Forensic Examiner Jerrilyn M. Conway at (505) 241-5163 or jmconway@fbi.gov.

Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to

provide the related materials. The FBI cannot ensure timely delivery of discovery requests received in less time.

Jerrilyn M. Conway
DNA Casework Unit

FBI LABORATORY REPORT (CE 30)
(SEPTEMBER 16, 2021)

2501 Investigation Parkway
Quantico, Virginia 22135
4940 Fowler Road
Huntsville, Alabama 35898

To:

Stephen M. Bosak
Detective
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: HQ-1122440

Lab No.: 2021-01196-4

Communication(s): June 4, 2021

Agency Reference(s): 95SC06687

Subject(s): Scott Williams

Victim(s): T.L.

Discipline(s): DNA

This document may contain personally identifiable information and must be afforded the protections required by applicable law, regulation, and policy. If you are not the intended recipient of this document, please destroy it promptly without further retention or dissemination, unless otherwise required by law.

FBI Laboratory Evidence Designator(s):

Item 1 Bottle with liquid contents

The item listed above was subjected to nuclear deoxyribonucleic acid (DNA) analysis.[1]

This report supersedes the FBI Laboratory Reports 2021-01196-2, dated August 9, 2021, and 2021-01196-3, dated August 18, 2021. After those reports were issued, the FBI Laboratory identified a quality issue with the reagent mix used during the detection stage of DNA analysis. The issue rendered the data used for the analysis and the previously reported results unreliable. Any sample affected by the issue has been reprocessed and the conclusions provided to you via this superseding report are based on the reprocessed data. All information in the previous Lab Reports is superseded by the current Laboratory Report.

Results of Nuclear DNA Examinations

Per incoming communication dated June 4, 2021 from Detective Stephen Bosak, item 1 is being used as an alternate reference sample for SCOTT WILLIAMS.

The DNA typing results from item 1 (S. WILLIAMS) were compared to the DNA typing results from items Q1-Q2M and Q1-Q2F [previously reported under FBI Laboratory Number 021119008 in the report dated January 21, 2004]. This report supplements the FBI Laboratory report 021119008, dated January 21, 2004.

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[1] DNA analysis was performed using the Quantifiler™ Trio DNA Quantification Kit for the quantitation of human DNA and the GlobalFiler™ PCR Amplification Kit for the DNA typing of short tandem repeats (STRs).

Q1-Q2 (Vaginal swabs from T.L.)

Items Q1 and Q2 were previously combined for analysis. Item Q1-Q2 was previously extracted in two fractions, which will be designated as items Q1-Q2M and Q1-Q2F.

Q1-Q2M (male fraction from items Q1 and Q2)

Male DNA is present in item Q1-Q2M. Item Q1-Q2M was interpreted as originating from one individual. The DNA profile from item Q1-Q2M matches S. WILLIAMS. The random match probability calculated for item Q1-Q2M is approximately 1 in 2.0 quadrillion.[2]

Q1-Q2F (female fraction from items Q1 and Q2)

Male and female DNA is present in item Q1-Q2F. DNA from two or more individuals was obtained from item Q1-Q2F. A major female contributor can be discerned and is suitable for matching purposes. The STR typing results for the minor contributor(s) to item Q1-Q2F may only be used for exclusionary purposes.[3] S. WILLIAMS is excluded as a potential

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[2] The random match probability is defined as the chance of selecting an unrelated individual at random having an STR profile matching the DNA obtained from the evidence item. The uncertainty associated with a random match probability has been empirically demonstrated to be less than 10-fold in either direction. Calculations were performed using the African American, Caucasian, Southeastern Hispanic, and Southwestern Hispanic populations. The most common random match probability is reported.

[3] When the potential exists that not all of the genetic information

major contributor; however, S. WILLIAMS is inconclusive with regards to the comparison to the minor contributor to item Q1-Q2F.[4]

Database Entry Information

The DNA results obtained from the tested item are not eligible for entry into the Combined DNA Index System (CODIS).

No other nuclear DNA examinations were conducted.

Methods/Limitations

The following methods and limitations apply to the results/conclusions provided in the results section(s) of this report and are referenced by number in the body of the text for clarity.

Remarks

If future comparisons are requested, a known blood or buccal (saliva) sample from the victim and subject should be submitted.

The work described in this report was conducted at the Quantico Laboratory, and the results will be maintained by the FBI Laboratory for possible future comparisons. This report contains the opinions and interpretations of the issuing examiner and is

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in a biological sample has been detected, the results are not suitable for matching purposes; however, they may be used for exclusionary purposes. For STR typing results to be used for matching purposes, sufficient DNA quality and/or quantity is necessary.

[4] A comparison is inconclusive when the reference sample can be neither included nor excluded as a potential contributor.

supported by records retained in the FBI Laboratory file. This report conforms to the Department of Justice Uniform Language for Testimony and Reports for Forensic Autosomal DNA Examinations Using Probabilistic Genotyping Systems. For questions about the content of this report, please contact Forensic Examiner Jerrilyn M. Conway at (505) 241-5163 or jmconway@fbi.gov.

The submitted item will be returned to you under separate cover. In addition to the evidence in the case, secondary evidence was generated that will also be returned to you. The secondary evidence can be found in a package marked DNA Secondary Evidence.

Please allow a minimum of thirty days from the date of a discovery request for the FBI Laboratory to provide the related materials. The FBI cannot ensure timely delivery of discovery requests received in less time.

Jerrilyn M. Conway
DNA Casework Unit

**REQUEST FOR TRANSCRIPT
OR COPY, CENTRE COUNTY
(JANUARY 13, 2023)**

Pursuant to Pa.R.J.A. 4007(A), this form must be completed by any person requesting a transcript for any court proceeding. Additional requirements maybe found in the local rules of court for each judicial district. Local rules may be found by following the appropriate link at: http://www.pacourts.us/courts/courts-of-common-pleas/ If the cost of the transcript presents an economic hardship, there are reduced rates available to those who qualify. See Pa.R.J.A. 4007 (E). Copies of this request must be served in accordance with Pa.R.J.A. 4007(B). A deposit determined by local rule may be required

I. Case Information

Case Caption	*Commonwealth v. Scott R. Williams*
Docket Number	CP-14-CR-1169-2021
Presiding Judge	Judge Marshall
Courtroom	Annex
Date(s) of Proceeding	1/12/2023
Court Reporter Name	Jennifer/Brittany

Type of proceeding: (check the appropriate box)

☒ Criminal

Is this transcript request associated with an appeal?

☒ No

Children's Fast Track

☒ No

II. Requestor Information

Court Appointed?

☒ No

Does this request qualify for a reduced rate pursuant to Rule 4007(E)?

No ☒

If Yes, please provide proof of authorization for a reduced rate or an affidavit required by Rule 4008(B)(4) requesting waiver of all or a portion of the costs.

Name of requestor/Attorney ID Number (if applicable) First Assistant DA Sean McGraw/81584

Agency/Firm	District Attorney's Office
Street Address	106 East High Street Room 302
City	Bellefonte
State	PA
Zip	16823
Email	smcgraw@centreda.org
Phone	814-355-6735
Fax	814-355-6756

III. Transcript Items Requested

☒ Entire proceeding

IV. Private Party Transcript Delivery and Cost

For original transcript requests, please select from the following:

Delivery Time:

☒ Ordinary

Cost per page (electronic format):

$2.50 per page

Manner of Delivery:

☒ Electronic (PDF) format

Are you requesting a copy of an existing transcript?

☒ No

(For Photocopy rates, please see Rule 4008(D)).

/s/ Sean P. McGraw/EBW

1/13/2023
Date

ENCLOSURE: ECC AND LATENT FILES (CE 38)

ENCLOSURE

95A-HQ-1122440-4

ECC/LATENT FILES

ALL MAIL AND FILES MUST BE WALKED BACK TO ROOM 1B089 AND SIGNED IN. PLEASE DO NOT SEND FILE OR MAIL THROUGH THE MAILING SYSTEM.

ENHANCED HIGH-ACCURACY TRANSCRIPTION 2012 HAIR ANALYSIS TESTIMONY REVIEW PROJECT REPORT (SEPTEMBER 7, 1995)

{ Not Legible Handwritten notes }

Q1–Q5 swabs, no exam in H.F.U.

Q6–Q7 fingernail scrapings from both of victim's hands, received in two sealed white envelopes inside a sealed white envelope. ISL.H. FRAG. & F'sMTl.

Q8 pubic hair combings from victim, 5-13-95, received in two sealed white envelopes, no comb. ISL.H.FRAG.&F'sMTl.

Q9 debris from victim, received in a sealed white envelope. ISL.H.FRAG.&F'sMTl.

Q10–Q11 cigarette butt & stain, no exam in H.F.U.

Q12–Q17 debris from flower bed by sidewalk, received in six sealed plastic film containers.

Q12: ISL. F's MTd, No H's.

Q13: ISL. F's MTd, No H's.

Q14: ISL. F's MTd, No H's.

Q15: ISL. F's MTd, No H's.

Q16: ISL. F's MTd, No H's.

Q17: ISL. F's MTd, No H's.

Q18–Q38 swabs, no exam in H.F.U.

Q39 panties, black with black lace trim, worn & soiled, label Vanity Fair size 6, all nylon. Received in a sealed brown paper bag. ISL. F's MT'd, NO H's.

Q40 jeans, light blue denim, zip up front to Button, 3 front & 2 back pockets, worn & soiled. Dirt stains in back. Label Arizona, -9-, 100% cotton. Received in a sealed brown paper bag. ISL. H's & F's MT'd.

Q41-Q42 pair of black leather shoes, low cut, black laces, black rubber soles. Very dirty. Label Eastland, 7 1/2 m, Received in two separate sealed brown paper bags (scraped 8-9-95). ISL. H's & F's MT'd.

Q43-Q44 pair of socks, gray & white, worn & soiled, brown stains. Under calf length, no label. Received in two separate sealed brown paper bags. ISL. H.FRAG's & F's MT'd.

Q45 jacket, white, 3 front pockets, buttons up front, worn & soiled, heavily stained with possible blood. Hospital cuts on right sleeve. Label GAP -M- 100% cotton, RN 54023. Received in a sealed brown paper bag. ISL. H's & F's MT'd.

Q46 T-shirt, white, short (mid-waist), crew neck, worn & soiled. Heavily stained with possible blood. Hospital cuts up front & right sleeve. Label Zamoni, 100% cotton, RN 74148, -M-. Received in a sealed brown paper bag. ISL. H's & F's MT'd.

Q47 brassiere, white with white lace, one hook in back, cut open in front, possible blood stains. Label to Faded to read. Received in a sealed brown paper bag. ISL. F's MT'd, NO H's.

Q48 shoeprint, no exam in H.F.U.

K1 blood, no exam in H.F.U.

K2 head hair sample from victim, 5-13-95. Received in two sealed white envelopes. 2 SL. H's MT'd.

K3 pubic hair sample from victim, 5-13-95. Received in two sealed white envelopes. ISL. H's MT'd.

REEM'S AE DICTATION
(DECEMBER 18, 1995)

December 18, 1995

File #: 95A- HQ- 1122440

LAB #: 50519026 S/D ZJ OF QJ BO

REEM's AE DICTATION

No blood was identified on specimens Q1, Q2 or Q5.

Semen was identified on specimens Q1, Q2 and Q5. Specimens Q3 and Q4 were examined for the presence of semen; however, none was found.

STATS: 02 UF 8 8

FBI SPECIMENS REPORT
(MAY 26, 1995)

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

RECORDED
5/26/95
nrl

5/19/95
FRAM
REEM
BODZTAK

To:

T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

FBI File No.: 95A-HQ-1122440

Lab No.: 50519026 S/D ZJ UF QJ BO

Reference: Communication dated May 16, 1995

Your No.: 3295-06687

Re:

UNKNOWN SUSPECT;

T.L. -VICTIM;

RAPE/ASSAULT

Specimens received: May 19, 1995

ITEMS FROM VICTIM AND CRIME SCENE:

Q1-Q2 Vaginal swabs (49)

Q3-Q4 Vaginal smears (49)

Q5 Genital swabbing (49)

Q6-Q7 Fingernail scrapings (49)

Q8 Pubic hair combings (49)

Q9 Debris (49)

Q10 Cigarette butt (3)

Q11 Soil with stain (27)

Q12-Q17 Debris from flower bed (36 through 41)

Q18-Q23 Blood splatters scraped from window (29 through 34)

Q24-Q25 Swabbings from curb and sidewalk (1 and 2)

Q26-Q37 Swabbings from sidewalk near flower bed (14 through, 19 through 26)

Q38 Straw from grass near sidewalk (18)

Q39 Panties (4)

Q40 Jeans (5)

Q41-Q42 Shoes (6 and 7)

Q43-Q44 Socks (43 and 44)

Q45 Jacket (46)

Q46 Shirt (48)

Q47 Brassiere (42)

Q48 Plaster casting of shoeprint (28)

K1	Liquid blood sample from victim (50)
K2	Head hair sample from victim (49)
K3	Pubic hair sample from victim (49)

LETTER FROM STATE COLLEGE POLICE TO FBI (MAY 16, 1995)

Borough of State College

"A Home Rule Municipality"

STATE COLLEGE POLICE DEPARTMENT
118 South Fraser Street
State College, PA 16801

THOMAS R. KING
Chief of Police

814/234-7150
Fax 814/231-3070

Assistant Director
Federal Bureau of Investigation
10th Street and Pennsylvania Ave., N.W.
Washington, D.C. 20535

50519026

ATTN: Serology Laboratory
Hairs and Fibers Unit
Shoe Print Examination

RE: SCPD Inc. 3295-06337
Aggravated Assault
Victim: A.Y.
SCPD Inc. 3295-06687
Rape/Aggravated Assault
Victim: T.L.
Suspect: Unknown

Dear Sir:

On May 5, 1995 at approximately 10:34 PM A.Y. was walking through the Fairmount Avenue Park on her way to work at the College Diner. A.Y. was grabbed from behind and the assailant began choking her. She was thrown to the ground and the assailant straddled her and choked her with his hands. She did lose consciousness. The assailant was scratched by A.Y. on the leg. A police car pulled into the Park and scared off the attacker who is a white male, medium build, muscular with brown hair (slight curl).

Evidence in the forms of fingernail scrapings, A.Y.'s jean jacket, pink body shirt, pair of plaid shorts and a long flowered skirt are being sent to you for analysis and comparison. They will be listed in the evidence log contained later in this letter.

On May 13, 1995 somewhere around 2:15 AM to 2:25 AM, Ms. T.L. was walking to her apartment. As she walked south on South Pugh Street she was attacked by an unknown individual. T.L. was found at around 2:55 AM lying on the street. She had numerous head wounds and her pants, underwear and shoes were missing. The investigation which followed revealed that her clothing was found in a flower bed on the south west corner of the apartment building on the east side of the 900 block of South Pugh Street. There was blood splattering on the brick and window near the flower bed indicating the victim was struck while in this area. The victim could make no statement at that time and was taken to the hospital. She has not medically been cleared to talk with the police as of May 16, 1995. The crime

scene was processed and evidence was gathered from the victim.

The following items are being submitted to you for examination and analysis:

05/05/95 attack of A.Y.:

Y-A - Sirchie sex crimes kit containing fingernail scrapings and hair samples from A.Y.

Y-B - Jean jacket worn by A.Y. while being attacked

Y-C - Pink body suit worn by A.Y. while she was attacked.

Y-D - Plaid shorts worn by victim A.Y. when attacked.

Y-E - Flowered skirt worn by A.Y. when she was attacked.

05/13/95 attack of T.L.:

Q24-Q25 #1 & #2 - Blood swabbings from curb and sidewalk.

Q10 #3 - Camel cigarette butt (believed to be victims) in blood pool.

Q39 #4 - Victim's black underwear from flower bed.

Q40 #5 - Victim's blue jeans from flower bed.

Q41-Q42 #6 & 7 - Victim's shoes from flower bed.

Q26-Q29 #14-17 - Blood swabbings from sidewalk near flower bed.

Q38 #18 - Blood on straw taken from grass next to sidewalk.

Q30-Q37 #19-26 - Blood swabbings from sidewalk near flower bed.

Q11 #27 - Soil sample from flower bed (blood soaked)

Q48 #28 - Plaster casting of shoeprint taken from flower bed.

Q18-Q23 #29-34 - Blood splatters scraped from apartment window.

Q12-Q14 #36-38 - Fibers found with aid of UV light (from flower bed)

Q15 #39 - Hairs collected from flower bed.

Q16 #40 - Hairs collected from area of bloody soil in flower bed.

Q17 #41 - Fibers from flower bed.

Q47 #42 - Bra from victim (obtained from hospital)

Q43 #43 - Sock from victim (obtained from hospital)

Q44 #44 - Sock from victim (obtained from hospital)

Q45 #46 - Bloody white jacket from victim (obtained from hospital)

Q46 #48 - Bloody white shirt from victim (obtained from hospital)

Q1-Q9, K2 K3 #49 – Sirche Sex Crime Kit from victim T.L.

K1 #50 - 3 vials of blood from T.L. (EDTA)

Examination Requests:

Shoe-print Examination:

Can you please examine the cast of the shoe impression taken from the area in the flower bed where part of the assault occurred. If possible, can you determine the size, manufacturer and model name of the shoe that made the impression?

Hairs and Fibers:

Can you please examine the following items to determine if hairs and or fibers (inconsistent with fibers from the garment) are present. A.Y. case Y-B; Y-C; Y-D; Y-E (note Y-A Sex Crimes Kit contains head hair sample from victim). T.L. case #4, 5, 6, 7, 36, 37, 38, 39, 40, 41, 42, 43, 44, 47 and 48. Please note that known head and pubic hair samples from T.L. are contained in the Sirchie Sex Crimes Kit.

Can you also determine if any fibers not consistent with the two victims clothing are similar in nature and could originate from the same item.

Also please compare any hairs found which do not belong to either victim to see if they could originate from the same person/suspect.

Serology:

Can you examine the Sirche Sex Crimes Kit (#49), #4, #5, #6, #7 to determine if any seminal fluid is present. If seminal fluid is found please notify me and prepare storage for future DNA analysis. Would you also examine blood Samples on numbers 1, 2, 3, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 29, 30, 31, 32, 33, 34, 47, and 48 to determine who the blood was deposited by. Samples of the victims blood are enclosed in the Sirche Sex Crimes Kit and envelope with EDTA treated samples.

Any questions should be directed to Inv. Thomas N. Jordan or Inv. John S. Wilson at (814) 234-7185.

Sincerely,

Thomas R. King

Chief of Police

/s/ Inv. T. N. Jordan #3232
Criminal Investigator

TNJ/cg

Enclosures

LAB REPORT
(MAY 16, 1995)

Violation(s): RAPE ASALT
Violation date: 05-13-95

Lab No: 50519026 S
City: STATE COLLEGE, PA PD
Form: LT 05-16-95
Bufile No: 95A-HQ-1122440
Contributors No: 329506687

Remarks:

900 BLOCK OF SOUTH PUGH STREET

Status 1: Trial Importance

Status 2: Doc/Sp Complex

Status 3: Volume Await Evid

Category: 2

Ack Type: 7

Principal Unit: HFU

Examiner(s):

FRAM (ZJ)

Evid./Exams: H'st F's

REEM (UF)

DNA

BOOZIAK (QJ)

Documents (Shoe Prints)

Q: Q1-Q48

K: K1-K3

Items: 51

Latent: No
Q Tabs? No
NO PREVIOUS SUBMISSIONS FOUND
[Handwritten: K1, Q1-Q5, Q10, Q11, Q18-Q38
TO UF 5-23-95

K1, Q1S, Q2S, Q5S to EE 6/20/95
]

EVIDENCE LIST

505/9026-S-ZJ-UF- QJ

RE: UNSUB; - VICT.

T.L.

RAPE.

ITEMS FROM VICTIM + CRIME SCENE:

Q1–Q2	VAGINAL SWABS. (49)
Q3–Q4	VAGINAL SMEARS. (49)
Q5	GENITAL SWABBING. (49)
Q6–Q7	FINGERNAIL SCRAPINGS. (49)
Q8	PUBIC HAIR COMBINGS. (49)
Q9	DEBRIS. (49)
Q10	CIGARETTE BUTT. (3)
Q11	SOIL WITH STAIN. (27)
Q12–Q17	DEBRIS FROM FLOWER BED. (36–41)
Q18–Q23	BLOOD SPLATTERS SCRAPED FROM WINDOW. (29–34)
Q24–Q25	SWABBINGS FROM CURB + SIDEWALK. (1–2)
Q26–Q37	SWABBINGS FROM SIDEWALK NEAR FLOWER BED. (14–17, 19–26)
Q38	STRAW FROM GRASS NEAR SIDEWALK. (18)
Q39	PANTIES. (4)
Q40	JEANS. (5)

Q41–Q42	SHOES. (6–7)
Q43–Q44	SOCKS. (43–44)
Q45	JACKET. (46)
Q46	SHIRT. (48)
Q47	BRASSIERE. (42)
Q48	PLASTER CASTING OF SHOEPRINT. (28)
K1	LIQUID BLOOD SAMPLE FROM VICTIM. (50)
K2	HEAD HAIR SAMPLE FROM VICTIM. (49)
K3	PUBIC HAIR SAMPLE FROM VICTIM. (49)

LIQUID BLOOD EXAMINATION

LIQUID BLOOD EXAMINATION

Lab #	50519026 ZJ UF
Contributor:	State College, PA
Exam Date	5-25-95
Specimen #	KI
Date on Tube	5-13-95

SOURCE INDIVIDUAL

Name:	T.L.
	☒ Victim
Age: DOB?	XX-XX-XXXX
Sex:	F

SAMPLE INFORMATION

Type of Vial:	☒ Red Top
	☒ Purple Top
Sample Quality:	☒ Fair

Remarks: Purple top used for DNA swatch, sample bright red semi-fluid, swatch somewhat light. Red top used for Extra/Enz swatch, clot crashed, swatch somewhat light.

SHOE PRINT SEARCH SLIP

SHOE PRINT DESIGN SEARCH SLIP
LABORATORY NUMBER: 50519026 S/D QI

SPECIMENS RECEIVED: (2) photographs of cast(s)
DATE RECEIVED: 8/10/95
RECEIVED BY: Maryann Shular
RECEIVED FROM: [illegible]
ITEMS SEARCHED THROUGH:
COMPUTER: 8/15/95 ___ MATCH
✓ NO MATCH
BOOKS: 8/15/95 ___ MATCH
✓ NO MATCH
CATALOGS: _____ ___ MATCH
___ NO MATCH
___ TOO LIMITED TO DETERMINE
DATE RETURNED: 8/15/95
RETURNED TO: _____
RETURNED FROM: [Not legible]

SHOE PRINT

The footwear impressions represented in the Q48 cast and in the Q49 through Q62 photographs could not be associated with specific brand names or manufacturers based on the limited nature of those impressions.

Although limited in overall detail, the Q48 cast contains some limited design features which are different from and therefore were not made by the Q41/Q42 victim's shoes.

LETTER FROM STATE COLLEGE POLICE DEPARTMENT TO FBI (MAY 16, 1995)

THOMAS R. KING
Chief of Police
814/234-7150
FAX 814/231-3070

Borough of State College
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
118 South Fraser Street
State College, PA 16801

Assistant Director
Federal Bureau of Investigation
10th Street and Pennsylvania Ave., N.W.
Washington, D.C. 20535
ATTN: Serology Laboratory
Hairs and Fibers Unit
Shoe Print Examination

RE: SCPD Inc. 3295-06337
Aggravated Assault
Victim: *** ***
Suspect: Unknown

Dear Sir:

On May 5, 1995 at approximately 10:34 PM A.Y. was walking through the Fairmount Avenue Park on her way to work at the College Diner. *** was grabbed from behind and the assailant began

choking her. She was thrown to the ground and the assailant struck her and choked her with his hands. She did lose consciousness. The assailant was scratched by A.Y. on the leg. A police car pulled into the Park and scared off the attacker who is a white male, medium build, muscular with brown hair (slight curl).

Evidence in the forms of fingernail scrapings, ***'s jean jacket, pink body shirt, pair of plaid shorts and a long flowered skirt are being sent to you for analysis and comparison.

On May 13, 1995 somewhere around 2:15 AM to 2:25 AM, Ms. T.L. was walking to her apartment. As she walked south on South Pugh Street she was attacked by an unknown individual. T.L. was found at around 2:55 AM lying on the street. She had numerous head wounds and her pants, underwear and shoes were missing. The investigation revealed that her clothing was found in a flower bed near the apartment building. There was blood splattering on the brick and window near the flower bed indicating the victim was struck while in this area. The victim could make no statement at that time and was taken to the hospital. She has not medically been cleared to talk with police as of May 16, 1995.

The following items are being submitted to you for examination and analysis:

05/05/95 attack of A.Y.:

Y-A - Sirchie sex crimes kit containing fingernail scrapings and hair samples from A.Y.

Y-B - Jean jacket worn by A.Y. while being attacked

Y-C - Pink body suit worn by A.Y. while she was attacked

Y-D - Plaid shorts worn by victim A.Y. when attacked

Y-E - Flowered skirt worn by A.Y. when she was attacked

05/13/95 attack of T.L.:

#2 - Blood swabbings from curb and sidewalk

#3 - Camel cigarette butt (believed to be victims) in blood pool

#4 - Victim's black underwear from flower bed

#5 - Victim's blue jeans from flower bed

#6 & 7 - Victim's shoes from flower bed

#14-17 - Blood swabbings from sidewalk near flower bed

#18 - Blood on straw taken from grass next to sidewalk

#19-26 - Blood swabbings from sidewalk near flower bed

#27 - Soil sample from flower bed (blood soaked)

#28 - Plaster casting of shoeprint taken from flower bed

#29-31 - Blood splatters scraped from apartment window

#36-38 - Fibers found with aid of UV light (from flower bed)

#39 - Hairs collected from flower bed

#40 - Hairs collected from area of bloody soil in flower bed

#41 - Fibers from flower bed

#42 - Bra from victim (obtained from hospital)

#43 - Sock from victim (obtained from hospital)

#44 - Sock from victim (obtained from hospital)

#45 - Bloody white jacket from victim (obtained from hospital)

#46 - Bloody white shirt from victim (obtained from hospital)

#49 - Sirchie Sex Crime Kit from victim

#50 - 3 vials of blood from T.L. (EDTA)

Examination Requests:

Shoeprint Examination:

Can you please examine the cast of the shoe impression taken from the area in the flower bed where part of the assault occurred. If possible, can you determine the size, manufacturer and model name of the shoe that made the impression?

Hairs and Fibers:

Can you please examine the following items to determine if hairs and or fibers are present: A.Y. case Y-B, Y-C, Y-D, Y-E; T.L. case #4, 5, 6, 7, 36, 37, 38, 39, 40, 41, 42, 43, 44, 47 and 48.

Please note that known head and pubic hair samples from T.L. are contained in the Sirchie Sex Crimes Kit.

Can you also determine if any fibers not consistent with the two victims clothing are similar in nature and could originate from the same item.

Also please compare any hairs found which do not belong to either victim to see if they could originate from the same person/suspect.

Serology:

Can you examine the Sirchie Sex Crimes Kit (#49), #4, #5, #6, #7 to determine if any seminal fluid is present. If seminal fluid is found please notify me and prepare storage for future DNA analysis.

Samples on numbers 1, 2, 3, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 29, 30, 31, 32, 33, 34, 47, and 48 to determine who the blood was deposited by.

Any questions should be directed to Inv. Thomas N. Jordan or Inv. John S. Wilson at (814) 234-7185.

Sincerely,

THOMAS R. KING
CHIEF OF POLICE

/s/ T.N. Jordan

Inv. T.N. Jordan #3232
Criminal Investigator

SMRZ (BO FINAL DICTATION)

50519026 S/D ZJ OF QJ BO
95A- HQ- 1122440
STATE COLLEGE, PA
VICTIM –
SUSPECT - UNSUB
RAPE/ASSAULT

SMRZ'S (BO) FINAL AE DICTATION

DNA ANALYSIS RESULTS

Deoxyribonucleic acid (DNA) profiles for genetic loci D2S44, D17S79, D1S7, D4S139, D10S28 and D5S110 were developed from HAE III digested high molecular weight DNA extracted from specimens Q1/Q2 (combined for analysis), Q5, and K1. These profiles were compared to DNA profiles obtained from specimen K5 (blood sample from MIKE WINTERS) in FBI Laboratory case number 50130021 S ZJ OF BO), Based on these results, the DNA profiles from specimens Q1/Q2 and Q5 do not match the DNA profiles from the blood sample of MIKE WINTERS and, therefore, could not have been contributed by this individual.

BOB, PLEASE ADD TO YOUR DISPOSITION STATEMENT...

The probed membrane and any remaining processed DNA from specimens analyzed by DNA analysis is also being returned to you. The processed DNA can be found in a plastic ziplock package marked "PROCESSED DNA: SHOULD BE REFRIGERATED

/FROZEN." It is recommended that this package be kept refrigerated/frozen and isolated from evidence which has not yet been examined.

YIELD TEST GEL DATA
(SEPTEMBER 18, 1995)

LAB #: 950519026-BO
CONTRIBUTOR: STATE COLLEGE, PA
DATE: 9/18/95

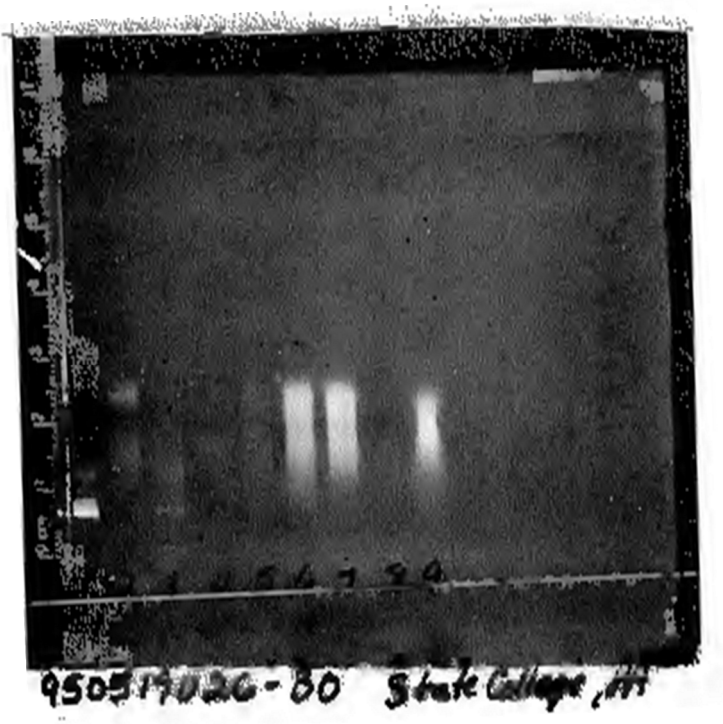
1. Lambda Hind III Visual Marker (10uL)
2. 300 nG DNA/10uL Standard
3. 200 nG DNA/10uL Standard

4. 150 nG DNA/10uL Standard
5. 100 nG DNA/10uL Standard
6. 50 nG DNA/10uL Standard
7. 25 nG DNA/10uL Standard
8. 10 nG DNA/10uL Standard
9. Uncut Human Cell Line (200 nG DNA/ 10uL)
10. K1-1-1/2
11. Q(1+2)-1m
12. Q(1+2)-1f 1/2
13. Q5-1m
14. Q5-1f

Before digestion with HAEIII, dilute:

POST RE TEST GEL DATA
(SEPTEMBER 19, 1995)

LAB #: 950519026-BO
CONTRIBUTOR: STATE COLLEGE, PA
DATE: 9/19/95



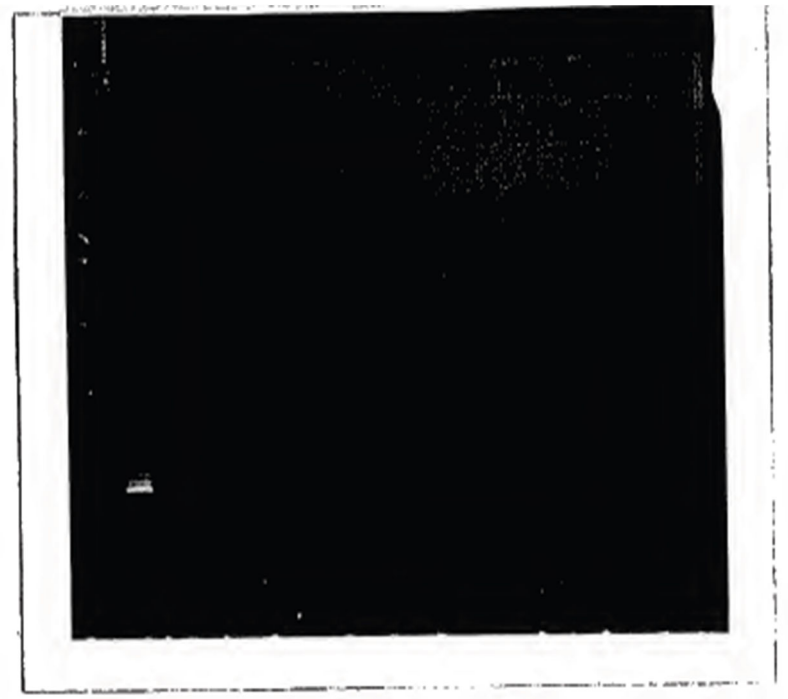
1. Lambda Hind III Visual Marker (10uL)
2. Cut Human Cell Line (200nG/10uL)P
3. K1-1a
4. K1-1b - 9uL
5. Q(1+2)-1m ✓

6. Q(1+2)-1fa
7. Q(1+2)-1fb - 45uL
8. Q5-1m - 14uL
9. Q5-1f - 7uL
10. BLANK
11. BLANK
12. BLANK
13. BLANK
14. BLANK

RE-CUTS: ✓

POST RE TEST GEL DATA
(SEPTEMBER 21, 1995)

LAB #: 950519026-BO
CONTRIBUTOR: STATE COLLEGE, PA
DATE: 9/21/95



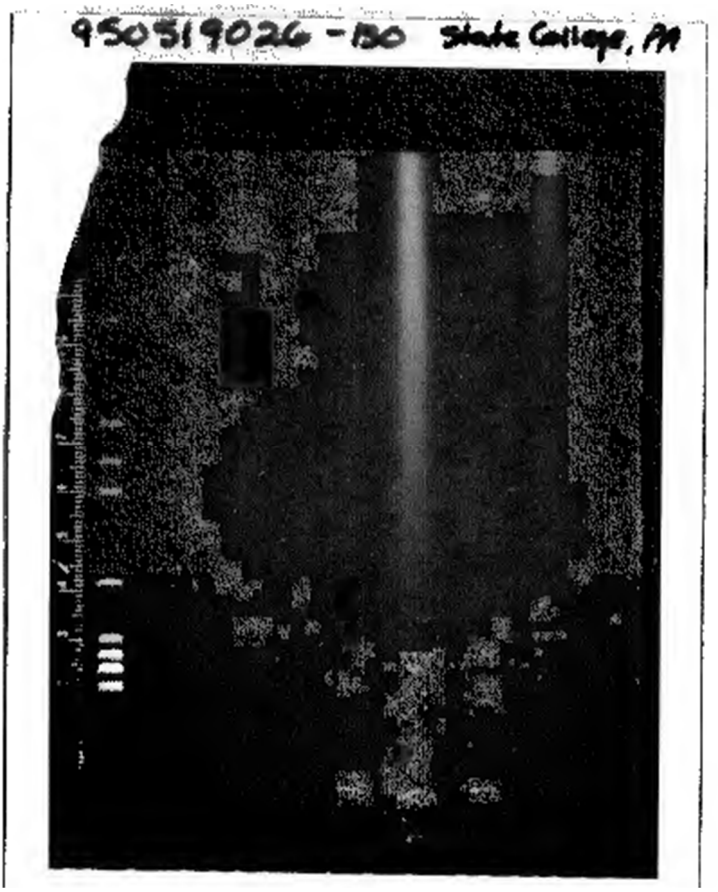
1. Lambda Hind III Visual Marker (10uL)
2. Cut Human Cell Line (200nG/10uL)P
3. Q(1+2)-1m – 14uL
4. BLANK
5. BLANK
6. BLANK
7. BLANK

8. BLANK
9. BLANK
10. BLANK
11. BLANK
12. BLANK
13. BLANK
14. BLANK

RE-CUTS:

ANALYTICAL GEL DATA
(SEPTEMBER 25, 1995)

LAB #: 950519026-BO
CONTRIBUTOR: STATE COLLEGE, PA
DATE: 9/25/95



1. ANALYTICAL VISUAL MARKER - 12uL
2. SIZE MARKER - 12uL

3. HUMAN CELL LINE - 400nG/20uL
4. BLANK
5. K1-1b - 9uL
6. BLANK
7. SIZE MARKER - 12uL
8. Q(1+2)-1m - 14uL
9. BLANK
10. Q(1+2)-1fb - 4uL
11. SIZE MARKER - 12uL
12. Q5-1m - 14uL
13. BLANK
14. Q5-1f - 7uL
15. SIZE MARKER - 12uL
16. BLANK

CASE REPORT
(NOVEMBER 22, 1995)

CASE REPORT 22-NOV-1995 10:33

Report Specifications
Case Number: 950498%
Submission No.: 950519026

PE: ZJ CASE NO.:	950498
MATCH.	Processing Not Complete
PRIORITY:	2
BUREAU FILE NO.:	95A-HQ-1122440
ALT PE:	
RVW PE:	
ACTIVE:	Yes
DISCONTINUED:	No

Victim: Afro-American Caucasian Hispanic

Violation Information

NO.	1
CODE:	11A

VIOLATION: Forcible Rape

Submission Information

Submission Number: 950519026

Contributor:	STATE COLLEGE BUREAU OF POLICE SERVICES

AEs: BO, QJ, UF,

IN DATE: 09/06/95

BEGIN DATE: 09/06/95

REMARKS: K1, Q1, Q2, Q5,

RECEIVED ON 9/6/95

SPECIMEN: K1

ITEM: Dried Blood

SOURCE: Victim TL

REMARKS: Approximately 5 cm. x 4 cm. swatch of washed sheeting moderately stained with blood

Cuttings

NO	TYPE	DIF	STAIN
1	B	N	Moderately

SUBSTRATE: washed sheeting

LENGTH – WIDTH – FRACT. – DATE

2 2 0.3 09/14/95

Remarks: * * *

SPECIMEN: Q(1+2)

ITEM: Vaginal Swabs

SOURCE: Victim TL

REMARKS: Two portions of cotton tips from vaginal swabbing of victim sealed in separate 1.5 ml tubes inside of separate manila coin envelopes.

Cuttings:

NO	TYPE	DIF	STAIN
0	S	Y	Lightly

SUBSTRATE

Two portions of cotton swabs

LENGTH	WIDTH	FRACT.	DATE
0	0	1	9/14/95

Remarks: * * *

SPECIMEN: Q5

ITEM: Genital Swabbing

SOURCE: Victim-T.L.

REMARKS

Approximately 4.5 cm. x 4 cm. piece of cotton gauze, lightly stained

Cuttings

NO	TYPE	DIF	STAIN
1	S	Y	Lightly

SUBSTRATE:

LENGTH	WIDTH	FRACT.	DATE
4.5	4	0.9	9/14/95

Remarks: * * *

****END OF REPORT****

RFLP STATUS: 950519026 22-NOV-1995 10:33

RFLP Seq. No.: 0

Contributor: PA16801PD State College Bureau of Police Services

Differentials

EXTRACT 09/14/95

PURIFY	09/15/95
YIELD	09/18/95
ENZYME 1	09/18/95
RETEST 1	09/19/95
Redigestion	K's/Q's: Q(1+2)-1M
HAE III Lot:	EHE407
ENZYME 2	09/20/95
RETEST 2	09/21/95

EXTRACTION REMARKS:

[* * *]

RFLP STATUS: 950519026 22-NOV-1995 10:33

Membrane No:	1
Electro:	09/25/95
Southern:	09/26/95
Membrane Lot:	068540

Membrane REMARKS:

HYB NO. – PROBE – PROBE LOT – HYSE – LOAD 1 – BACK 1 – FRONT 1 – LOAD 2 – BACK 2 – FRONT 2 – STRIP

1 – D2S44 – Y259 – 09/28/95 – 09/29/95 – 10/02/95 N/A – N/A – N/A – 10/05/95

2 – D17S79 – 1002AB – 10/05/95 – 10/06/95 – 10/10/95 – 10/12/95 – 10/10/95 – 10/11/95 –10/12/95

3 – D1S7 – M311 – 10/12/95 – 10/13/95 – 10/16/95 – 10/23/95 – N/A – N/A – N/A – 10/26/95

4 – D4S139 – 1023AC – 10/26/95 – 10/27/95 – 10/30/95 – 10/31/95 – 10/30/95 – 10/31/95 – 11/02/95

5 – D10S28 – T269 – 11/02/95 – 11/03/95 – 11/06/95 – 11/13/95 – 11/16/95

6 – D5S110 – L114 – 11/16/95 – 11/17/95 – 11/20/95 – 11/22/95 – N/A – N/A – N/A – N/A

ANALYTICAL LANE TYPE – VOL. – SPECIMEN – SUBMISSION

1 – Analytical Visual – 12uL – -0 – N/A

2 – Marker (Ladder) – 12uL – -0 – N/A

3 – Allelic (Cell line) – 20uL – -0 – N/A

4 – Empty – 0uL – -0 – N/A

5 – Specimen 9uL – K1-1Bb – 950519026

6 – Empty – 0uL – -0 – N/A

7 – Marker (Ladder) – 12uL – -0 – N/A

8 – Specimen – 14uL – Q(1+2)-1SM – 950519026

9 – Empty – 0uL – -0 – N/A

10 – Specimen – 4uL – Q(1+2)-1SFb – 950519026

11 – Marker (Ladder) – 12uL – -0 – N/A

12 – Specimen – 14uL – Q5-1SM – 950519026

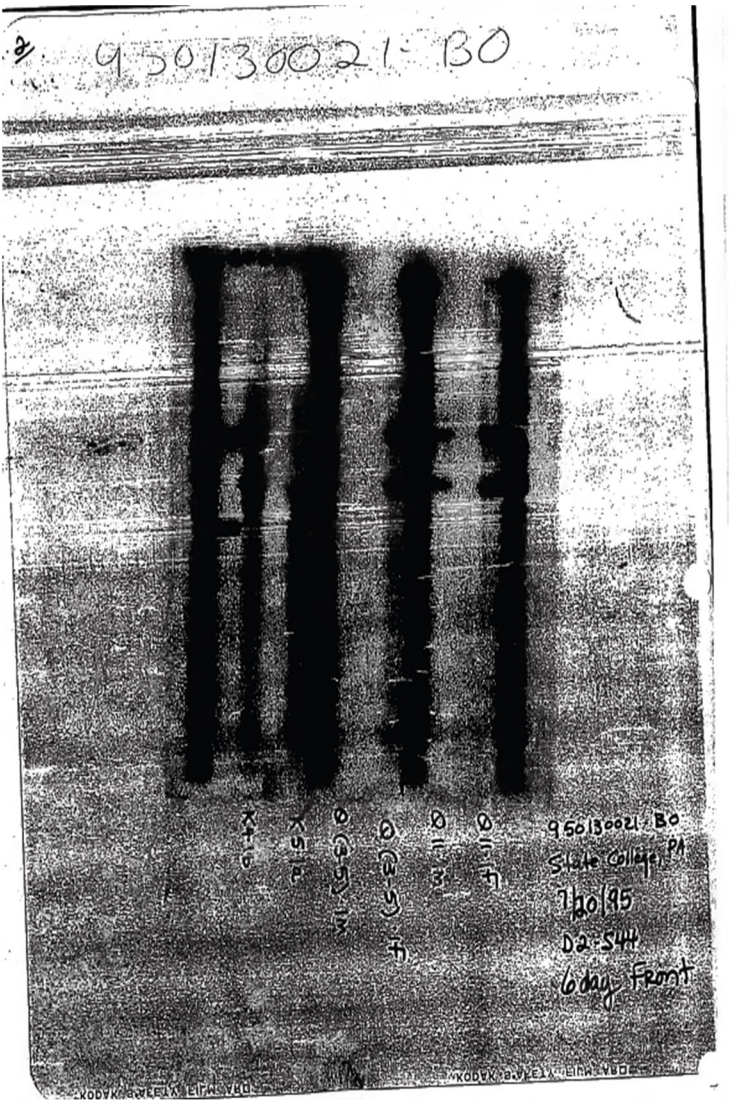
13 – Empty – 0uL – -0 – N/A

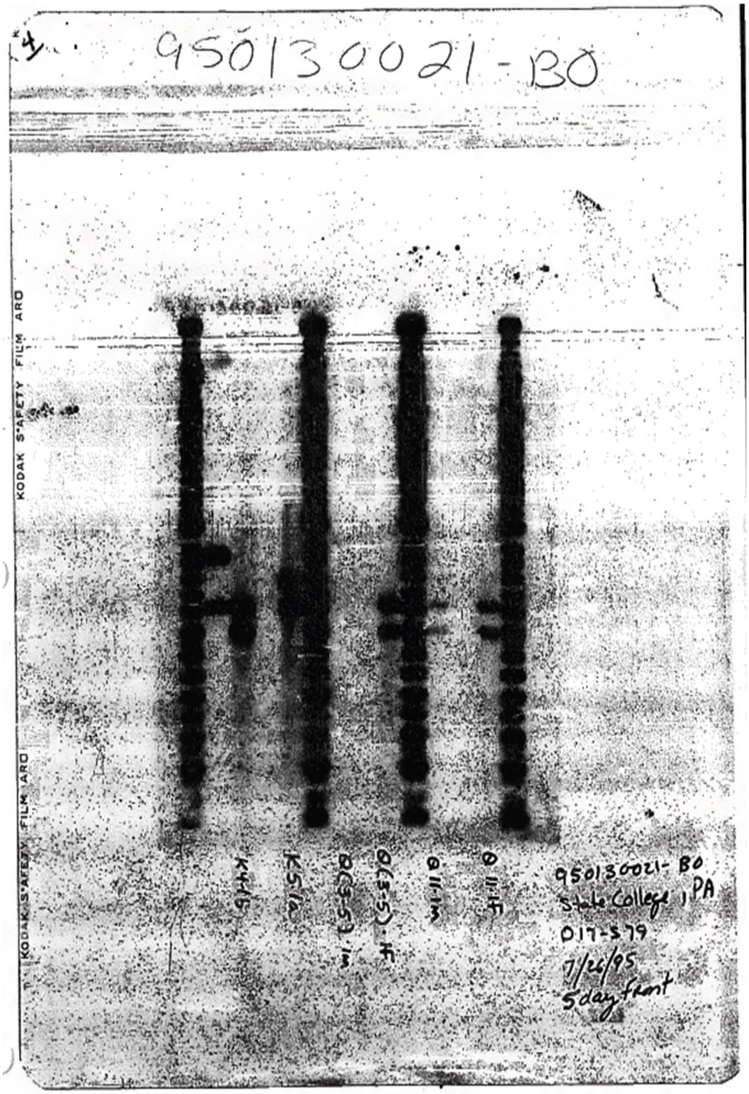
14 – Specimen – 7uL – Q5-1SF – 950519026

15 – Marker (Ladder) – 12uL – -0 – N/A

16 – Empty – 0uL – -0 – N/A

*********END OF REPORT*********


9501300 21 BO
9501300 21 BO
State College PA
7/20/95
D2-S44
6 days Front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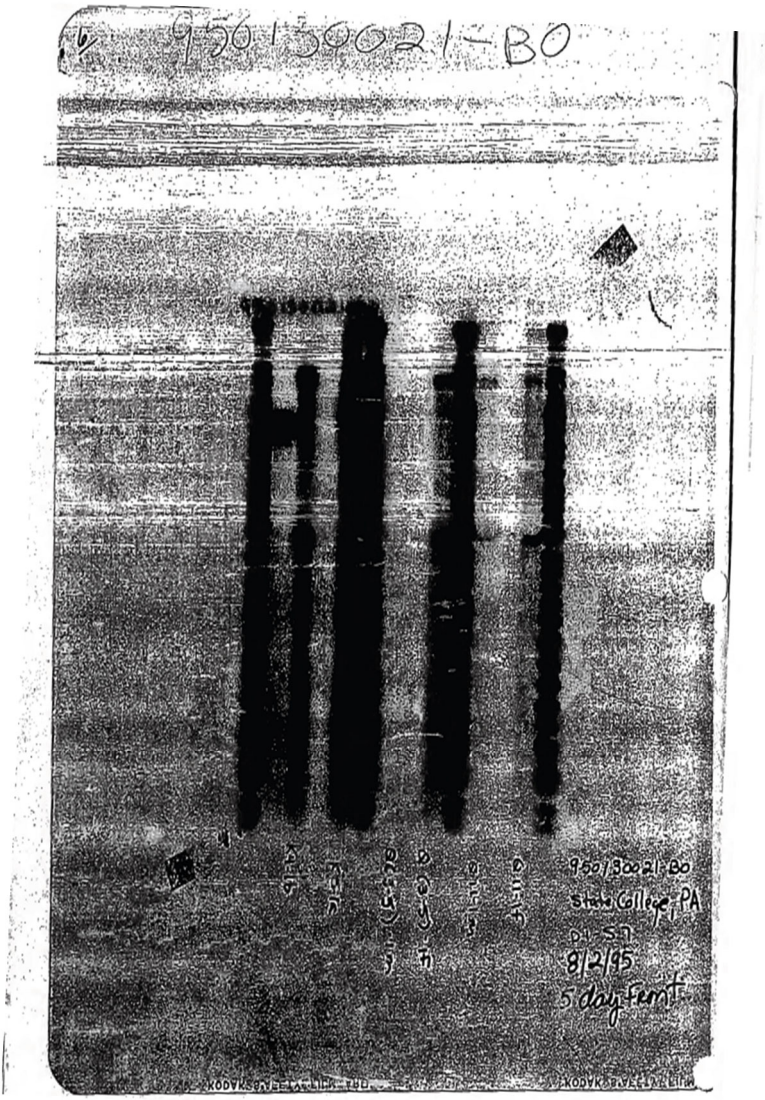
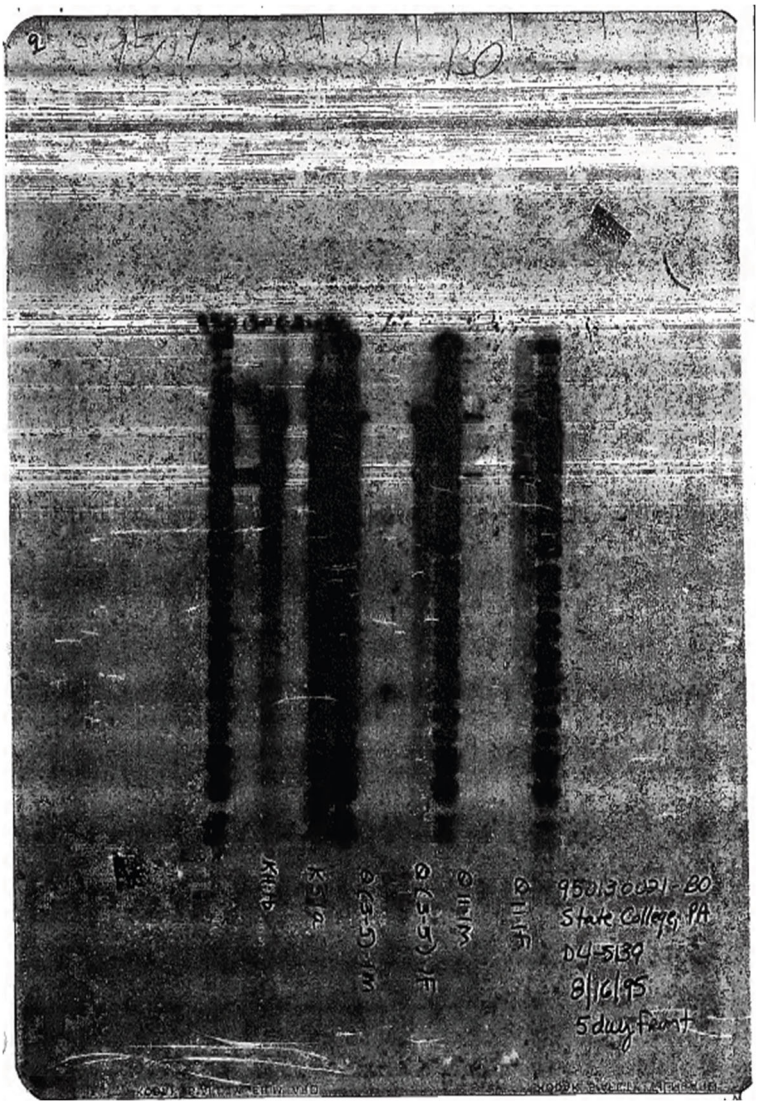
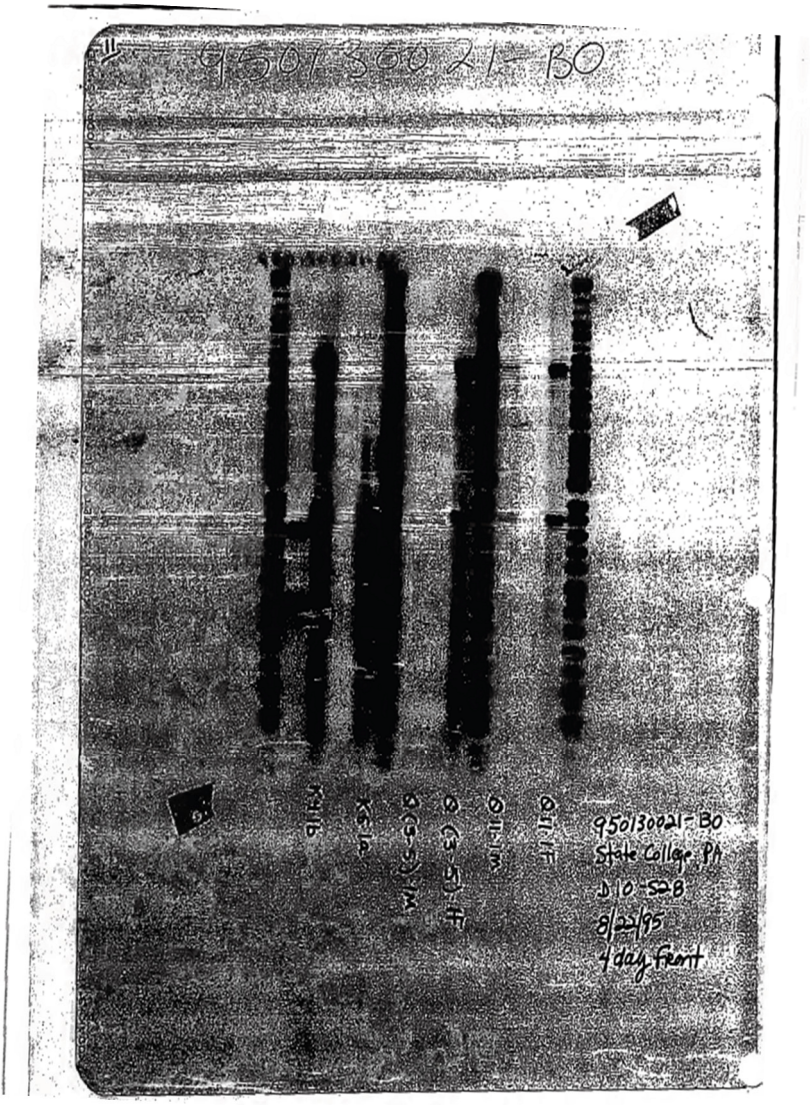
KODAK SAFETY FILM
950130021- B0
State College, PA
D17-579
7/26/95
5 day front


9501300021-BO
9501300021-BO
State College PA
8/2/95
5 day turnaround


9501300021-130
State College, PA
DL-5139
8/16/95
5 day Front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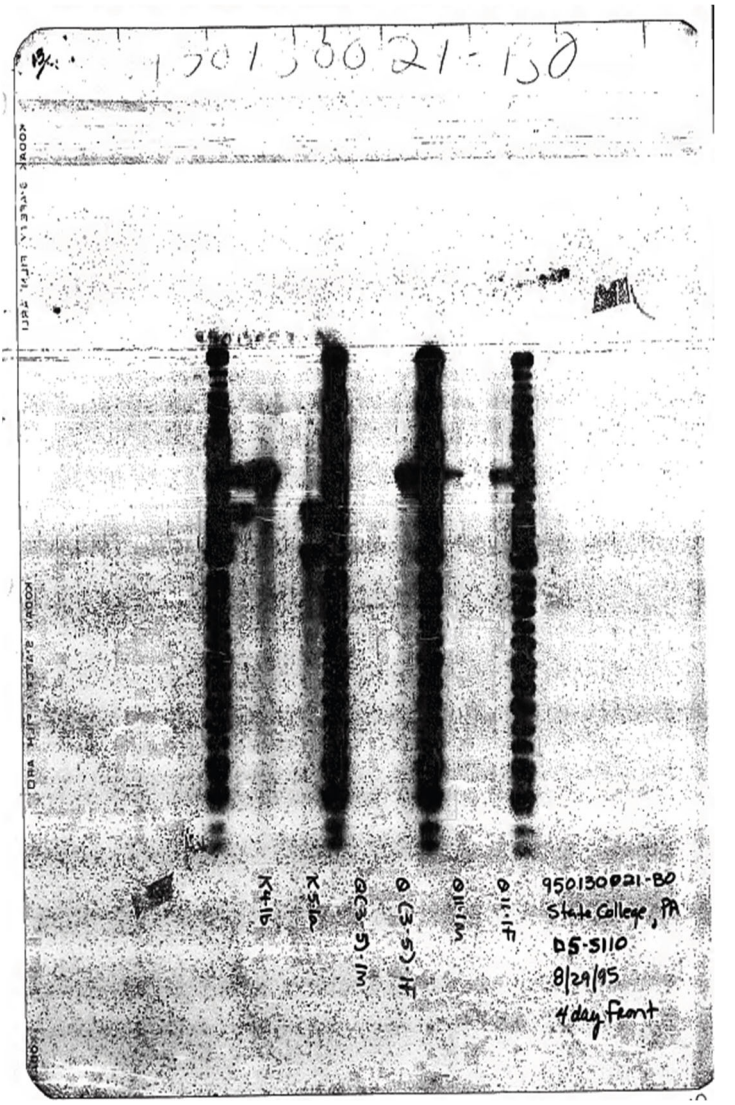
State College PA
D.10-52.B
8/22/95
4 day Exam


950130021-150
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DS-5110
8/29/95
4 day Front
K4-1G
K5-1A
0 (3-5).1M
0 (3-5).1F
0 11.1M
0 11.1F

CASE REVIEW SHEET
(NOVEMBER 29, 1995)

LABORATORY # 50519026 S/D ZJ UF QJ BO

All autoradiographs and data pertaining to this laboratory submission were reviewed by Valerie J. Lander, and the interpretation of these data was agreed upon.

SIGNATURE OF REVIEWING EXAMINER

/s/ Valerie J. Lander

DATE 11/29/95

LAB WORKSHEET ITEMS

FILE: # 950519026-BO
CONTENT: LAB WORKSHEET ITEMS
DO NOT STAMP OR HANDLE AS ENCLOSURE

No. 950519026-BO
Name State College, PA
Date 950498

[Handwritten:

1 D2-544

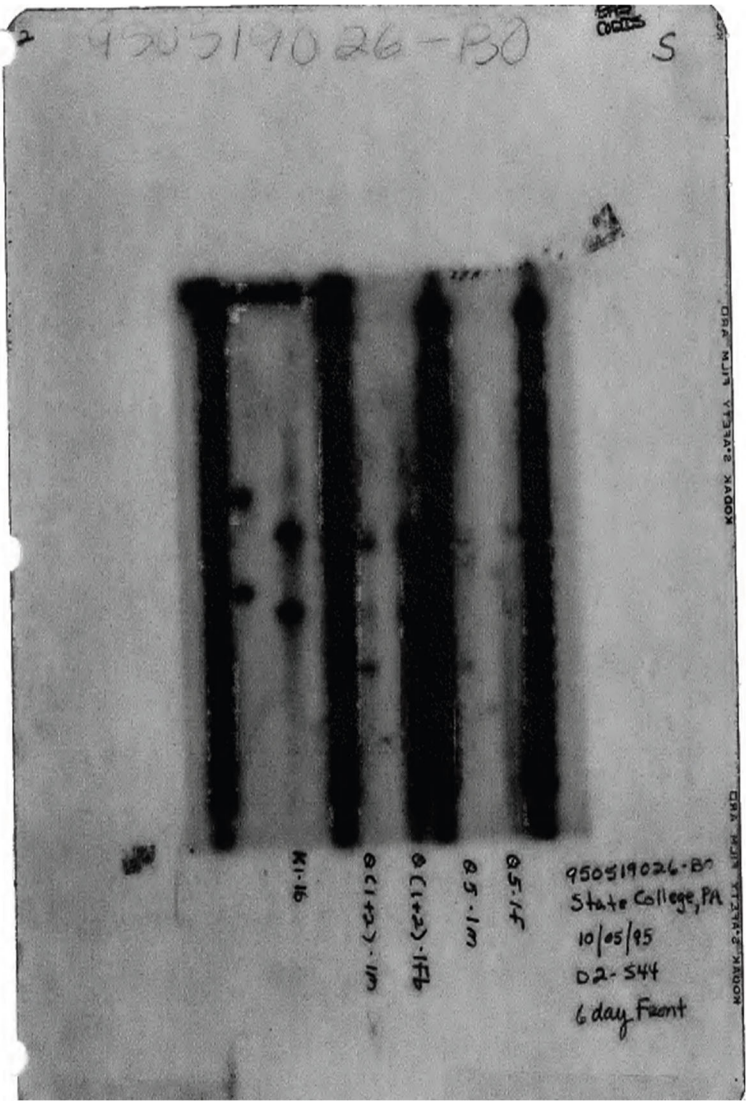
3 D17-579

6 D1-57

8 D4-5139

11 D10-528

13 D5-5110]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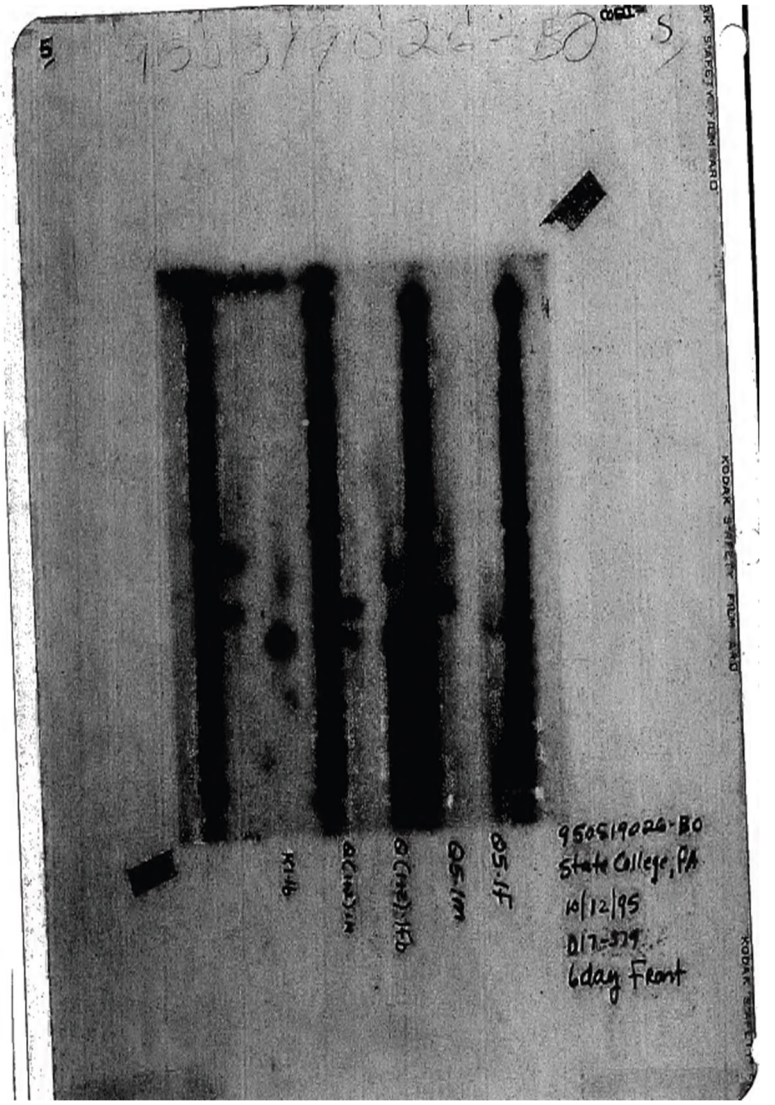
S
950519026-B0
State College, PA
10/05/95
D2-544
6 day Front
B5-1F
B5-1M
C(1+2)-1H
C(1+2)-1M
K1-1K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6day Front
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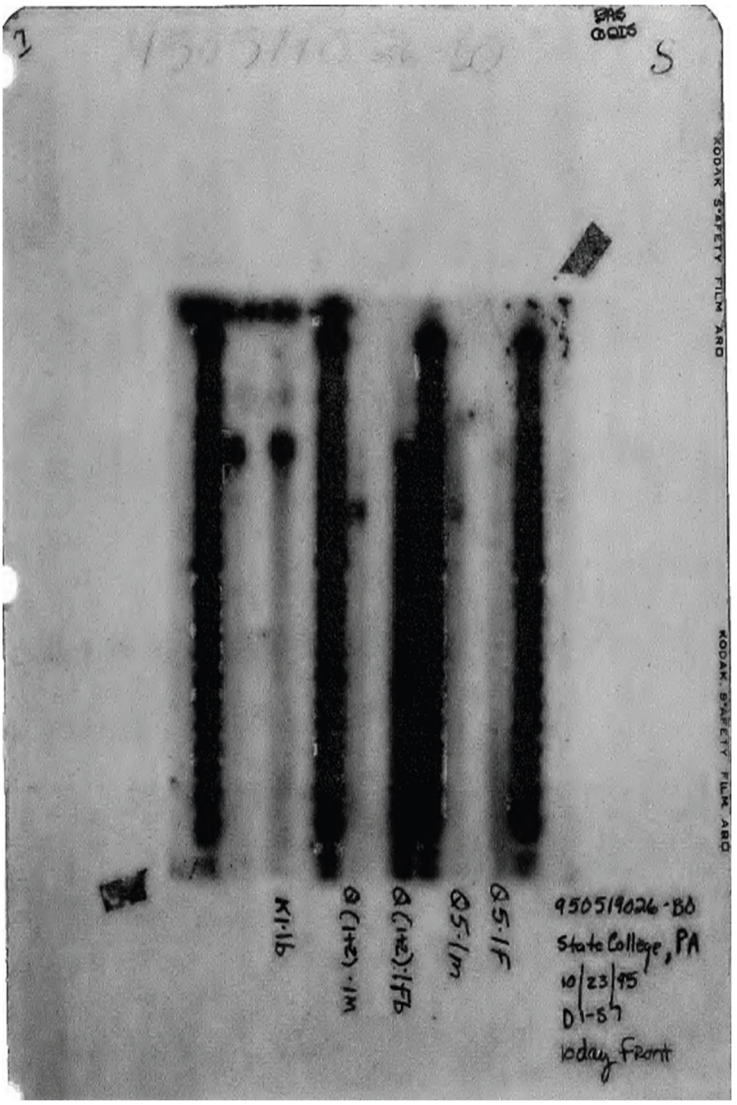
05-1M
K14b


KODAK SAFETY FILM ARO
KODAK SAFETY FILM ARO
K1·1b
Ø(+2)·1M
Ø(+2):1FB
Ø5·1M
Ø5·1F
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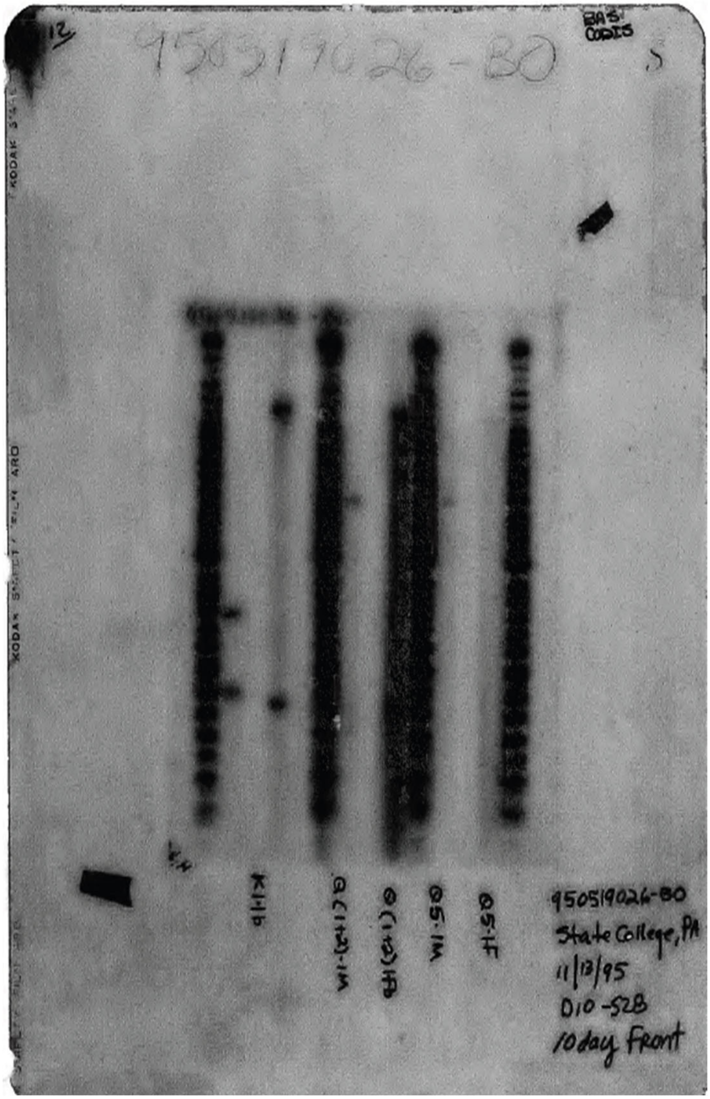
State College, PA
10/23/95
D1-S7
today Front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State College, PA
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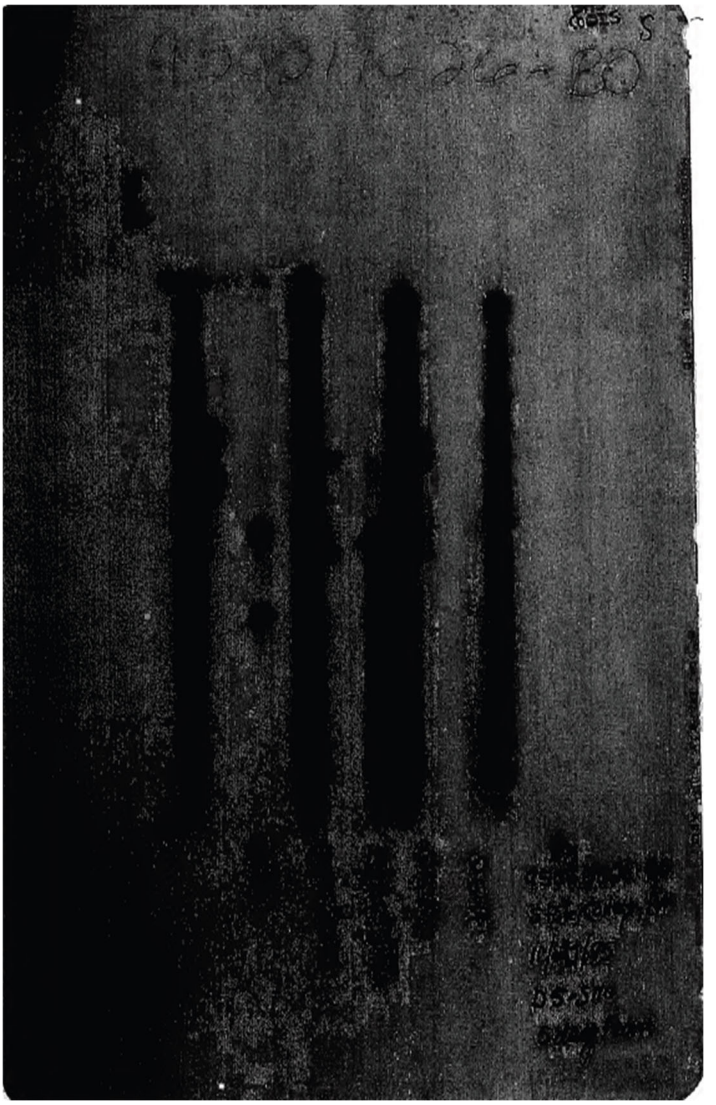
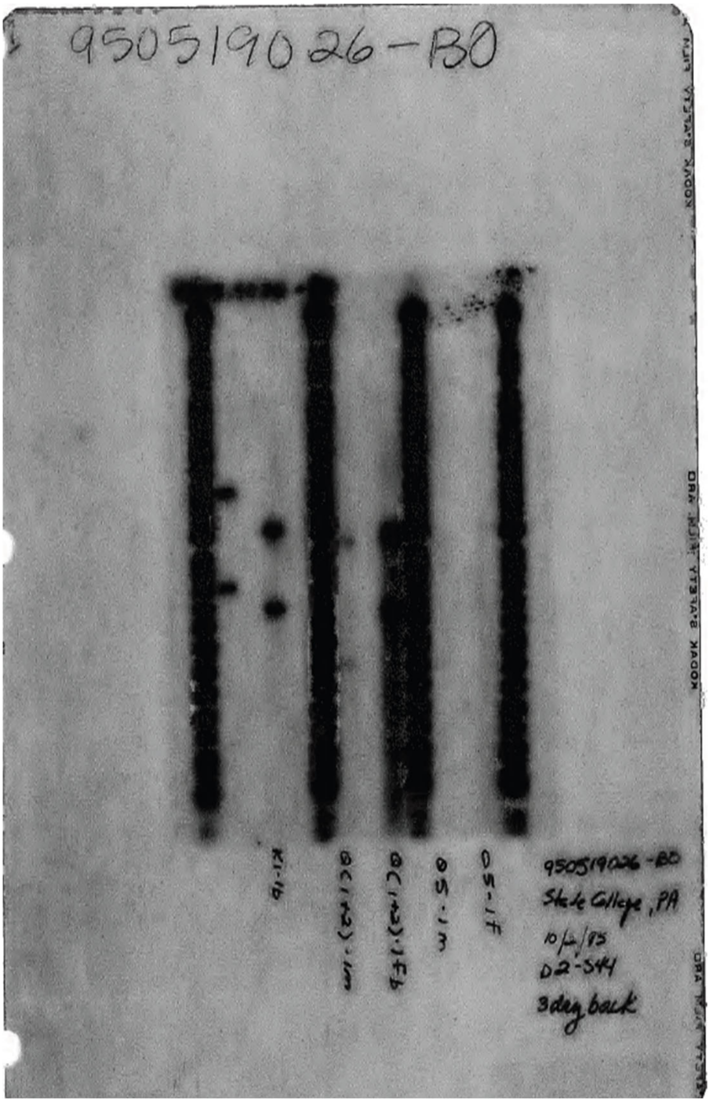
D10-S28
10 day Front

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State College, PA
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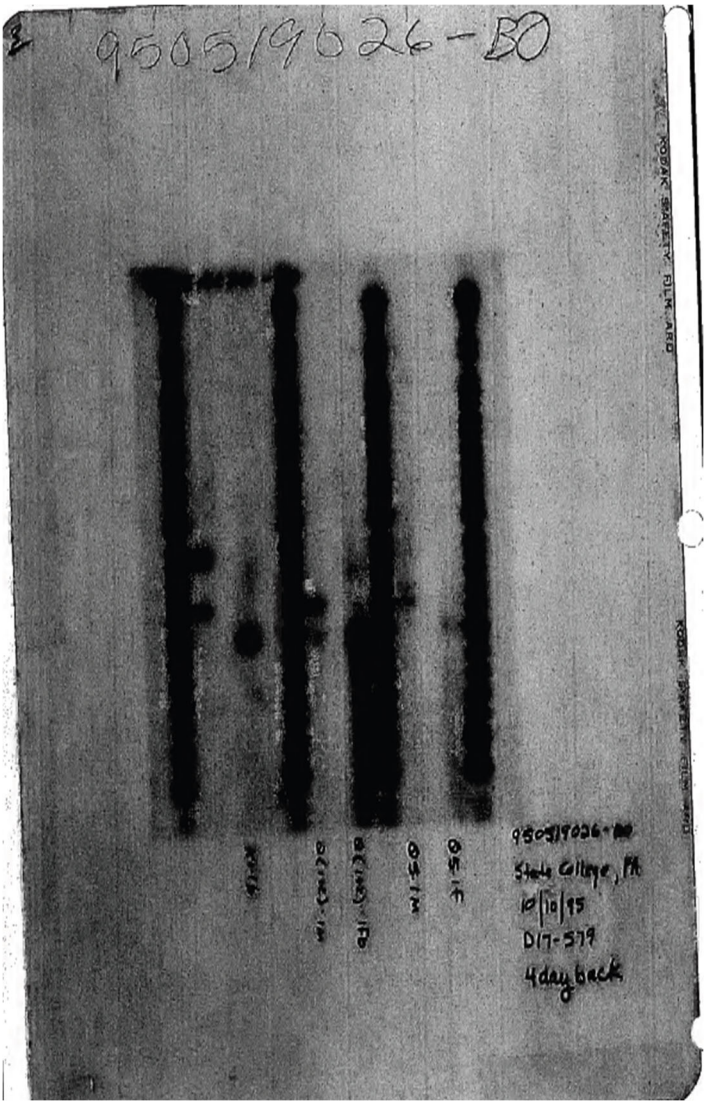
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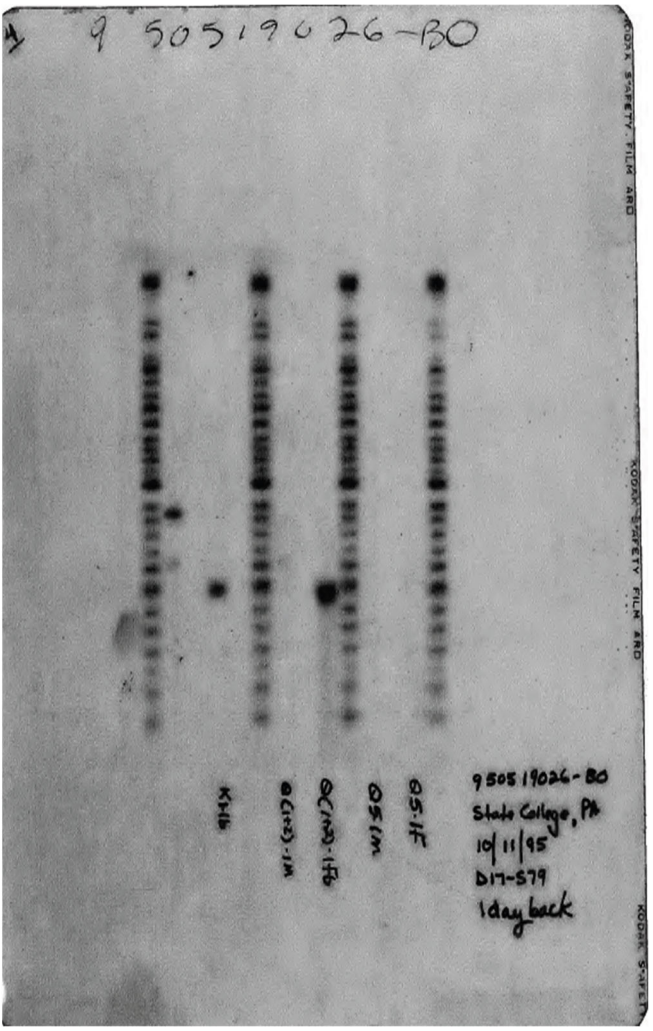
10/10/95
D17-579
4 day back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KODAK SAFETY FILM ARD
KODAK SAFETY FILM ARD
KODAK SAFETY
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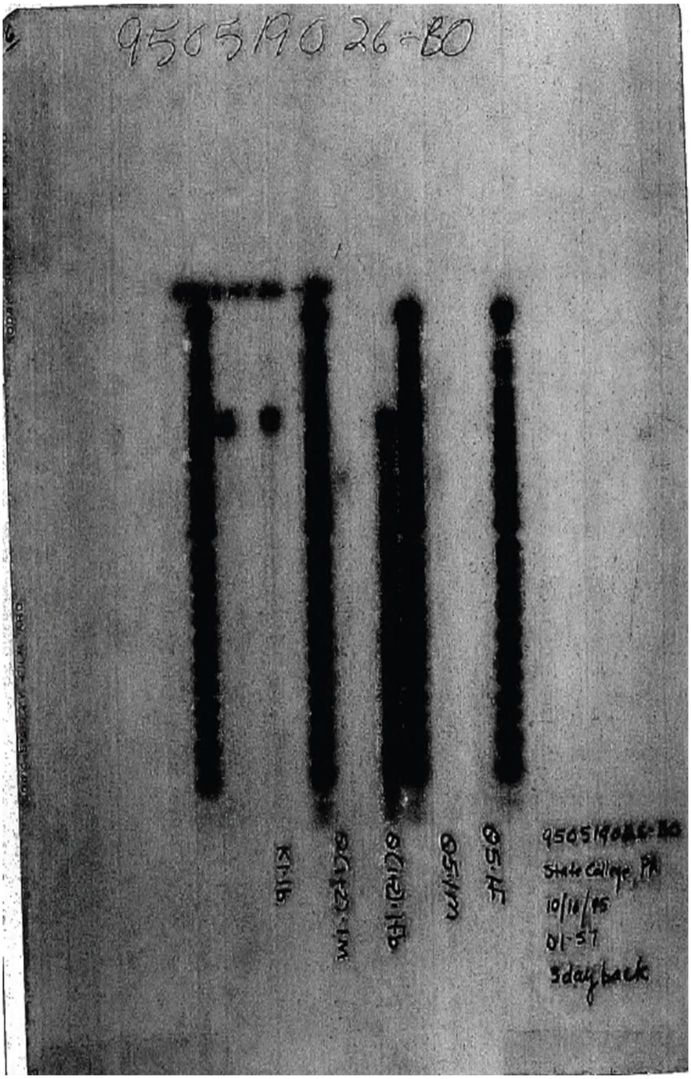
State College, PA
10/11/95
D17-S79
1 day back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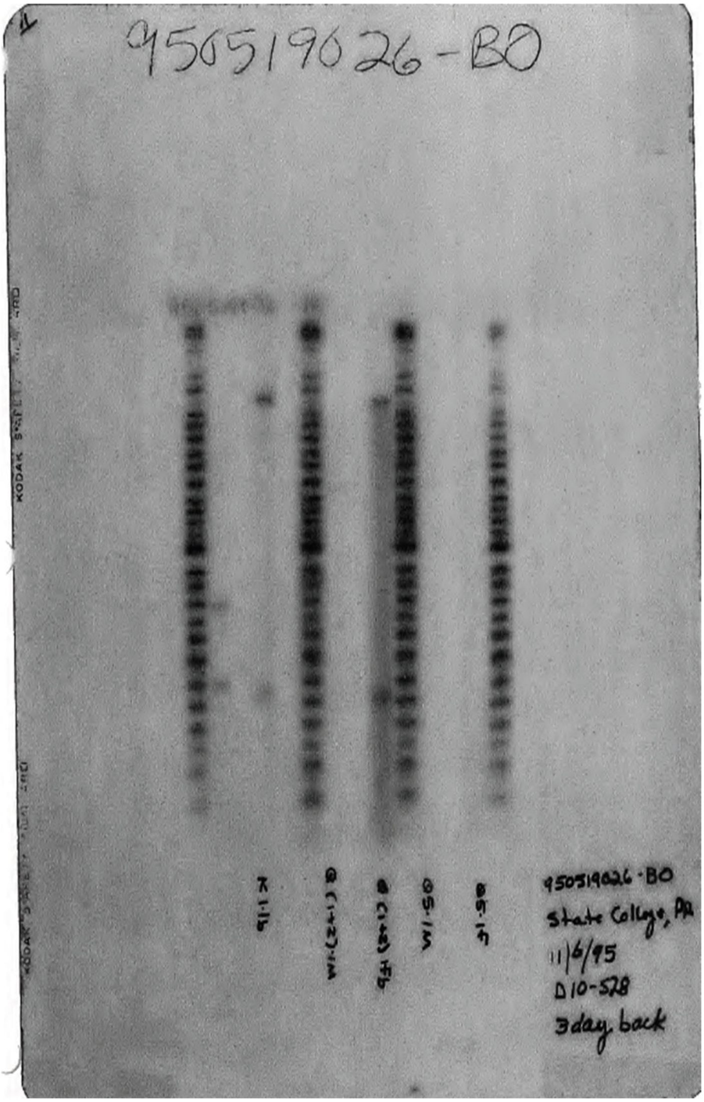
10/18/95
01-57
5day back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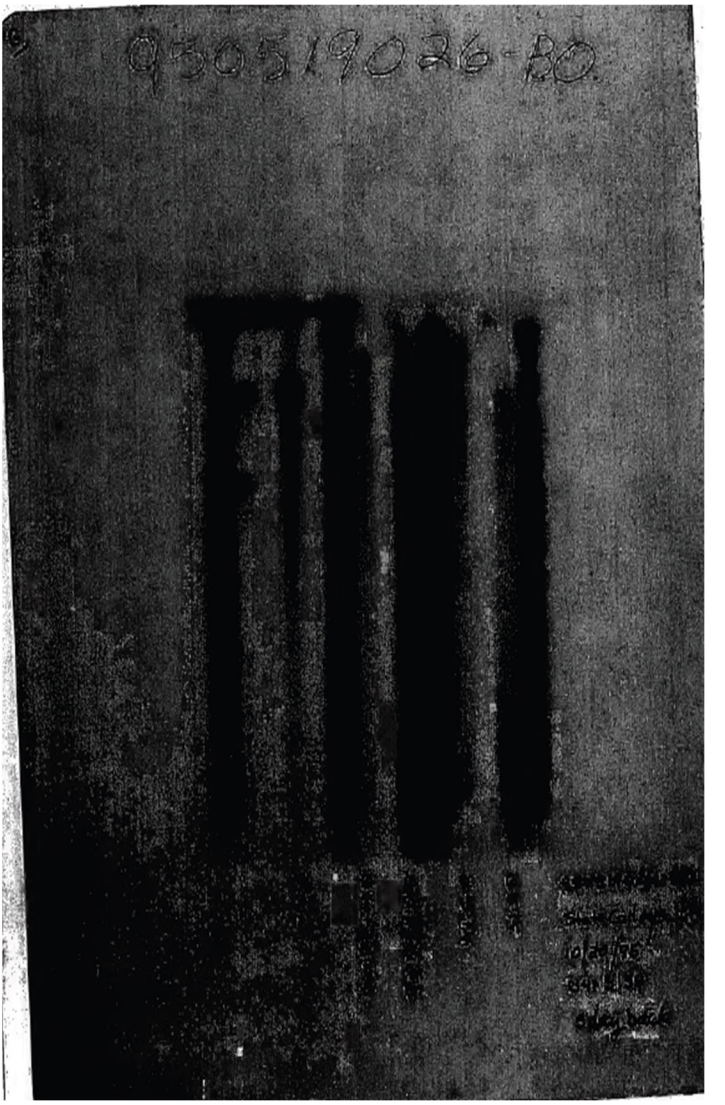
State College, PA
11/6/95
D10-528
3 day back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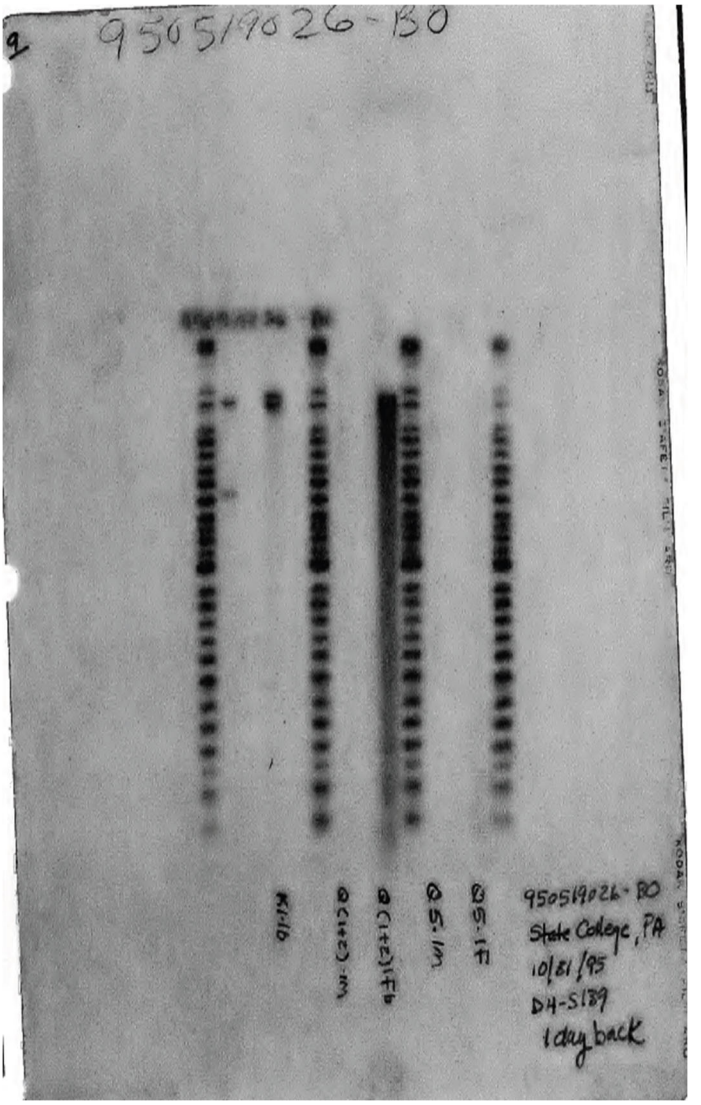
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State College, PA
10/31/95
D4-S139
1 day back

FBI COVER SHEET (CE 39)

4-596.1 Rev. 10-1-92

U.S. DEPARTMENT OF JUSTICE

FEDERAL BUREAU OF INVESTIGATION HEADQUARTERS

FBIHQ INVESTIGATIVE AND ADMINISTRATIVE FILES

With implementation of the Universal Case File Number, please be aware that another file under the old Bufile number may be Ident with this file. You may obtain the other file by calling extension 43421 using the old Bufile number, if known, otherwise call extension 43611 using the subject name to identify the old Bufile number.

TRANSFER - CALL 3421

Use Care in Handling this File

MATERIAL MUST NOT BE REMOVED FROM OR ADDED TO THIS FILE

95A-HQ-1122440 SECTION 1 SERIAL 1

FBI HAIR ANALYSIS
(APRIL 12, 2007)

This File was evaluated as part of the 2012 Hair Analysis Testimony Review Project.

7-1 (Rev. 7-10-06)

FBI LABORATORY
2501 Investigation Parkway
Quantico, Virginia 22135

REPORT OF EXAMINATION

To: Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Date: April 12, 2007

Case ID No.: 95A-HQ-1533654

Lab No.: 060719037 PF WF
061002002 PF WF
061117011 PF WF
070116003 PF WF

Reference: Communications dated July 18, 2006, September 29, 2006, November 16, 2006, and January 12, 2007

Your No.: 687-02827

Title: UNSUB (S);
DJB -VICTIM;
HOMICIDE

Date specimens received: July 19, 2006

The specimen listed below was examined in DNA Analysis Unit I under the cover of the communication dated July 18, 2006 (060719037 PF WF):

RESUBMITTED ITEM FROM FBI LABORATORY NUMBER 870506055

Q56 – Cigarette butt (Item #67-B)

The specimen listed below was examined in DNA Analysis Unit I under the cover of the communication dated September 29, 2006 (061002002 PF WF):

K27 – Buccal swabs from JOHN E. WELD

The specimen listed below was examined in DNA Analysis Unit I under the cover of the communication dated November 16, 2006 (061117011 PF WF):

K28 – Buccal swab of GARY STEVENS

The specimen listed below was examined in DNA Analysis Unit I under the cover of the communication dated January 12, 2007 (070116003 PF WF):

K29 – Buccal swab from ANTHONY ERAMO

This report contains the results of the nuclear DNA examinations.

Results of Examinations:

Deoxyribonucleic acid (DNA) isolated from specimens Q56, K27 (WELD), K28 (STEVENS), and K29 (ERAMO) was subjected to DNA typing by the polymerase chain reaction (PCR) at the amelogenin sex typing locus and the nine (9) short tandem repeat

(STR) loci of the AmpFℓSTR® Profiler Plus™ ID PCR Amplification Kit.[1]

The STR typing results from specimens K27 (WELD), K28 (STEVENS), and K29 (ERAMO) were compared to the STR typing results from specimens Q3 and Q14 [submitted under FBI Laboratory Number 040729011 WP HZ and reported in FBI Laboratory report dated March 1, 2005]. Additionally, were compared to the STR typing results from specimens K27 (WELD), K28 (STEVENS), and K29 (ERAMO) to the STR typing results from specimens Q1-Q2F and Q1-Q2M [submitted under FBI Laboratory Number 021119008 NR, Case ID 95A-HQ-1122440, and reported in FBI Laboratory report dated January 21, 2004].

Based on the typing results from the amelogenin locus (for sex determination), male DNA is present in the DNA obtained from specimens K27 (WELD), K28 (STEVENS), and K29 (ERAMO). No amelogenin typing results were obtained from specimen Q56.

No STR typing results were obtained from the DNA recovered from specimen Q56; therefore, no comparisons could be made to specimens K27 (WELD), K28 (STEVENS), and K29 (ERAMO).

Based on the STR typing results, the sources of specimens K27 (WELD), K28 (STEVENS), and K29 (ERAMO) are excluded as potential contributors to the mixtures of DNA obtained from specimens Q3 (040729011), Q14 (040729011), Q1-Q2F (021119008), and Q1-Q2M (021119008).

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[1] The AmpFℓSTR® Profiler Plus™ ID PCR Amplification Kit includes the locl D3S1358, vWA, FGA, D8S1179, D21S11, D18S51, D5S818, D13S317, and D7S820.

No other nuclear DNA examinations were conducted.

Remarks:

The results of additional FBI Laboratory examinations are the subjects of separate reports.

Upon completion of all the requested examinations, the submitted items will be returned to you under separate cover. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis will also be returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a refrigerator/freezer and isolated from evidence that has not been examined.

Jerrilyn M. Conway
DNA Analysis Unit I
703-632-7499

This report contains the opinions/interpretations of the examiner(s) who issued the report.

FBI SPECIMENS REPORT
(JUNE 27, 2006)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
QUANTICO, VA 22135

To: Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, Pennsylvania 16801

Case ID No.: 95A-HQ-1122440 — 13

Lab No.: 040624016 PG NR

Reference: Communication dated June 22, 2004

Your No.: 3295-06687

Title: JOSHUA HETTINGER-SUSPECT;
T.L.-VICTIM;
SEXUAL ASSAULT

Date specimens received: June 24, 2004

The following specimen was received into the DNA Analysis Unit I:

K3 – Saliva sample from JOSHUA HETTINGER

This report includes the results of the DNA examinations.

Results of Examinations:

Deoxyribonucleic acid (DNA) isolated from specimen K3 was subjected to DNA typing by the polymerase chain reaction (PCR) at the amelogenin sex typing locus, the nine (9) short tandem repeat (STR) loci of the AmpFℓSTR® Profiler Plus™ ID PCR

Amplification Kit, and the six (6) STR loci of the AmpFℓSTR® COfiler™ PCR Amplification Kit.[1]

The STR typing results from specimen K3 were compared to the STR typing results from specimen Q1-Q2M [submitted under FBI Laboratory Number 021119008 NR and reported in FBI Laboratory report dated January 21, 2004].

Based on the typing results from the amelogenin locus (for sex determination), male DNA is present in the DNA obtained from specimen K3.

Based on the STR typing results, the source of specimen K3 is excluded as a potential contributor to the DNA obtained from specimen Q1-Q2M.

No other nuclear DNA examinations were conducted.

Remarks:

The submitted specimen will be returned under separate cover of communication. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis will also be returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a

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[1] The AmpFℓSTR® Profiler Plus™ ID PCR Amplification Kit includes the loci D3S1358, vWA, FGA, D8S1179, D21S11, D18S51, D5S818, D13S317, and D7S820. The AmpFℓSTR® COfiler™ PCR Amplification Kit includes the loci D3S1358, D16S539, TH01, TPOX, CSF1PO, and D7S820. Due to the differences in sample condition and quantity, amplification may not be attempted using both kits.

refrigerator/freezer and isolated from evidence that has not been examined.

Heather Seubert
DNA Analysis Unit I
703-632-7488

Reviewer: [signature not legible]
Date: 7/06/06

FBI SPECIMENS REPORT
(OCTOBER 21, 2004)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
QUANTICO, VA 22135

To: Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440 — 12

Lab No.: 040224003 PG NR

Reference: Communication dated February 21, 2003

Your No.: SCPD INC. #3295-06687

Title: T.L.-VICTIM; SEX OFFENSES

Date specimens received: February 24, 2004

The following specimen was examined in the DNA Analysis Unit I:

K2 – Blood sample from T.L.

This report includes the results of the DNA examinations.

Results of Examinations:

Deoxyribonucleic acid (DNA) was isolated from specimen K2 and subjected to DNA typing by the polymerase chain reaction (PCR) at the amelogenin sex typing locus, the nine (9) short tandem repeat (STR) loci of the AmpFℓSTR® Profiler Plus™ ID and the six (6) STR loci of the AmpFℓSTR® COfiler™ PCR Amplification Kits.

The STR typing results from specimen K2 (T.L.) were compared to the STR typing results from specimen Q1-Q2F [submitted under FBI Laboratory Number 021119008 NR and reported in FBI Laboratory report dated January 21, 2004] (results reproduced in the table below for reference purposes).

AmpFℓSTR® Profiler Plus™ ID

SPECIMEN Q1-Q2F mc

D3S1358 – 15,17

vWA – 16,18

FGA – 23,24

D8S1179 – 13,15

D21S11 – 30,31.2

D18S51 – 16,19

D5S818 – 12,13

D13S317 – 8,13

D7S820 – 10,11

SPECIMEN K2

D3S1358 – 15,17

vWA – 16,18

FGA – 23,24

D8S1179 – 13,15

D21S11 – 30,31.2

D18S51 – 16,19

D5S818 – 12,13

D13S317 – 8,13

D7S820 – 10,11

mc = major contributor

AmpFℓSTR® COfiler™

SPECIMEN Q1-Q2F mc

D3S1358 – 15,17

D16S539 – 11,12

TH01 – 8,9.3

TPOX – 8,11

CSF1PO – 10,11

D7S820 – 10,11

SPECIMEN K2

D3S1358 – 15,17

D16S539 – 11,12

TH01 – 8,9.3

TPDX – 8,11

CSF1P0 – 10,11

D7S820 – 10,11

Based on the typing results from the amelogenin locus (for sex determination), female DNA is present in the DNA obtained from specimen K2 (T.L.).

The STR typing results for specimen Q1-Q2F indicate the presence of DNA from more than one individual. Based on the STR typing results and to a reasonable degree of scientific certainty, the source of specimen K2 (T.L.) is the major contributor of the DNA obtained from specimen Q1-Q2F.

No other DNA examinations were performed.

Remarks:

Upon completion of all the requested examinations, the submitted items will be returned to you under separate cover. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis will also be returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a refrigerator/freezer and isolated from evidence that has not been examined.

* This opinion is based upon the outcome of a statistical calculation in which the probability of selecting an unrelated individual at random from an African American, Caucasian, South-eastern Hispanic, or Southwestern Hispanic population having a DNA profile matching the major contributor of the DNA obtained from the questioned specimen(s) was determined to be equal to, or less than 1 in 280,000,000,000 individuals.

Heather Seubert
DNA Analysis Unit I
703-632-7488

Reviewer: [signature not legible]
Date: 21 Oct. 04

ACKNOWLEDGEMENT OF
DNA TESTING SAMPLE RECEIVING
(JUNE 22, 2004)

THOMAS R. KING
Chief of Police

Borough of State College
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

U.S. Department of Justice
Federal Bureau of Investigation Laboratory
Evidence Control Center
2501 Investigation Parkway
Quantico, VA 22135

040624016

ATTN: DNA laboratory

RE: SCPD Inc. #3295-06687 C/N
FBI File No. 95A-HQ-1122440
Case No. 021119008 NR
Victim: T.L. VIC

To whom it may concern:

Recently I received the results of DNA testing on evidence that was resubmitted on 11/19/02. As a result of that testing, a new STR DNA profile was developed for the suspect and entered into CODIS. On 2/21/04, new samples of the victim's blood were

submitted for DNA analysis. Heather Seubert was the analyst that performed the earlier analyses.

Recently, a tip on a potential suspect, Joshua Hettinger, was received. Hettinger was contacted and agreed to be interviewed. He also provided two saliva samples for DNA analysis and eventual comparison to the DNA profile of the known suspect.

Enclosed find two collection containers containing known samples of Hettinger's saliva. Please analyze for DNA and compare with existing results.

Any questions regarding this matter should be directed to Det. Ralph W. Ralston at 814/278-4742.

Sincerely,

/s/ R.W. Ralston
Detective R.W. Ralston
Detective Section

[Handwritten: 95A-HQ-1122440-11
VIO #1-Sex Offenses
VIO #2-Assault Offenses]

ACKNOWLEDGEMENT OF
DNA TESTING SAMPLE RECEIVING
(JUNE 22, 2004)

THOMAS R. KING
Chief of Police

Borough of State College
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

U.S. Department of Justice
Federal Bureau of Investigation Laboratory
Evidence Control Center
2501 Investigation Parkway
Quantico, VA 22135

040224003

ATTN: DNA laboratory

RE: SCPD Inc. #3295-06687
FBI File No. 95A-HQ-1122440
Case No. 021119008 NR C/N

To whom it may concern:

Recently I received the results of DNA testing on evidence that was resubmitted on 11/19/02. As a result of that testing, a new STR DNA profile was developed for the suspect. At that time, Heather Seubert, of DNA Analysis Unit I, requested a new whole blood sample from victim T.L., so that T.L.'s

known blood could be analyzed and compared with the earlier findings.

Enclosed find two EDTA vacutainers containing known samples of T.L.'s whole blood. Please analyze for DNA and compare with Q1-Q2F me and Q1-Q2M obtained in the prior analysis.

Any questions regarding this matter should be directed to Det. Ralph W. Ralston at 814/278-4742.

Sincerely,

/s/ R.W. Ralston
Detective R.W. Ralston
Detective Section

[Handwritten Text: 900 block of South Pugh Street
Sex offenses-V.O
Assault offenses-V.O
95A-HQ-1122440-10]

FBI REPORT ON RESUBMISSION OF SPECIMENTS (JANUARY 21, 2004)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To: Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440 — 9

Lab No.: 021119008 NR

Reference: Communication dated November 14, 2002

Your No.: 3295-06687

Title: T.L.-VICTIM; SEXUAL ASSAULT;

Date specimens received: November 19, 2002

Specimens received into the DNA Analysis Unit I under cover of communication dated November 14, 2002 and Laboratory number 021119008 NR:

K1 – Blood sample from Todd Kirsten

RESUBMISSION OF SPECIMENS FROM F.B.I. LABORATORY NUMBER 950519026 ZJ UF QJ BO:

Q1-Q2 – Vaginal swabs

Q5 – Genital swabbing

Results of Examinations:

Deoxyribonucleic acid (DNA) was isolated from specimens Q1-Q2F (female fraction from specimens Q1 and Q2, which were combined for analysis), and

Q1-Q2M (male fraction from specimens Q1 and Q2, which were combined for analysis), and subjected to DNA typing by the polymerase chain reaction (PCR) at the thirteen (13) short tandem repeat (STR) loci and amelogenin sex typing locus of the AmpFℓSTR® Profiler Plus™ ID and AmpFℓSTR® COfiler™ PCR Amplification Kits. DNA amplification via the PCR of the nine (9) AmpFℓSTR® Profiler Plus™ ID STR loci was only performed on DNA obtained from specimen K1 (KIRSTEN). The DNA typing results are detailed below.

AmpFℓSTR® Profiler Plus™ ID

SPECIMEN Q1-Q2F mc

D3S1358 – 15,17

vWA – 16,18

FGA – 23,24

D8S1179 – 13,15

D21S11 – 30,31.2

D18S51 – 16,19

D5S818 – 12,13

D13S317 – 8,13

D7S820 – 10,11

SPECIMEN Q1-Q2M

D3S1358 – 15,18

vWA – 17,17

FGA – 21,22

D8S1179 – 13,15

D21S11 – 28,31.2

D18S51 – 12,12

D5S818 – 12,13

D13S317 – 8,12

D7S820 – 11,11

SPECIMEN K1 (KIRSTEN)

D3S1358 – 15,18

vWA – 14,19

FGA – 22,22.2

D8S1179 – 12,14

D21S11 – 31,31.2

D18S51 – 10,12

D5S818 – 9,12

D13S317 – 12,12

D7S820 – 7,12

mc = major contributor

AmpFℓSTR® COfiler™

SPECIMEN Q1-Q2F mc

D3S1358 – 15,17

D16S539 – 11,12

TH01 – 8,9.3

TPOX – 8,11

CSF1PO – 10,11

D7S820 – 10,11

SPECIMEN Q1-Q2M

D3S1358 – 15,18

D16S539 – 9,12

TH01 – 6,7

TPOX – 9,11

CSF1PO – 11,12

D7S820 – 11,11

The STR typing results from specimen Q1-Q2M do not match specimen K1 (KIRSTEN) and could not have been contributed by this individual.

The STR typing results for specimen Q1-Q2F indicate the presence of DNA from more than one individual. The profile from the major contributor is listed in the above table. The source of specimen K1 (KIRSTEN) can be excluded as a contributor of the DNA obtained from specimen Q1-Q2F.

The typing results from the amelogenin locus (for gender determination) indicate the presence of male DNA in the DNA obtained from specimens Q1-Q2M and K1 (KIRSTEN).

The typing results from the amelogenin locus indicate the presence of female DNA in the DNA obtained from specimen Q1-Q2F; however, the typing results were inconclusive for the presence of male DNA obtained from specimen Q1-Q2F.

These results will be maintained by the FBI Laboratory for possible future comparisons if requested. A known blood sample from the victim and suspect(s) should be submitted for comparison. Also, the DNA profile from Q1-Q2M will be entered into the Combined

DNA Index System (CODIS) and maintained by the FBI Laboratory for future comparisons.

No other DNA examinations were conducted.

Remarks:

This report contains the results of the DNA examinations, and completes the requested examinations. The submitted items and the probed DNA membrane will be returned to you under separate cover by overnight express. In addition to the evidence in the case, any remaining processed DNA from specimens examined by DNA analysis is also being returned to you. The processed DNA can be found in a package marked PROCESSED DNA SAMPLES: SHOULD BE REFRIGERATED/FROZEN. It is recommended that these samples be stored in a refrigerator/freezer and isolated from evidence that has not been examined.

Heather Seubert
DNA Analysis Unit I
703-632-7488

Reviewer: [signature not legible]
Date: January 22, 2004

ACKNOWLEDGEMENT OF
DNA TESTING SAMPLE RECEIVING
(NOVEMBER 21, 2002)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

To: Detective R.W. Ralston
State College Police Department
243 South Allen Street
State College, PA 16801

Case ID No.: 95A-HQ-1122440 — 8

Lab No.: 021119008 NR

Reference: Communication dated November 14, 2002

Your No.: 3295-06687

Title: unsub T.L.-VICTIM; SEXUAL ASSAULT;

Date specimens received: November 19, 2002

The FBI Laboratory has received your request for examination. The accompanying items of evidence have been inventoried. The provided listing and description of the submitted items may be subject to change when the examination phase begins. If changes are made, they will be reflected in the Report of Examination issued by the examiner making the change.

Each examiner assigned to your request will issue a separate Report of Examination that will address the results of her expertise. If there is a change in the status of your investigation that would have an effect on the prioritization of your request, such as court deadlines, dismissal of charges, or guilty

pleas, please notify Heather Seubert at (202) 324-6017.

Specimens:

K1 – Blood sample from Todd Kirsten

RESUBMISSION OF SPECIMENS FROM F.B.I. LABORATORY NUMBER 950519026 ZJ UF QJ BO:

Q1-Q2 – Vaginal swabs

Q5 – Genital swabbing

[. . .]

LETTER FROM STATE COLLEGE POLICE DEPARTMENT TO FBI (NOVEMBER 14, 2002)

THOMAS R. KING
Chief of Police
Borough of State College
"A Home Rule Municipality"
STATE COLLEGE POLICE DEPARTMENT
243 South Allen Street
State College, PA 16801
814 / 234-7150
FAX 814 / 231-3070

Assistant Director
Federal Bureau of Investigation
10th Street and Pennsylvania Ave., NW
Washington, DC 20535

021119008

ATTN: DNA laboratory State College, PACLS

RE: SCPD Inc. #3295-06687 CN
FBI File No. 95A-HQ-1122440
Lab No. 950519026 S/D ZJ UF QJ

.Sexual Assault-VIC
Assault-VIC

Dear Sir:

In May 1995, T.L. was brutally beaten and raped in State College. Evidence was obtained from T.L. at that time, and the FBI was able to locate and identify a DNA profile for the suspect. The following DNA profile for genetic loci D2S44, D17S79, D1S7, D10S28 and D5S110 was developed from digested

high molecular weight DNA from specimens Q1/Q2 and Q5, which are vaginal/genital swabbings. DNA was also developed from specimen K1, whole blood from victim T.L. As the result of this examination, a John Doe warrant, which was based on the suspect DNA profile, was obtained by Det. T.N. Jordan. The DNA profile was also entered in CODIS.

As per a telephone conversation with Alan Giusti on 11/14/02, I am resubmitting specimens Q1/Q2 and Q5 for additional DNA testing utilizing the STR procedure so that the STR profile can be entered into CODIS. Also included is a known specimen of whole blood obtained on 11/14/02 from T.L.'s former boyfriend, Todd Kirsten. In addition, will the new STR result be entered into CODIS by your agency?

Please analyze and compare the DNA profiles obtained from specimens Q1/Q2, Q5 and compare with the DNA profile obtained from the known sample from Todd Kirsten.

Any questions regarding this matter should be directed to Det. Ralph W. Ralston at 814/278-4742.

900 block of South Pugh Street

Sincerely,

Thomas R. King
Chief of Police

/s/ R.W. Ralston
Detective R.W. Ralston
Detective Section

95A-HQ-1122440-7

LDIS CASE REVIEW SHEET
(SEPTEMBER 24, 1999)

FILE: # 95A-HQ-1122440
CONTENT: LAB WORKSHEET ITEMS CODIS
DO NOT STAMP OR HANDLE AS ENCLOSURE

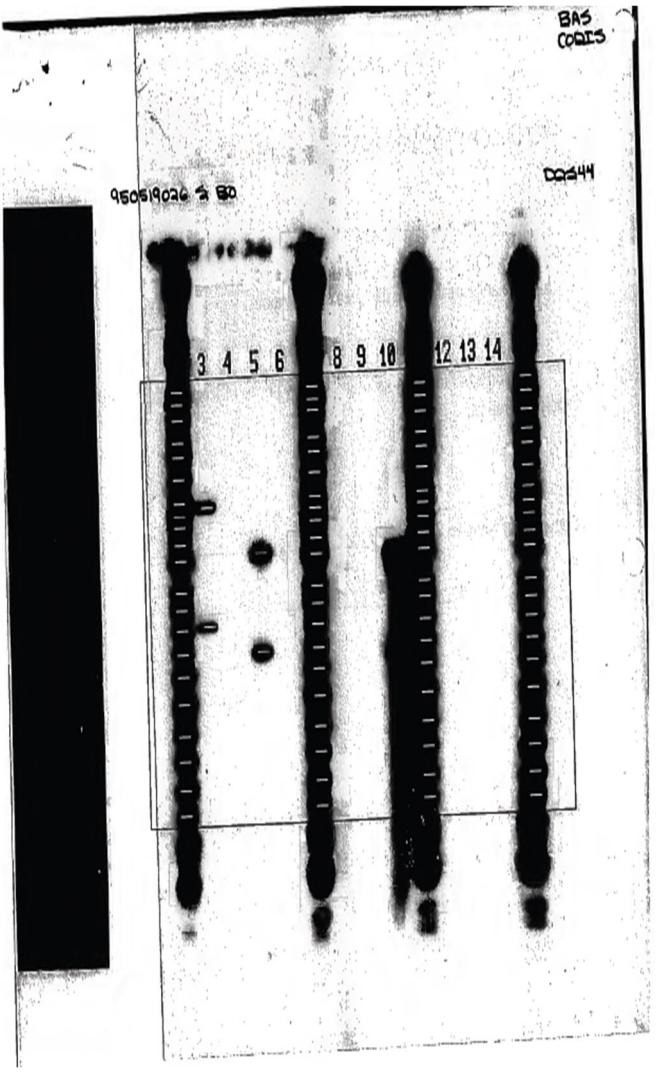
LDIS CASE REVIEW SHEET

FBI LABORATORY NUMBER 50519026 SBO

The CODIS data pertaining to this FBI Laboratory number for LDIS entry has been reviewed by Melissa A. Smrz and the interpretation of this data has been agreed upon.

[x] Some of the CODIS sizing data may not be reflected in the original laboratory report.

Signature of reviewer: /s/ Melissa A. Smrz
Date: 9-24-99


BAS
CODIS
DQ244
3 4 5 6
8 9 10
12 13 14

LAB REPORT

CALCULATED FRAGMENT LENGTHS (LOG MODEL)

Autoradiogram: 950519026A
DNA Probe: D2S44
MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS
Im. Analysis: 28-OCT-1997
Markers used: 21

Lane 3: Control/Digest, K562
Band 1 MW = 2962 bp
Band 2 MW = 1807 bp

Lane 4: /, Empty lane
(No bands detected)

Lane 5: Blood / Stain, Unknown,
BO950519026K1/0
Band 1 MW = 2392 bp
Band 2 MW = 1632 bp

Lane 6: /, Empty lane
(No bands detected)

Lane 8: MaleFr / Stain, Unknown,
BO950519026Q1-Q2M/0
Band 1 MW = 2230 bp
Band 2 MW = 1615 bp
Band 3 MW = 1212 bp

Lane 9: /, Empty lane
(No bands detected)

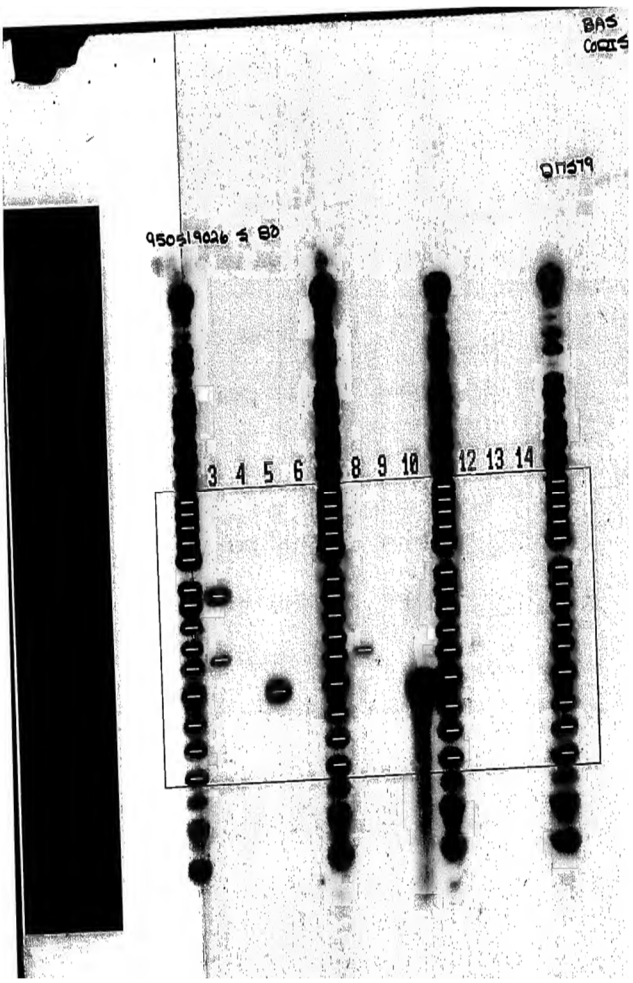
Lane 10: FemaleF/Stain, Unknown,
BO950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr / Stain, Unknown,
BO950519026Q5M/0
(No bands detected)

Lane 13: /, Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown,
BO950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder


BAS
COEIS
D11579
950519026 $ BD
3 4 5 6 8 9 10 12 13 14

CALCULATED FRAGMENT LENGTHS
(LOG MODEL)

Autoradiogram: 950519026B
DNA Probe: D17S79
MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS
Im. Analysis: 28-OCT-1997
Markers used: 14

Lane 3: Control/Digest, K562
Band 1 MW = 2001 bp
Band 2 MW = 1550 bp

Lane 4: /, Empty lane
(No bands detected)

Lane 5: Blood / Stain, Unknown,
BO950519026K1/0
Band 1 MW = 1338 bp

Lane 6: /, Empty lane
(No bands detected)

Lane 8: MaleFr / Stain, Unknown,
BO950519026Q1-Q2M/0
Band 1 MW = 1537 bp
Band 2 MW = 1328 bp

Lane 9: /, Empty lane
(No bands detected)

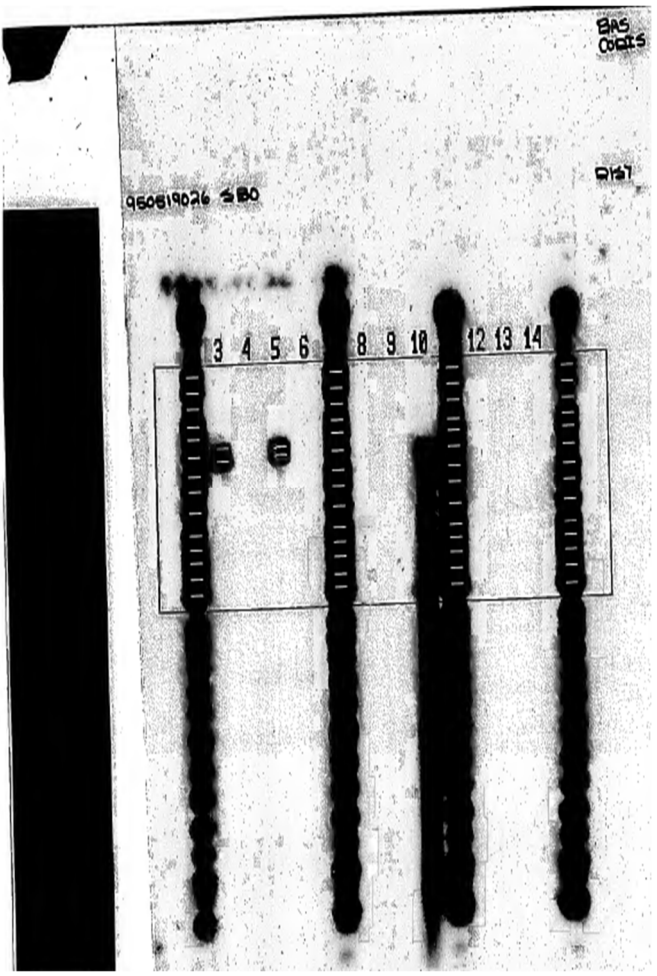
Lane 10: FemaleF/Stain, Unknown,
BO950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr / Stain, Unknown,
BO950519026Q5M/0
(No bands detected)

Lane 13: /, Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown,
BO950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



CALCULATED FRAGMENT LENGTHS
(LOG MODEL)

Autoradiogram: 950519026C
DNA Probe: D1S7
MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS
Im. Analysis: 28-OCT-1997
Markers used: 14

Lane 3: Control/Digest, K562
Band 1 MW = 4533 bp
Band 2 MW = 4229 bp

Lane 4: /, Empty lane
(No bands detected)

Lane 5: Blood / Stain, Unknown,
BO950519026K1/0
Band 1 MW = 4516 bp
Band 2 MW = 4306 bp

Lane 6: /, Empty lane
(No bands detected)

Lane 8: MaleFr / Stain, Unknown,
BO950519026Q1-Q2M/0
Band 1 MW = 3127 bp
Band 2 MW = 3001 bp

Lane 9: /, Empty lane
(No bands detected)

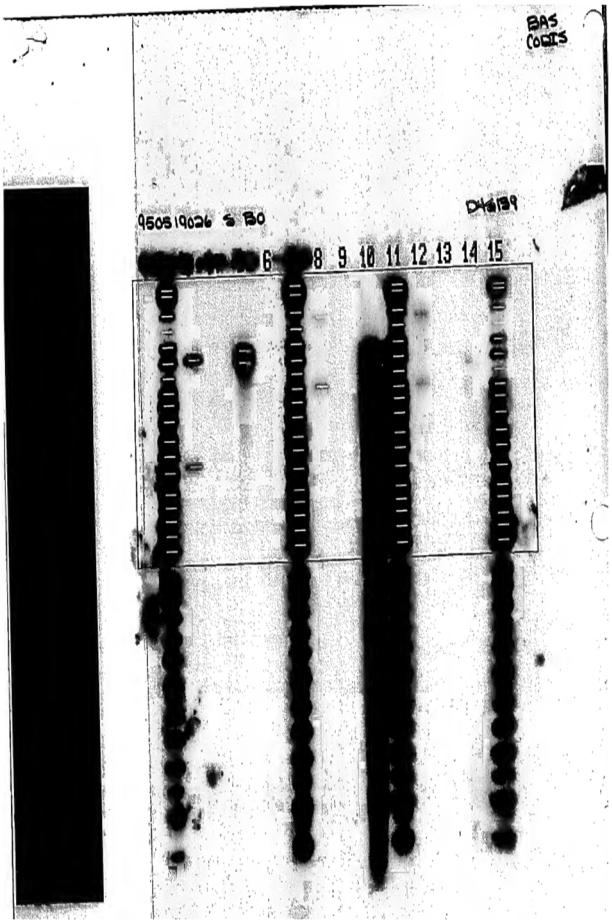
Lane 10: FemaleF/Stain, Unknown,
BO950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr / Stain, Unknown,
BO950519026Q5M/0
(No bands detected)

Lane 13: /, Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown,
BO950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



CALCULATED FRAGMENT LENGTHS
(log model)
Autoradiogram: 950519026D
DNA Probe: D4S139
MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS
Im. Analysis: 28-OCT-1997
Markers used: 18

Lane 3: Control/Digest, K562
Band 1 MW = 6534 bp
Band 2 MW = 3441 bp

Lane 4: /, Empty lane
(No bands detected)

Lane 5: Blood / Stain, Unknown,
BO950519026K1/0
Band 1 MW = 6956 bp
Band 2 MW = 6339 bp
. . .

Lane 6: /, Empty lane
(No bands detected)

Lane 8: MaleFr / Stain, Unknown,
BO950519026Q1-Q2M/0
Band 1 MW = 9626 bp
Band 2 MW = 5279 bp

Lane 9: /, Empty lane
(No bands detected)

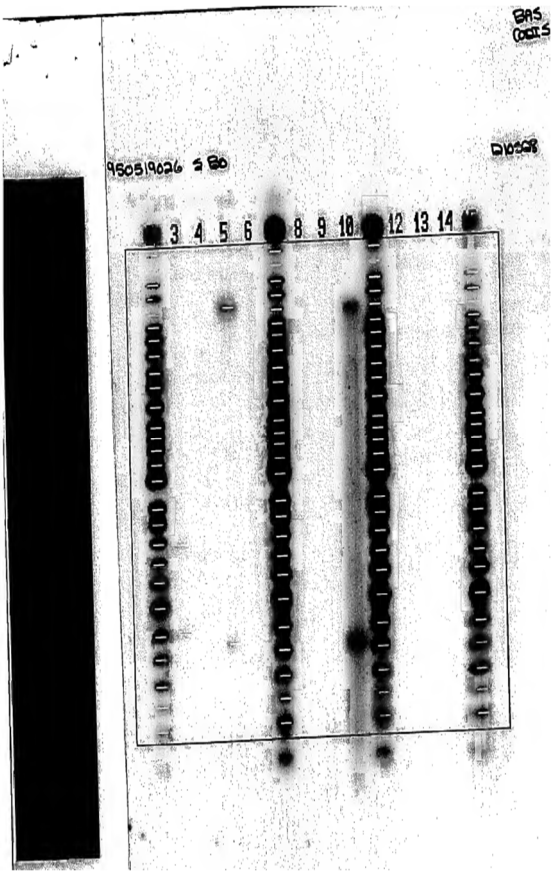
Lane 10: FemaleF/Stain, Unknown,
BO950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr / Stain, Unknown,
BO950519026Q5M/0
(No bands detected)

Lane 13: /, Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown,
BO950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



CALCULATED FRAGMENT LENGTHS
(LOG MODEL)

Autoradiogram: 950519026E
DNA Probe: D10S28
MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS
Im. Analysis: 28-OCT-1997
Markers used: 27

Lane 3: Control/Digest, K562
Band 1 MW = 1773 bp
Band 2 MW = 1200 bp

Lane 4: /, Empty lane
(No bands detected)

Lane 5: Blood / Stain, Unknown,
BO950519026K1/0
Band 1 MW = 5874 bp
Band 2 MW = 1130 bp

Lane 6: /, Empty lane
(No bands detected)

Lane 8: MaleFr / Stain, Unknown,
BO950519026Q1-Q2M/0
Manual placement Band 2
Band 1 MW = 3221 bp
Band 2 MW = 987 bp

Lane 9: /, Empty lane
(No bands detected)

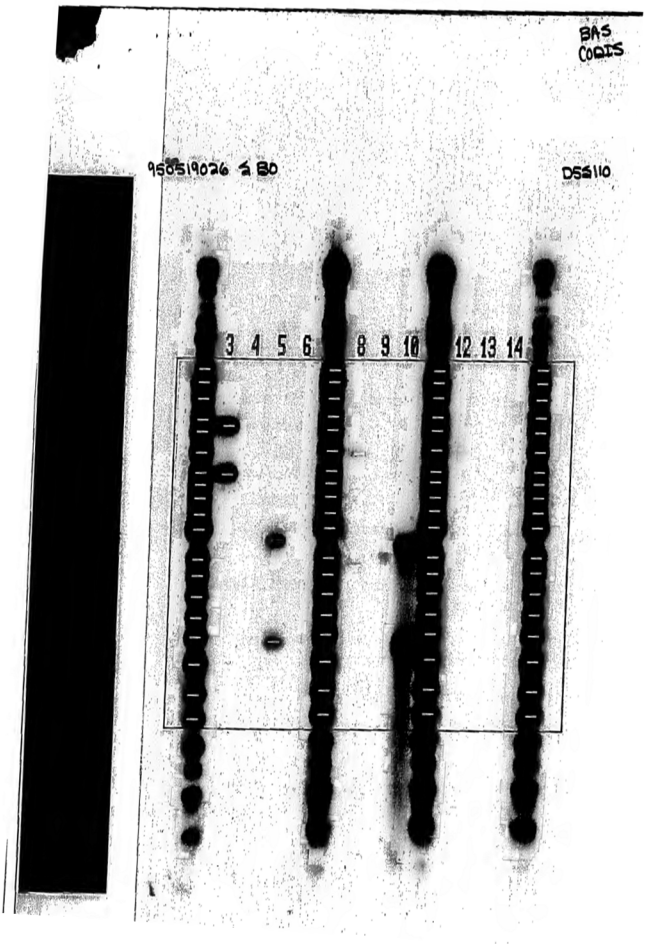
Lane 10: FemaleF/Stain, Unknown,
BO950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr / Stain, Unknown,
BO950519026Q5M/0
(No bands detected)

Lane 13: /, Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown,
BO950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder



CALCULATED FRAGMENT LENGTHS
(log model)

Autoradiogram: 950519026F
DNA Probe: D5S110
MW Standard: LIFECODES 0.6-23 KB

Analyst: BAS
Im. Analysis: 28-OCT-1997
Markers used: 19

Lane 3: Control/Digest, K562
Band 1 MW = 3805 bp
Band 2 MW = 3003 bp

Lane 4: /, Empty lane
(No bands detected)

Lane 5: Blood / Stain, Unknown,
BO950519026K1/0
Band 1 MW = 2240 bp
Band 2 MW = 1474 bp

Lane 6: /, Empty lane
(No bands detected)

Lane 8: MaleFr / Stain, Unknown,
BO950519026Q1-Q2M/0
Band 1 MW = 3282 bp
Band 2 MW = 2226 bp
Band 3 MW = 2009 bp

Lane 9: /, Empty lane
(No bands detected)

Lane 10: FemaleF/Stain, Unknown,
BO950519026Q1-Q2F/0
(No bands detected)

Lane 12: MaleFr / Stain, Unknown,
BO950519026Q5M/0
(No bands detected)

Lane 13: /, Empty lane
(No bands detected)

Lane 14: FemaleF/Stain, Unknown,
BO950519026Q5F/0
(No bands detected)

Note: If MW = 99999 or MW = 9, the fragment is too long or too short, respectively, to be sized with this ladder

FRAMS'S DICTATION
(SEPTEMBER 20, 1995)

50519026 S/D ZJ UF QJ BO

Results of examination:

This report supplements and completes the FBI Laboratory reports dated September 20, 1995 and October 4, 1995. Please refer to the September 20th report for a listing of the specimens.

(Reem's Dictation)

(Smrz's Dictation)

Specimens Q1 through Q48 and K1 through K3 are being returned under separate cover by registered mail. (add Smrz's disposition)

This report supplements and completes the FBI Laboratory report dated September 20, 1995. Please refer to that report for a listing of the specimens.

(Bodzia's Dictation)

You will be advised of the results of DNA analyses and the disposition of the evidence by separate report.

Light brown Caucasian pubic hairs found in the debris from specimen Q15 are dissimilar microscopically to hairs in the K3 pubic hair sample from T.L., and are not consistent with having originated from her. These hairs, and textile fibers removed from the submitted items, have been preserved on glass microscope slides and in pillboxes, for possible future comparison purposes. Should a suspect be developed, please return the slides, which will be returned with the evidence, along with known standards.

No apparent common fibers were detected between items from this submission and items submitted under FBI Laboratory numbers 50519025 (A.Y.) and 50130021 (Jody Basehoar).

DNA analyses and shoeprint analyses are continuing and will be reported separately along with the disposition of the evidence.

FBI EXAMINATION RESULTS
(JANUARY 2, 1996)

FBI LABORATORY
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

1-Mr. Fram
1-Mr. Reem
1-Ms. Smrz
1-Mr. Bodziak

To: T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

FBI File No. 95A-HQ-1122440

Lab No. 50519026 S/D ZJ UF QJ BO

Reference: Communication dated May 16, 1995

Your No. 3295-06687

Re: UNKNOWN SUSPECT;
T.L.-VICTIM; RAPE/ASSAULT

Specimens received: May 19, 1995 95A-HQ-1122440 -6

Result of examination:

This report supplements and completes the FBI Laboratory reports dated September 20, 1995 and October 4, 1995. Please refer to the September 20th report for a listing of the specimens.

No blood was identified on specimens Q1, Q2 or Q5.

Semen was identified on specimens Q1, Q2 and Q5. Specimens Q3 and Q4 were examined for the presence of semen; however, none was found.

Deoxyribonucleic acid (DNA) profiles for genetic loci D2S44, D17S79, D1S7, D4S139, D10S28 and D5S110 were developed from HAE III digested high molecular weight DNA extracted from specimens Q1/Q2 (combined for analysis), Q5, and K1. These profiles were compared to DNA profiles obtained from specimen K5 (blood sample from MIKE WINTERS) in FBI Laboratory case number 50130021 S ZJ UF BO. Based on results, the DNA profiles from specimens Q1/Q2 and Q5 do not match the DNA profiles from the blood sample of MIKE WINTERS and, therefore, could not have been contributed by this individual.

Specimens Q1 through Q48 and K1 through K3 are being returned under separate cover by registered mail. The probed membrane and any remaining processed DNA from specimens analyzed by DNA analysis is also being returned to you. The processed DNA can be found in a plastic ziplock package marked “Processed DNA: Should BE REFRIGERATED /FROZEN". It is recommended that this package be kept refrigerated/frozen and isolated from evidence which has not yet been examined.

FBI EXAMINATION INVOICE OF CONTENTS (JANUARY 2, 1996)

0-4 (Rev. 8-11-88)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

To: T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

Re: UNKNOWN SUSPECT;

T.L. - VICTIM;

RAPE/ASSAULT

Invoice of Contents

Description of Contents:

Q1-Q48

K1-K3

Probed membrane DNA SAMPLES

FBI File#	95A-HQ-1122440
Case#	50519026 S/D ZJ UF QJ BO
Your#	3295-06687
☒ Return to	FRAM
Room	3931
Ext.	4350

Hazardous Materials Only

Weight of Hazardous Materials:

All items listed above are contained in this package.

A detailed description items will be found in Bureau communication dated 1/2/96.

FBI SUMMARY OF FOOTPRINT ANALYSIS (OCTOBER 4, 1995)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C. 20535

1 - Mr. Fram
1 - Mr. Bodziak

To:

T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

FBI File No. 95A-HQ-1122440

Lab No. 50519026 S/D ZJ UF QJ

Reference: Communication dated May 16, 1995

Your No. 3295-06687

Re: UNKNOWN SUSPECT; T.L. - VICTIM;

RAPE/ASSAULT

Specimens received: May 19, 1995

Result of examination:

This report supplements the FBI Laboratory report dated September 20, 1995. Please refer to that report for a listing of the specimens.

The footwear impressions represented in the Q48 cast and in the Q49 through Q62 photographs could not be associated with specific brand names or

manufacturers based on the limited nature of those impressions.

Although limited in overall detail, the Q48 cast contains some limited design features which are different from and therefore were not made by the Q41/Q42 victim's shoes.

You will be advised of the results of DNA analyses and the disposition of the evidence by separate report.

SPECIMENS REPORT, FBI
(SEPTEMBER 20, 1995)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

1 - Mr. Fram
1 - Mr. Bodziak

To:

T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

FBI File No. 95A-HQ-1122440

Lab No. 50519026 S/D ZJ UF QJ

Reference: Communication dated May 16, 1995

Your No. 3295-06687

Re: UNKNOWN SUSPECT;

T.L. - VICTIM;

RAPE/ASSAULT

Specimens received: May 19, 1995

Specimens:

Items from Victim and Crime Scene:

Q1-Q2 Vaginal swabs (49)

Q3-Q4 Vaginal smears (49)

Q5 Genital swabbing (49)

Q6-Q7	Fingernail scrapings (49)
Q8	Pubic hair combings (49)
Q9	Debris (49)
Q10	Cigarette butt (3)
Q11	Soil with stain (27)
Q12-Q17	Debris from flower bed (36 through 41)
Q18-Q23	Scrapings from window (29 through 34)
Q24-Q25	Swabbings from curb and sidewalk (1 and 2)
Q26-Q37	Swabbings from sidewalk near flower bed (14 through, 19 through 26)
Q38	Straw from grass near sidewalk (18)
Q39	Panties (4)
Q40	Jeans (5)
Q41-Q42	Shoes (6 and 7)
Q43-Q44	Socks (43 and 44)
Q45	Jacket (46)
Q46	Shirt (48)
Q47	Brassiere (42)
Q48	Plaster casting of shoeprint (28)
K1	Blood sample from victim (50)
K2	Head hair sample from victim (49)
K3	Pubic hair sample from victim (49)

Result of examination:

Light brown Caucasian pubic hairs found in the debris from specimen Q15 are dissimilar microscopically

to hairs in the K3 pubic hair sample from T.L., and are not consistent with having originated from her. These hairs, and textile fibers removed from the submitted items, have been preserved on glass microscope slides and in pillboxes, for possible future comparison purposes. Should a suspect be developed, please return the slides, which will be returned with the evidence, along with known standards.

No apparent common fibers were detected between items from this submission and items submitted under FBI Laboratory numbers 50519025 (** *****) and 50130021 (*** ****).

DNA analyses and shoeprint analyses are continuing and will be reported separately along with the disposition of the evidence.

FBI SPECIMEN REPORT ON FOOTWEAR (SEPTEMBER 25, 1995)

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C. 20535

1 - Mr. Bodziak

To:

T. N. Jordan #3232
Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

REGISTERED

FBI File No. 95A-HQ-1122440

Lab No. 50821009 D QJ

Reference: Communication dated August 17, 1995

Your No. 3295-06687

Re: UNKNOWN SUSPECT;

T.L. - VICTIM;

RAPE/ASSAULT

Specimens received: August 21, 1995

Specimens:

Q49-Q62 Fourteen color negatives depicting footwear impressions

Results of examination:

The results of the shoe print comparison are being reported separately under laboratory number 50519026 D QJ.

Q49 through Q62 are returned herewith.

95A HQ-1122440-3

Enclosures (14)

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

Laboratory Work Sheet

To:

T. N. Jordan #3232

Investigator
State College Police Department
118 South Fraser
State College, Pennsylvania 16801

FBI File No. 95A-HQ-1122440

Lab No. 50821009 D QJ

Reference: Communication dated August 17, 1995

Your No. 3295-06687

Re: UNKNOWN SUSPECT;

T.L. - VICTIM;

RAPE/ASSAULT

Specimens received: August 21, 1995

Specimens:

Q49-Q62 Fourteen color negatives depicting footwear impressions

LAB WORKSHEET

FILE #: 95A-HQ-1122440 – 3

CONTENT: LAB WORKSHEET ITEMS

DO NOT STAMP OR HANDLE AS ENCLOSURE

FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D.C.

Paula,

Have Frank return evidence (on chair) and dictation for 50519026.

For 50821009 D QJ, have Frank find disc it is recorded on, make corrections on worksheet, prepare report and add the below dictation and return the Q49-62 negatives with report. Send our stuff to file like a document case. Prepare pink sheet!

(dictation)

The results of the shoe print comparison are being reported separately under laboratory number 50519026 D QJ.

Q49 through Q62 are returned herewith.

[Handwritten: Paula, this is on disk #11 FM??? I returned to Frank for assembly of report and to include disposition of evidence.]

REQUEST FOR PHOTOGRAPHIC WORK
(SEPTEMBER 11, 1995)

THIS FORM MUST BE TYPED
REQUEST FOR PHOTOGRAPHIC WORK

Prepared for: Frank McCann

Room: 3372A

Extension: 4489/91

Date: 9/11/95

Cost Code: 0721

☒ Unclassified

ENCLOSURES:

Negatives

Size	35mm
Type	Color
Quantity	1

(color and black & white work will not be accepted on same request)

WORK REQUESTED:

Make three 8“x10” prints of negative #& 7.

Need by Friday 9/15/95. THANKS!

JUSTIFICATION: 50821009 S/D QJ

MEMO THAT ITEMS CANNOT BE SCANNED (APRIL 10, 2014)

ITEM(S) CANNOT BE SCANNED

DESCRIPTION

Negatives

Official DocLab Instruction(s) — Revised 10-Apr-2014

LETTER FROM STATE COLLEGE POLICE DEPARTMENT TO FBI REGARDING SHOE PRINT NEGATIVES (AUGUST 17, 1995)

Borough of State College

"A Home Rule Municipality"

STATE COLLEGE POLICE DEPARTMENT

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Assistant Director
Federal Bureau of Investigation
10th St. and Pennsylvania Ave., N.W.
Washington, D. C. 20535

ATTN: Frank McCann
Shoe Print Examinations

Re: SCPD Inc. 3295-06687

Victim: T.L.

FBI Lab # 50519026

Dear Agent McCann:

Enclosed you will find the photo negatives of the shoe print taken at the scene of the T.L. assault. They are being sent at your request as per a telephone conversation you had with Lt. Diane Conrad on 8/17/95.

Please return them when you have completed your examinations.

Thank you, for your assistance in this matter.

Sincerely,

Thomas R. King
Chief of Police

/s/ Thomas N. Jordan
Criminal Investigator

FBI LAB PROCEDURES FOR THE DETECTION OF RESTRICTION FRAGMENT LENGTH POLYMORPHISMS IN HUMAN DNA (DECEMBER 7, 1990)

FBI Laboratory
December 7, 1990

I. ISOLATION OF DNA FROM LIQUID BLOOD SAMPLES

1. Collect liquid blood specimens in EDTA vacutainer tube. Mix well before removing aliquots. Store at 4°C for up to 5 days. Freeze at -80°C in 700 µL aliquots.
2. Add 800 µL 1X SSC to thawed blood and mix. Spin 1 minute.
3. Remove and discard 1.0 mL supernatant.
4. Add 1.0 mL 1X SSC, vortex, centrifuge 1 minute. Remove supernatant. Do not disturb pellet.
5. To pellet add:

   375 µL 0.2M NaAcetate

   25 µL 10% SDS

   5 µL Proteinase K (20 mg/mL)

   Vortex briefly (1 sec)

   Incubate at 56°C for 1 hour

NOTE: Allelic control processing begins at this step (Appendix D).

6. Add 120 µL phenol/chloroform/isoamyl alcohol. Vortex 30 sec. Perform in fume hood.

7. Spin 2 minutes.
8. Carefully remove aqueous layer to new tube. Do not disturb interface.
9. Add 1.0 mL cold absolute ethanol. Mix by inversion. Place at -20°C for 15 minutes.

   Spin 2 minutes.
10. Remove supernatant by decantation. Remove residual alcohol with micropipette.
11. Add 180 µL TE buffer. Vortex.

    Incubate at 56°C for 10 minutes.

    Add 20 µL 2.0M NaAcetate. Mix.
12. Add 500 µL cold ethanol. Mix.

    Spin 1 minute. Decant supernatant.
13. Wash pellet with 1.0 mL 70% ethanol.

    Spin 1 minute. Decant.
14. Place in Speed-Vac ~10 minutes to remove ethanol.
15. Add 200 µL TE. Mix. Incubate at 56°C overnight. Next morning vortex 10 seconds.
16. DNA is ready for quantification by spectrophotometry.

II. ISOLATION OF DNA FROM BODY FLUID STAINS

1. Cut the stain into small pieces and place the pieces into a 1.5 mL tube that has a depression in the cap (Sarstedt).
2. Add 400 µL stain extraction buffer.

Add 10 μL Proteinase K.Mix and spin 2 seconds to force cutting into liquid.

3. Incubate at 56°C overnight.
4. Punch a hole in the lid and place the cutting pieces in the lid. Spin 5 minutes. Remove the cutting pieces and the cap. Place a new cap on the tube.
5. Add 500 μL phenol/chloroform/isoamyl alcohol. This step must be done in the fume hood. Shake the tube vigorously by hand to achieve a milky emulsion in the tube. Spin the tube for 2 minutes.
6. Transfer aqueous phase (top layer) to a new tube. Do not disturb the interface. Discard old tube containing the phenol in the waste box in the hood.
7. To the aqueous layer add 1.0 mL cold absolute EtOH.
8. Mix by hand and place the tube at −20°C for 1/2 hour.
9. Spin 15 minutes.
10. Remove the alcohol by decantation.
11. Wash pellet with 1.0 mL room temperature 70% EtOH.
12. Spin 5 minutes.
13. Remove the alcohol by decantation. Remove remaining alcohol with a micropipette (yellow tip).
14. Place the tube in Speed-Vac for 10 minutes to remove remaining EtOH.

15. Resolubilize the DNA in 36 µL TE buffer at 56°C for a minimum of two hours.

III. TEST GEL FOR ASSESSING THE QUALITY AND QUANTITY OF DNA ISOLATED FROM BODY FLUID STAINS

1. The DNA at this stage has been solubilized in 36 µL of TE buffer at 56°C for a minimum of 2 hours.

Spin for 5 seconds.

NOTE: You must spin before the tube cap is opened.

2. Remove 4 µL DNA and combine with 2 µL loading solution. Spin 2 seconds.

3. Preparation of test gel:

Three sizes of test gels can be run, and each size gel can have multiple origins. The size used and number of origins depends on the number of specimens that one needs to test.

Gel size	Gel vol (mL)	Wells/origin	Origins
Baby (6 × 8 cm)	25	14	2
Medium (11 × 14 cm)	100	14–16	2
Large (20 × 25 cm)	325	25	3

All gels use 1% agarose (Sigma Type II or Seakem ME) in 1X TAE buffer supplemented with ethidium bromide (EB) at a ratio of 10 µL EB per 100 mL TAE.

Gel volume (mL)	g agarose	µL EB
25	0.25	2.5
100	1.00	10.0
325	3.25	32.5

Add TAE buffer to the agarose.

Bring to a boil to dissolve agarose.

Equilibrate at 56°C.

Pour agarose into gel form (be sure comb is in place).

Let stand 15 minutes to gel.

4. Pour 1X TAE buffer into electrophoresis tank. The buffer should be supplemented with ethidium bromide (EB) at a ratio of 10 μL EB per 100 mL buffer.

5. Place the gel into the tank. Enough buffer should be present to cover the gel. Remove comb.

6. The DNA sample mixed with loading solution (6 μL total volume) is pipetted into the well with a micropipette. Do not poke the pipette tip through the bottom of the gel.

   If the test gel procedure is to be quantitative, DNA standards must be included on the gel. Preparation of the standards is given in the Reagent Section. Quantitative DNA standards are also available from commercial sources.

7. Well number 1 of each row of wells receives 10 μL Hind III digest of Lambda DNA.

8. Set the voltage at 200 volts. When the bromophenol blue tracking dye has moved 1–2 cm from the origin, the run can be stopped. For 11 × 14 gels, this should be about 20 minutes.

9. Remove the gel from the tank. Examine the gel on the ultraviolet light transilluminator. Intact

DNA will move as a band not far from the origin. A smear from the origin to or past the dye front indicates that the DNA has been fragmented and may not be suitable for restriction. Take a photograph of the gel.

Polaroid #553, f4.5, 1 second, red filter in place. DO NOT EXPOSE YOURSELF TO THE UV LIGHT FOR AN EXCESSIVE AMOUNT OF TIME. ALWAYS WEAR THE FULL FACE SHIELD WHEN WORKING WITH THE TRANSILLUMINATOR.

10. From the photograph, assess the quantity of DNA in test specimens by comparison with the DNA standards. Multiply your estimate by 8 to obtain the total quantity of DNA in the remaining 32 μL of sample.

IV. QUANTIFICATION OF DNA FROM LIQUID BLOOD SAMPLES BY SPECTROPHOTOMETRY

The DNA obtained from a liquid blood sample has been solubilized in 200 μL TE buffer (Section I, step 15). The following description of instrument operation is applicable to the Beckman DU-7 only.

1. The concentration of DNA in the sample will be determined on a Beckman DU-7 using a microcuvette that enables absorbancy of samples as small as 50 μL to be measured. This instrument remains in an "idle" mode when not being used.

2. To activate, push the "ON" button. Follow the menus to set the instrument to read dual wavelengths of 260 nm and 280 nm and to

determine the ratio 260/280. The instrument will self-calibrate and then request that you put in the solvent blank. Pipette 50 μL of TE buffer into the microcuvette. Tap gently to remove any air bubbles. Place the cuvette into the sample holder and push "START." The instrument will determine the absorbancy at both 260 and 280 nm and store these readings for the entire working session.

3. Empty the cuvette. There is no need to rinse. Place 50 μL of the DNA sample in the cuvette. Place the cuvette into the instrument and push "RUN." Both absorbancies will be measured and their ratio calculated. At the end of the session you can print out the entire list of values by pushing "COPY."

4. Pipette the 50 μL sample back into the original sample tube. Rinse the cuvette with water before the next sample is added.

5. Data reduction:

   Assume the readings were:

   A260 = 1.80

   A280 = 1.00

   Absorbancy ratio = 1.80

   The DNA content of the sample is calculated as follows:

   (A260)(50)(0.2) = μg DNA / 200 μL

   (1.80)(50)(0.2) = 18.0 μg DNA

   50 μg DNA/mL yields an A260 of 1.0

V. DIGESTION OF DNA WITH HAE III

Effective December 7, 1990 - June 2, 1996

Two digestion procedures are given below. One procedure is to be used for the digestion of DNA recovered from body fluid stains; whereas the other should be used if digesting the much larger quantity of DNA recovered from a liquid blood sample.

A. Body fluid stain DNA

1. There should be 32 uL DNA specimen remaining after test gel.

2. Combine the following in the DNA specimen tube:

32 uL DNA

4 uL restriction buffer concentrate (REact 2)

4 uL HAE III (40 international units)

40 uL

Mix by hand and spin 2 seconds.

NOTE: The volume of restriction enzyme added should never be more than 10% of the final digestion volume. Also, do not permit the HAE III (or any restriction enzyme for that matter) to warm up. Always keep the enzyme on ice.

3. Incubate at 37°C overnight.

B. Liquid blood DNA

1. DNA recovered from liquid blood should be in a volume of 200 uL TE.

2. Combine the following in the DNA specimen tube:

200 uL DNA

25 uL restriction buffer concentrate (REact 2)

x uL HAE III

y uL H2O

250 uL

Where:

x = (5 µg DNA) / (units HAE III per µL)

y = 25 - x

3. Incubate at 37°C overnight.

VI. PRECIPITATION OF DIGESTED DNA

Effective December 7, 1990 - June 2, 1996

A. Body fluid stain DNA

1. Spin tube for 5 seconds. To the 40 uL of DNA digest, add 13 uL of 7.0M ammonium acetate. Mix by hand.
2. Add 105 uL cold absolute EtOH and mix by hand.
3. Place tube at -20°C for 15–30 minutes. Don't let the tube freeze.
4. Spin tube 15 minutes. Decant the alcohol.
5. Rinse pellet with 1.0 mL room temperature 70% EtOH. Spin for 5 minutes and decant supernatant fluid. Remove remaining EtOH with a micropipette (yellow tip).
6. Put tube in Speed-Vac to remove remaining alcohol. This should take about 10 minutes.

7. Add 16 uL TE to the tube and place at 56°C to dissolve the DNA. After restriction the DNA should dissolve within 30–60 minutes.

8. DNA is now ready for another test gel (this one to assess the completeness of restriction) and then an analytical gel.

B. Liquid blood DNA

1. To the 250 uL of restriction digest, add 83 uL 7M NH4OAc and mix.

2. Add 666 uL 100% EtOH and mix by hand.

3. Place tube at -20°C for 15–30 minutes. Don't let the tube freeze.

4. Spin tube 15 minutes. Decant the alcohol.

5. Rinse pellet with 1.0 mL room temperature 70% EtOH. Spin and decant supernatant fluid. Remove remaining EtOH with a micropipette (yellow tip).

6. Put tube in Speed-Vac to remove remaining alcohol. This should take about 10 minutes.

7. Add 16 uL TE to the tube and place at 56°C to dissolve the DNA. After restriction the DNA should dissolve within 30–60 minutes.

8. DNA is now ready for another test gel (this one to assess the completeness of restriction) and then an analytical gel.

VII. TEST GEL TO MEASURE COMPLETENESS OF RESTRICTION DIGESTION

Effective December 7, 1990 - June 2, 1996

1. Spin tube for 5 seconds before the top is opened. Remove 2 uL of DNA and combine with 1 uL loading solution in a separate tube. Spin 2 seconds. Pipette the entire 3 uL into test gel well. Run gel under same conditions as described in Section III.

2. Completely digested DNA will be present on this test gel as a smooth streak from the dye front back toward the origin. If a fluorescent large band remains near the origin, the digestion is incomplete and must be repeated. To redigest, add 18 uL TE to the 14 uL of DNA that remain to restore the volume to 32 uL. Redigest as per the original digestion procedure.

VIII. TEST GEL TO MEASURE COMPLETENESS OF RESTRICTION DIGESTION

Effective December 7, 1990 - June 2, 1996

1. Spin tube for 5 seconds before the top is opened. Remove 2 uL of DNA and combine with 1 uL loading solution in a separate tube. Spin 2 seconds. Pipette the entire 3 uL into test gel well. Run gel under same conditions as described in Section III.

2. Completely digested DNA will be present on this test gel as a smooth streak from the dye front back toward the origin. If a fluorescent large band remains near the origin, the digestion is incomplete and must be repeated. To redigest, add 18 uL TE to the 14 uL of DNA that remain to restore the volume to 32 uL. Redigest as per the original digestion procedure.

VIII. RESOLUTION OF DNA FRAGMENTS ON AN ANALYTICAL GEL

Effective December 7, 1990 - June 2, 1996

The analytical gels are composed of 1% agarose in 1X TAE buffer. The gel dimensions are 11 x 14 x 0.65 cm (100 mL).

1. Preparation of the analytical gel:

   Prepare 100 mL of 1X TAE buffer. Add 10 uL ethidium bromide (EB) to the buffer.

   Weigh out 1.0 g agarose (Sigma type II or Seakem ME) into a flask or bottle.

   Add 100 mL TAE-EB.

   Bring to a boil to dissolve agarose.

   Place at 56°C to equilibrate.

   Place the gel tray on a leveling platform.

   Place a 16-well comb into the gel tray.

   Pour agarose into gel form.

   Let stand at least 15 minutes to cool.

2. Pour 1X TAE buffer into the BRL gel tank. Supplement the tank buffer with EB at ratio of 10 uL per 100 mL TAE.

3. Place the gel into the tank with the well comb nearest you. The buffer should cover the gel to a depth of at least 0.5 cm. Remove the comb.

   Well numbering is defined as the wells at the far left side of the gel. The first well will receive visual marker (see Appendix B).

Well 3 is reserved for the HAE III digested DNA as control.

Size markers are placed into appropriate wells depending upon which gel comb has been used and depending upon the types of samples that must be run in the gel.

4. To the 14 uL digested DNA, add 1 uL loading solution, mix, spin 2 seconds and carefully pipette the entire specimen into the well.

5. Add other samples to their wells.

6. Set the voltage at 30 volts (maximum amperage) for a run time of 17 hours. Alternatively, use 32 volts (maximum amperage) for a run time of 16 hours.

7. After the electrophoresis is complete, the gel can be examined on a UV transilluminator to evaluate the fragment separation. Photograph gels with Polaroid #553 (ASA 400) for 1 second at f4.5 with a red filter.

   The analytical gel run is considered complete when the top fragment band of the visual marker has migrated between 9 and 11 cm from the origin.

IX. SOUTHERN BLOTTING OF GELS ONTO NYLON MEMBRANE

Effective December 7, 1990 - June 2, 1996

1. Slide the gel from the tray into a plastic box that contains 0.4M NaOH. Gently shake for 30 minutes.

   Soak BRL blot pad in a separate container of 0.4M NaOH for 15 minutes. Discard the dirty

NaOH and refill with fresh NaOH for an additional 15 minutes.

During the same time period, fill a sponge with 0.4M NaOH and place it into a plastic tray (11 x 12.5 cm) in 0.4M NaOH for 15 minutes. Membrane should be handled only with gloved hands.

2. Place the soaked blot pad onto the sponge.

3. Carefully remove the gel from the NaOH. When removed, cover with a glass plate. The top of the gel (defined as the gel surface that contains the formed wells) should now be face down onto the blot pad.

   Remove the top glass plate. With gloved fingers, press down carefully on the gel to remove any air bubbles.

4. Without delay, place the presoaked Biodyne B membrane onto the gel. Be sure the edges of the membrane are square with the gel edges.

   Roll a glass pipette up and down the membrane several times to remove any air bubbles.

5. Cover the membrane with a piece of Whatman #3 that has been cut to 11 x 12.5 cm and wetted with 0.4M NaOH. Roll the surface.

6. Place 5 blot pads on top of the Whatman #3.

   Place 2–4 x 20 x 20 cm glass plates on top of the sandwich.

7. Allow the transfer to proceed for 16 hours at room temperature.

8. Remove blot pads and 3 mm paper. Grasp the membrane at the right corner (origin end) and remove and turn it over.

   Label the membrane with a pen where your thumb touched the membrane.

9. Wash the membrane once with 0.2 M Tris, pH 7.5 + 2X SSC for 15 minutes with gentle shaking.

10. Sandwich each membrane between 3 mm Whatman (tape edges) and place in an 80°C oven for 30 minutes.

X. HYBRIDIZATION

Effective December 7, 1990 - June 2, 1996

Normally 60 mL of hybridization solution is needed in the hybridization containers when hybridizing 11 x 12.5 cm membranes. Add the membranes to the hybridization solution one at a time, making certain that each is covered with solution before the next is added. Many membranes can be hybridized in the same container. After membranes are in the solution, tilt the container to pool the hybridization solution at one corner. Add the labeled probes (VNTR probe and size marker probes) and agitate container to mix. Incubate at 65°C overnight with constant shaking.

HYBRIDIZATION SOLUTION

20.4 mL sterile H2O
12.0 mL 50% PEG
4.5 mL 20X SSPE
21.0 mL 20% SDS

57.9 mL total
+ probe (Volume = 2.4 mL + x uL probe)

See Appendix C, step 12

XI. POST-HYBRIDIZATION WASHES

Effective December 7, 1990 - June 2, 1996

1. Pour off the hybridization solution slowly. The membranes will stick to the bottom of the container. Capture the last drops that collect at the corner of the container with a Kimwipe. Discard the Kimwipe into a radioisotope waste container.

2. Carry out the following washes, using enough wash solution to fill the container one-half full:

   A. 15 minutes in 2X SSC + 0.1% SDS at room temperature

   B. 15 minutes in 2X SSC + 1% SDS at room temperature

   C. 0.1X SSC + 0.1% SDS at 65°C. The conditions of this final, high stringency wash(es) will vary according to the probe that has been used:

Probe	Number of washes	Length of wash
VNTR (D2S44)	1	10 min
YNH24 (D2S44)	1	10 min
MS43A (D1S7)	2	30 min
pH30 (D4S139)	2	30 min
CMM101 (D14S13)	1	30 min
3' HVR (D16S85)	1	30 min
TBQ7 (D10S28)	2	30 min

NOTE: The 0.1X SSC + 0.1% SDS used for the final stringency washes must be at 65°C before use.

3. Blot the membrane on 3MM Whatman. DO NOT LET THE MEMBRANE DRY OUT!

XII. AUTORADIOGRAPHY

1. Wrap the damp membranes in Glad or Saran wrap. Do not use Reynolds food wrap for this step! In the darkroom under red light illumination, place the membranes DNA side down onto XAR film. Tape the membranes to this film. You can record the locations of membranes in contact with the film by writing directly on the film with a ball point pen. Place another sheet of XAR onto the back of the membranes and close the cassette. Place the cassette at -80°C.

2. The XAR film on the back side of the membranes can be removed after a short exposure period which can be as short as a few hours or as long as several days. The back film is to be used as a guide for determining the length of time the front film needs to be left in place.

XIII. BLOT STRIPPING PROCEDURE

1. Remove plastic wrap from membranes.

2. Place membranes in the following solution:

   110 mL formamide

   20 mL 20X SSPE

   10 mL 20% SDS

   QS with H2O to 200 mL

3. Shake membranes for 45–90 minutes at 65°C.
4. Rinse the stripped blot in 200 mL of 0.1X SSC + 0.1% SDS for 1 minute at room temperature.
5. Place the blot on filter paper to remove excess fluid. Relabel the membrane with ballpen if required.
6. Place the blot in the hybridization solution for the next probing.

NOTE: If membranes are to be stored for an indefinite period of time, carry out the stripping and rinsing steps as described. Then rewrap the membranes with plastic wrap and freeze at -80°C.

XIV. RESOLUTION OF SPERM CELL DNA AND VAGINAL CELL DNA

1. Remove the swab from the applicator stick and place into a 1.5 mL tube.
2. Add:

   400 uL Tris/EDTA/NaCl (TNE)
   25 uL 20% sarkosyl
   75 uL H2O
   5 uL Proteinase K
   505 uL total

   Mix tube contents and place at 37°C for 2 hours.
3. Punch a hole in the cap of the tube. Place the swab into the cap and spin the tube for 5 minutes.
4. Remove the supernatant fluid and place it into a new 1.5 mL tube. This is the fraction that contains female DNA. Discard the swab. Be

careful not to disturb the pellet on the bottom of the tube.

5. Place a new cap on the original tube.

6. To the pellet in the original tube add:

150 uL TNE
50 uL 20% sarkosyl
40 uL 0.39M DTT
150 uL H2O
10 uL Proteinase K

Mix tube contents and place at 37°C for 2 hours.

7. Extract both tubes (i.e., the tube containing the female fraction as well as the tube containing the sperm cell heads) with an equal volume of phenol:chloroform:isoamyl alcohol. Continue to process each of the samples as you would a regular stain extract.

XV. ASSESSMENT OF AUTORADIOGRAPHY DATA

Effective December 7, 1990 - June 2, 1996

There are four major steps in the assessment of autoradiographic (autorad) data. Each of these steps will be described.

A. Visual evaluation of autorads

1. Examine the lane containing the allelic control specimen K562. There must be either one or two bands, depending upon which RFLP locus has been probed. If the allelic control specimen does not exhibit the expected number of bands for the locus being probed, the autorad cannot be assessed further.

2. Visually inspect the allelic control bands for their position relative to the adjacent size markers. Depending on the locus being probed, the allelic control band(s) should be located in a designated position on the autorad. If the allelic control band(s) are not found in a visually expected position, the autorad cannot be assessed further.

3. Visually inspect the lanes that contain size markers. The bands in these lanes must be of sufficient intensity to enable them to be used as size references for the allelic control, the known, and the questioned specimen bands. If regions of the size ladder lanes are not visible, specimen bands cannot be sized in these regions.

4. Visually inspect the lanes that contain known or questioned specimen DNA to assess the quality of the fragment bands. Determine if the bands in these lanes are extremely broad or exhibit pronounced band curvature. These band irregularities can signal potential mobility shifts of a fragment band for a specimen. If any fragment band for a specimen has migrated to a position that is greater than the position of the 10,094 bp size marker band, the evaluation of that specimen at that locus is considered inconclusive.

5. Based on the assessment of band quality and band position, decide which of the specimens will be subjected to the computer-assisted band sizing procedure.

B. Computer-assisted band size determination

The determination of band size is carried out using the DNA IMAGE ANALYSIS program that is run on MS-DOS-based computers. The analyst will be guided through the imaging and sizing procedures by text displayed on the computer screen. The computer program enables an objective determination of the sizes of the DNA fragments in each test specimen and the allelic control. The sizing program ends by printing out the calculated fragment sizes, in base pairs, for each of the specimens and the allelic control specimen.

C. Confirmation of visual matches

Visual matches must be confirmed or rejected through application of the appropriate mathematical procedures. In the absence of a computer program to accomplish this procedure, the following steps can be carried out manually:

1. For each fragment band in the known specimen, calculate a value that is 2.5% of the base pair size determined by the sizing procedure. Add the calculated value to the base pair size of the fragment. Subtract the calculated value from the base pair size of the fragment.

2. For each fragment in a questioned specimen that has been determined to be presumptively equal in size to a fragment in a known specimen, calculate a value that is 2.5% of the base pair size of the questioned fragment determined by the sizing procedure. Add the calculated value to the base pair size of the fragment. Subtract the calculated value from the base pair size of the fragment.

3. Compare the calculated ranges of base pair values for the known and questioned specimen bands. If these ranges overlap, the presumptive equality has been confirmed. If the ranges do not overlap, the presumptive equality of fragment sizes is either inconclusive or exclusionary.

D. Determination of Point Estimate values

If specimen fragment size equalities have been confirmed, the best estimate values can be determined for the fragment bands in the appropriate specimen by using the appropriate computer program.

APPENDIX C
PREPARATION AND USE OF DNA PROBES

Effective December 7, 1990 - June 2, 1996

A. Commercially-obtained DNA probes

1. Hybridization concentrations.

DNA probes that have been prelabeled with radioisotope can be obtained commercially. This includes probes to the variable number tandem repeat (VNTR) loci as well as probes to the viral DNAs that make up the molecular size markers. The concentrations of probe that are required for each of the VNTR loci are shown in the following table.

Probe (locus)	DPM / 60 ml of hybridization solution
YNH24 (D2S44)	3.0 X 10^7
V1 (D17S79)	3.0 X 10^7

MS1 (D1S7)	3.0 X 10^7
pH30 (D4S139)	1.5 X 10^7
CMM101 (D14S13)	3.0 X 10^7

The concentration of radioactive viral DNA probe placed into a hybridization solution is a function of the species of DNA. The following table illustrates those differences.

MW Standard	Viral DNA	DPM / 60 ml hybridization solution
Lifecodes (Extended)	φX174	1.3 X 10^6
	Lambda	8.0 X 10^6

2. Use of commercially-obtained DNA probes.

Some commercially-obtained DNA probes are obtained in combination. That is, one vial will contain labeled probe to the single VNTR locus and probes to the viral molecular weight markers. In other cases, labeled single locus probes will be obtained separately from labeled viral DNA probes. For the latter situation, appropriate volumes of each of the probes are combined into one tube prior to denaturation.

a. For each combination probe preparation that will be used, set up an individual 15 ml tube that contains:

0.6 ml 0.2M NaOH

1.5 ml herring sperm DNA

b. To this tube add the appropriate volumes of single locus probe and viral DNA probes. Mix tube contents.

c. Place the tube into boiling water for 5 minutes.

d. Immediately after heat treatment, add the entire solution to the 60 ml hybridization solution in the hybridization container.

e. Place the container in environmental shaker at 65°C overnight.

B. Radiolabeling of DNA probes

For the occasions during which commercially-obtained DNA probes are not used, these probes can be labeled with radioisotope using the primer extension method. The quantity of DNA probe taken for labeling varies as a function of the particular probe. The following table shows the quantities of probe to be used.

Probe (locus)	ng used
YNH24 (D2S44)	100
V1 (D17S79)	100
MS1 (D1S7)	30
pH30 (D4S139)	50
CMM101 (D14S13)	100
φX174	100
Lambda	100

Probe labeling is carried out using the BRL Random Primers DNA Labeling System. The protocol recommended by BRL has been modified to contain certain steps.

1. Place the appropriate quantity of probe in a 1.5 ml screw-cap tube. Add water to achieve a final volume of 23 µl.
2. Place the tube in boiling water for 8 minutes. Immediately after heating, place the tube into a slurry of crushed ice and water for 5 minutes.
3. While on ice, add to the tube:

   2 uL dATP
   2 uL dGTP
   2 uL dTTP
   15 uL random primers buffer mixture
   5 uL 32P-dCTP (50 uCi at 3000 Ci/mmole)*
   mix
   1 uL Klenow fragment
   mix and then spin for 2 seconds
   50 uL = final labeling volume
4. Incubate at room temperature (25°C) for 3 hours to overnight.

* It is very easy to contaminate the tube threads with radioactivity. Once the threads are contaminated, the radioactivity will be transferred to the worker's fingers and thence transferred to anything else that is touched. To avoid such a scenario, spin the tube each time its contents are mixed. Check fingers for radioactivity frequently.

5. After incubation, precipitate the DNA with spermine.

   50 uL reaction mixture
   140 uL TE
   4 uL herring sperm DNA at 10 mg/mL
   mix

4 uL of 1M spermine-HCl
on ice for 15 minutes (can go less time)
6. Spin 10 minutes in microfuge at 4°C.
Remove supernatant and place in radioactive storage bottle.
Rinse pellet with 396 uL TE + 4 uL spermine, vortex briefly.
Spin 2 minutes at 4°C.
Remove and discard supernatant (place in radioactive storage bottle).

7. Resuspend pellet in 500 uL TE + 40 uL 5M NaCl. mix and place at 56°C for 15–30 minutes.

8. Vortex tube briefly. Remove 2 uL labeled probe and place at the exact bottom of a 1.5 mL screw-cap tube.

   If 2 uL is deposited onto the side of the tube it will not be counted properly.

   Spin 2 seconds if necessary to place the 2 uL at the bottom.

9. Place the tube containing 2 uL probe into radioactivity counter.

   Counter is a DuPont “Bench-Count” model BC2000.

   Start the counter and count to 2% precision.

10. Calculate dpm isotope present in probe preparation.

    Example:

    counts/minute (cpm) = 10,000

    counting efficiency = 6.8% (instrument specific)

    volume probe counted = 2 uL

Calculations:

(10000 cpm) / (0.068 x 2) = 73529 dpm/uL

(73529 dpm/uL)(560 uL) = 4.1 x 10^7 dpm total

(4.1 x 10^7 dpm) / 0.1 ug DNA = 4.1 x 10^8 dpm/ug

11. Calculate the probe that must be added to hybridization solution to achieve 5 x 10^5 dpm/mL hybridization solution.

    Example:

    60 mL hybridization solution

    5 x 10^5 dpm/mL hybridization solution

    probe labeled = 73529 dpm/uL

    (60 mL)(5 x 10^5 dpm/mL) / (73529 dpm/uL) = 408 uL

    12. Add the following to a 15 mL tube:

    0.6 mL 0.2M NaOH

    1.5 mL herring sperm DNA

    x uL labeled single locus probe (from step 11)

    \+ the contents of one vial of commercially-obtained, prelabeled molecular weight marker (containing labeled probes to phiX174 and lambda DNA)

13. Place the tube into boiling water for 5 minutes.

14. Immediately add the entire tube contents to the 60 mL of hybridization solution and place the container in an environmental shaker at 65°C overnight.

ALLELIC CONTROL

Allelic control is obtained commercially. Use cell line K562.

1. The allelic control is furnished as 2.5 X 10^6 cells/tube.
2. Process cell pellet beginning with I. Isolation of DNA from liquid blood samples, step 5.
3. Exactly 0.4 ug allelic control DNA must be mixed with loading solution and placed in well #3 of each analytical gel.

APPENDIX E
VERIFICATION OF SPECIFICITY OF HAE III

This procedure is designed to enable verification of the catalytic specificity of the restriction endonuclease HAE III. Intact DNA from PhiX 174 is digested with two concentrations of HAE III and for two lengths of time followed by the electrophoretic separation of the DNA fragments.

Appropriate predigested standards of PhiX 174 DNA and controls are included on the gel.

A. Primary supplies/reagents:

1. PhiX 174 DNA - Intact (e.g. BRL #5260SA/SB)

   Prepare at 0.50 ug/uL TE

2. PhiX 174 DNA - Predigested with HAE III by manufacturer (e.g. BRL #5611SA)

   Dilute with TE to 0.25 ug/uL

3. HAE III - 10 units/uL (e.g. BRL #5205SA)

   Prepare a dilution with TE to give 1 unit/uL

B. Sample preparation:

Addition	Sample 1	2	3	4	5
PhiX 174 DNA intact	4	4	4	4	4
Water	30	30	28	28	32
Buffer concentrate	4	4	4	4	4
HAE III (1 U/μL)	2	2	-	-	
HAE III (10 U/μL)	–	–	4	4	–
Total volume	**40**	**40**	40	40	

C. Incubation times:

Sample	Incubation time (hours at 37°C)
1	1
2	1
3	5
4	5
5	5

D. Preparation of predigested PhiX 174 DNA:

Addition	uL per Sample (6	7	8)
PhiX 174 DNA predig.	2.5	2.5	2.5
TE	1.5	1.5	1.5
Loading solution	2.0	2.0	2.0
Total volume	6.0	6.0	6.0

E. Post-restriction handling of samples 1 through 5:

After the appropriate digestion time has passed, the DNA must be precipitated and resolubilized before loading on the gel.

1. To the 40 uL digest add 13 uL of 7.0M ammonium acetate and mix.
2. Add 105 uL cold absolute EtOH and mix by hand.
3. Place the tubes at -20°C for 15–30 minutes.
4. Spin tubes for 15 minutes. Decant the alcohol.
5. Rinse the pellet with 1000 uL room temperature 70% EtOH. Spin the tube for 5 minutes and decant the alcohol. Remove remaining alcohol with a pipette.
6. Put tube in Speed-Vac for 5 minutes.
7. Dissolve DNA in 4 uL TE.
8. After DNA is dissolved, add 2 uL loading solution and mix.

F. Electrophoresis of samples:

1. Prepare a 25 mL baby gel that is 1.5% agarose in TAE buffer supplemented with ethidium bromide. See Section III. You will need at least 8 wells in this gel.
2. Add samples to the gel in the following arrangement:

Well	Sample # (composition)
1	1 (HAE III @ 1U/ug-1hr)
2	6 (predigested PhiX174)
3	2 (HAE III @ 1U/ug-1hr)

4	7 (predigested PhiX174)
5	3 (HAE III @ 10U/ug-5hr)
6	8 (predigested PhiX174)
7	4 (HAE III @ 10U/ug-5hr)
8	5 (intact PhiX174)

3. Electrophorese for 1 hour at 100 volts.

G. Assessment of results:

1. Place the gel on the UV transilluminator and photograph.

2. Using the photograph as the experimental data, compare the location of the bands.

A. Look first at lanes 2, 4, and 6. These samples are PhiX174 DNA that was predigested by the manufacturer. Ten bands should be visible in each lane.

B. Look at lanes 1 and 3. Ten bands should be visible and in the same positions as the bands in lanes 2, 4, and 6. The DNA in these samples was cut with an amount of HAE III that should completely digest the DNA. If the digestion is incomplete, then the activity of the HAE III is lower than desired.

C. Look at lanes 5 and 7. The bands in these lanes should compare exactly with the bands in lanes 2, 4, and 6. The DNA in these samples was digested with a 20-fold excess of HAE III and for a five-fold excess in incubation time. These digestions will reveal any low-level contamination of the HAE III by another endonuclease(s). Such contamination would present itself as

extra bands that will not line up with the control bands in lanes 2, 4, and 6.

D. The DNA in lane 8 is intact PhiX174 that has not been cut. You should see one, or possibly two bands that have not migrated very far from the origin.

H. Additional assessment of HAE III activity:

Test each new lot of HAE III on the following specimens: K562 - 400, 200, 100, and 50 ng; human bloodstains of 50, 40, 30, and 20 uL. These specimens should be processed using the techniques described in this protocol including the production of autoradiograms at locus D2S44.

CHANGES TO DNA UNIT OPERATING PROTOCOL (MARCH 22, 1991)

ARCHIVED
Effective December 7, 1990 - June 2, 1996

Mr. Hicks

J. J. Kearney

1 - Mr. Hicks
2 - Mr. Nimmich
3 - Mr. Kearney

CHANGES TO DNA UNIT OPERATING PROTOCOL

PURPOSE: To inform you that changes have been made in the operating protocol used for the analysis of DNA by the DNA Analysis Unit (DNAU), Scientific Analysis Section (SAS), FBI Laboratory.

SYNOPSIS: The protocol by which the DNAU carries out the analysis of DNA in biological evidence has been revised. This memorandum describes each of the locations in this protocol where changes have been made.

RECOMMENDATION: That the changes made to the operating protocol of the DNAU for the conduct of the restriction fragment length polymorphism test described in this memorandum be approved.

DETAILS: A meeting of the protocol review committee was convened on 10/18/90 during which a number of alterations to the operating protocol for the analysis of DNA evidence was discussed (memo

Mr. Kearney to Mr. Hicks dated 10/19/90). These alterations were to be included in the forthcoming version of the operating protocol, Procedures for the Detection of Restriction Fragment Length Polymorphisms in Human DNA. In addition to changes discussed during this meeting, a number of minor changes were already in place in the procedure, having been made by DNAU personnel since the last major revision of this document. Listed below are the specific locations in the protocol where changes have been made. Of the changes that were proposed in the meeting of 10/18/90, only the division of the combination marker into two separate markers has been incorporated into the latest protocol version. The transition to 16 cm gels and the use of probes to locus D10S28 has not taken place.

Memorandum from J. J. Kearney to Mr. Hicks

RE: CHANGES TO DNA UNIT OPERATING PROTOCOL

Protocol 12/04/90 [handwritten 89]

Page 6 - A medium gel was shown to possess either 14 or 15 wells per origin.

Page 10 - Under step 5 it has been stated that pellets were rinsed with 500 uL 70% EtOH.

Page 12 - Under step 1 instructions were to place a 14 well comb into the gel tray.

Under step 3 it is defined as to what the contents of gel wells 2, 3, 6, 10, and 13 shall be.

Page 26 - Appendix B. This appendix has been rewritten to reflect changes in the composition of marker DNAs.

Page 27 - Appendix C. This appendix describes the preparation and modes of use of DNA probes. It has been divided into procedures employed by the DNA Analysis Unit and procedures employed by the Forensic Science Research Unit.

Page 28 - In the footnote at the bottom of the page the word scenario has been misspelled.

Protocol 12/07/90

Page 6 - A medium gel is shown to possess either 14 or 16 wells per origin.

Additional sentences have been added to indicate that quantitative DNA standards can be obtained from commercial vendors. Moreover, it is stated that the volume of standard loaded is a function of the DNA concentration supplied by such vendors. Currently, the volume loaded is 10 uL.

Page 10 - Under step 5 it now states that pellets are to be rinsed with 1.0 ml 70% EtOH.

Page 12 - Under step 1 the instructions now state to place a 14 or 16 well comb into the tray.

Only wells 1 and 3 are defined as to what their contents shall be. The location of size marker wells are undefined and left to the judgement of the analyst.

Under step 7 acceptable visual marker migration distances have been added to signal a completed electrophoretic run.

Page 13 – Specified membrane is Zeta Probe.

Step 7 instructs to blot the membrane on Whatman #1.

Page 15 – Post hybridization wash conditions are given for six loci.

Page 17 - The numbering sequence for the steps in this section was incorrect.

Page 18 - This section describes the manner by which vaginal swab evidence is processed.

Page 22 - Appendix A – A number of changes have been made in this appendix. Wording has been clarified, several recipes added, and several recipes changed.

Page 14 – Specified membrane is Pall Biodyne B.

Step 7 instructs to blot the membrane on Whatman #3.

Page 16 – Post hybridization wash conditions are given for seven loci (D10S28 added).

Page 18 - The numbering sequence has been corrected.

Page 19 - This section describes a modified approach to the processing of vaginal swab evidence.

Page 22 - Appendix A Ammonium acetate is to be sterilized by passage of the solution through a sterile 0.45 u filter unit.

The preparation of a dithiothreitol solution is now described.

Page 23 - The preparation of HEPES-buffered saline is now described.

Page 24 - The preparation of a spermine solution is now described.

SSPE 20X concentrate is now prepared by addition of the appropriate volume of 0.5M EDTA instead of adding powdered EDTA.

Stain extraction buffer is now prepared by using 0.5M EDTA solution instead of the powder.

Page 25 - The recipe for preparation of Tris 2M, pH 8.0 has been deleted.

An asterisk has been added to the recipe for TNE to indicate that it should be autoclaved before use.

Page 26 - Appendix B. Handling procedures have been given for visual markers for yield and post-restriction test gels, visual marker for analytic gels, and molecular weight markers.

Page 27 - Appendix C. This appendix has been extensively rewritten. it is now divided into a section which describes the use of commercially-obtained DNA probes and a section on inhouse radiolabeling of DNA probes. With regard to the labeling of molecular weight size ladder probes, only the conditions appropriate to the use of the Lifecodes extended ladder are given.

Page 28 - Under section 2, paragraph e has been added.

Page 29 - In the footnote under step 4, the word scenario has been correctly spelled.

In step 8 the sentence “Vortex the tube briefly.” has been added.

Page 30 - The words “and place the container in an environmental shaker at 65C overnight.” have been added to step 14.

All pages of the latest version of Procedures for the Detection of Restriction Fragment Length Polymorphisms in Human DNA, except the cover page carry the date 12/07/90. Copies of this protocol are being made available to all examiners in the DNAU. A copy is also attached to this memorandum.

DNA RFLP POPULATION DATABASE FREQUENCY REPORT (JUNE 7, 1991)

Mr. Hicks

J. J. Kearney

1 - Mr. Hicks
2 - Mr. Nimmich
3 - Mr. Kearney

REVISED FREQUENCY TABLES FOR CASE WORK

PURPOSE: To transmit revised RFLP population frequency tables.

RECOMMENDATION: That the attached population frequency tables be adopted by the DNA Analysis Unit.

DETAILS: As a result of tests to determine the number of profiles, if any, which matched in a large database after being probed at four loci, approximately twenty duplicate and triplicate VNTR profiles were detected by the Forensic Science Research and Training Center (FSRTC) in the population databases used by the DNA Analysis Unit (DNAU). Specimen duplication was verified by the agencies which submitted the specimens to the FBI and the duplicate and triplicate profiles were removed from the respective databases in which they occurred. Detailed information on the methods used to detect and verify duplication will be provided in a memorandum to follow. New tables for Blacks, Caucasians and Hispanics are appended (reprinted from "A Preliminary Report on Binned General Population Data on Six VNTR Loci

in Caucasians, Blacks and Hispanics in the United States," BUDOWLE, B., MONSON, K.L., et al., Crime Laboratory Digest, January 1991, Vol. 18. No. 1). Since Hispanics are more a geo-political group than a racial classification, data deriving from the south-eastern and southwestern U.S. are listed separately, followed by a composite of the data where the larger bin frequency between the two samples is tabulated for each bin.

Memorandum from J. J. Kearney to Mr. Hicks

RE: DNA RFLP POPULATION DATABASE:REVISED FREQUENCY TABLES FOR CASE WORK

The greatest change in bin frequencies between the previous database and the version from which duplicates and triplicates were removed was 0.7%, occurring in the Texas Hispanic D17S79 data. The difference between estimates of the chance of random occurrence of a given profile calculated with either version of the database would be negligible.

A PRELIMINARY REPORT ON BINNED GENERAL POPULATION DATA ON SIX VNTR LOCI IN CAUCASIANS, BLACKS AND HISPANICS FROM THE UNITED STATES (JANUARY 1, 1991)

Bruce Budowle[1], Keith L. Monson, Kim S. A. Aroe[2], F. Samuel Baechtel, Dan L. Bergman[3], Eric Buel[4], Priscilla A. Campbell, Meghan E. Clement[5], Harry W. Corey[6], Lucy A. Davis[7], Andrea Dixon[8], Pamela Fish, Alan M. Giusti, Thomas L. Grant[9], Teresa M. Gronent[10], Denise M. Hoover, Linda Jankowski, Anita M. Kilgore[11], Wayne Kimoto[12],

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7 Kentucky State Police Forensic Laboratory, Frankfort, Kentucky

8 Chicago Police Department, Chicago, Illinois

9 Missouri State Highway Patrol, Jefferson, Missouri

10 Maryland State Police Crime Laboratory, Pikesville, Maryland

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William H. Landrum[13], Heather Leone[14], C. Robert Longwell[15], Donald C. MacLaren[16], Lorri E. Medlin[17], Susan D. Narveson[18], Mary L. Pierson[19], James M. Pollock[20], Ronald J. Raquel[21], Joni M. Reznicek[22], Georgia Sue Rogers[23], Jill E. Smerick, and Robert M. Thompson[24]

Introduction

Of the genetic markers used for forensic analysis, the most informative for discrimination are the highly

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[17] South Carolina Law Enforcement Division, Columbia, South Carolina

[18] Arizona Department of Public Safety Crime Laboratory, Phoenix, Arizona

[19] California Department of Justice, Berkeley, California

[20] Florida Department of Law Enforcement Crime Laboratory, Jacksonville, Florida

[21] Los Angeles Police Department, Los Angeles, California

[22] Southwest Institute of Forensic Sciences, Dallas, Texas

[23] Alabama Department of Forensic Sciences, Birmingham, Alabama

[24] Oregon State Police, Portland, Oregon

polymorphic variable number of tandem repeats (VNTR) loci which are detected by restriction fragment length polymorphism (RFLP) analysis. By using a panel of DNA probes, sufficient data potentially can be obtained to produce a composite profile which is unique to an individual (excluding monozygote twins). More importantly, typing these hypervariable DNA regions provides the forensic scientist the best avenue to exclude a suspect who has been falsely associated with an evidentiary sample.

For those situations where a suspect cannot be excluded as a possible contributor of a sample, a statistical value needs to be placed upon the DNA profile derived from the evidentiary material to determine the portion of the general population that could be potential contributors of the evidentiary sample(s). It is obvious that depending on the number of loci analyzed and the quantity and quality of the DNA, individualization may not be achieved. Therefore, population data on VNTR loci are necessary for a statistical evaluation of forensic evidence. This paper reports on population data of six VNTR loci-D2S44 (Nakamura *et al.* 1987), D1 7S79 (Balazs *et al.* 1989), D1S7 (Wong *et al.* 1987), D4S139 (Milner *et al.* 1989), D10S28 (Bragg *et al.* 1988) and D14S13 (Nakamura *et al.* 1988), in Caucasians, Blacks and Hispanics.

Materials and Methods

Whole blood samples were obtained from unrelated Caucasians at the FBI Academy. In addition, whole blood, bloodstain, or purified DNA samples from unrelated Caucasians, Blacks, and Hispanics were kindly provided by C. T. Caskey (Baylor University, Houston, Texas), A. J. Eisenberg (Texas College of Osteopathic Medicine, Fort Worth, Texas), R. Kahn

(Metro-Dade Police Department, Miami, Florida) and J. Bashinski (California Department of Justice, Berkeley, California). The DNA was extracted, purified and typed by RFLP analysis via Southern blotting according to the method of Budowle and Baechtel (1990). One microgram of DNA from each sample was applied to the gels. The size standards markers ranging in size from 0.640 to 23 kb were obtained from Lifecodes (Valhalla, New York). The probes for the loci D2S44, D14SI3 and D10S28 were kindly provided by R. White and his colleagues (Howard Hughes Medical Institute, Salt Lake City, Utah) or the Promega Corporation (Madison, Wisconsin). The probes for D17S79, D1S7 and D4S139 were purchased from Lifecodes (Valhalla, New York), Cellmark Diagnostics (Germantown, Maryland) and Genelex (Seattle, Washington), respectively. Size measurements of bands were made using an interactive image analysis system composed of an IBM compatible personal computer, a video camera, an image processing board and software developed by the FBI (Monson and Budowle 1989). The base pair size data was binned according to the method of Budowle *et al*. (1990, 1991).

Results and Discussion

The number of observed allelic counts and point estimates for the fixed-bin distributions of the various VNTR loci for Caucasians (FBI, California, Florida and Texas), Blacks (California, Florida and Texas), Southeastern Hispanics (Florida) and Southwestern Hispanics (Texas) are shown in Tables 1-24. The data have been refined to provide a minimum value of five alleles per bin (Budowle *et al*. 1990, 1991). It is evident that the data for the different sample populations are not the same for each of the

VNTR loci. However, it is obvious that all VNTR loci for the four general population samples are highly polymorphic. Thus, the frequency of occurrence of any array of DNA profiles would be an unlikely event (even with the conservative statistical approach of binning) in any population sample displayed.

Since Hispanics are more a geo-political group than a racial classification, it is the FBI's policy to take an even more conservative approach. The Southeastern and Southwestern Hispanic data are not pooled, as were, for example, Black data from California, Florida and Texas. Instead, a composite of the data was made where the larger bin frequency between the two Hispanic samples is used for all Hispanics (Tables 25-30).

This preliminary report provides point estimate data in a fixed bin format for Caucasians, Blacks and Hispanics. A more extensive paper providing regional data, as well as fixed bin data from non-United States populations is forthcoming.

DNAU EXAMINERS NOTE REGARDING AMERICAN INDIAN DNA DATABASE (SEPTEMBER 21, 1992)

ARCHIVED

Effective December 7, 1990 - June 2, 1996

See attached memo for a description of the new American Indian population data base (14). The memo is self explanatory. The adjusted frequencies (ADJ. FREQUENCY) of 14 have already been added to DCMS.

Dave

Mr. Hicks

J. J. Kearney

9/3/92

1 - Mr. Hicks
2 - Mr. Nimmich
3- Mr. Kearney

REVISED AMERICAN INDIAN DNA DATABASE

PURPOSE: To provide information on current status of the FBI's American Indian database and to provide revised fixed bin frequency tables for American Indian estimates.

RECOMMENDATIONS: That the enclosed revised American Indian fixed bin tables be used for DNA profile estimates when appropriate.

DETAILS: In the summer of 1989 the DNA Analysis Unit (DNAU), Laboratory Division, produced an American Indian database for the loci D1S7, D2S44,

D4S139, and D17S79. This database has been used in specified cases since 1989. However, the measurements of the DNA profile bands were not saved on computer disk.

To facilitate population genetic analyses the American Indian data were imaged again in the spring of 1991, but this time by Forensic Science Research Unit (FSRU) personnel. A cursory review of the data demonstrated no real differences between the original database and the resized database. Because of this and due to other research demands on FSRU personnel, further analytical review of the American Indian database was postponed until a later date.

In order to complete the World Population Study the FBI American Indian database was revisited. On 8/17/92, the data produced by the FSRU were reviewed, edited, and new frequency tables were constructed. The frequency tables were constructed using generally the same approaches that have been employed in the past.

Thirty-one bin database tables were compiled for both of the American Indian groups - Sioux and a mixture of Indians. Each set of tables was rebinned and a composite of the rebinned tables was made using the same approach employed for the Hispanic database (Budowle, et al, crime Laboratory Digest 18: 9-26, 1991). To be consistent with the current practice in the DNAU with an American Indian database an additional buffer was placed on the American. Indian database. A minimum bin frequency was established based on the average of the composite bin frequencies for a particular locus. The enclosed tables contain the

now recommended American Indian frequency tables (see column labeled "ADJ. FREQUENCY").

During the course of the above analysis, some discrepancies were noted between the data generated by the DNAU and the FSRU. There were some sizing errors for DNA fragments less than 10,000 base pairs in size in the original analysis by the DNAU, resulting in a measurement error greater than 5% when compared with the newer data. The samples were: for D2 S44 - nos. 44, 45, 46, and 130; for D17S79 - nos. 62 (only 4.5% measurement difference), 103, and 160; for DIS7 - no. 140; and for D4S139 - nos. 71 (only 4.6% measurement difference), 113, and 122. Furthermore, some gels, although within acceptable measurement error ranges, were sized consistently higher by the DNAU.

Additionally, for D4S139 there were eight three-band patterns that were not recorded by DNAU personnel. Samples 45, 93, 104, 123, and 182 originally were interpreted as inconclusive and Samples 49, 51 and 91 were recorded as two-band patterns.

To determine if the measurement errors in the American Indian database created by the DNAU would have any impact on a DNA profile frequency estimate, the DNAU and FSRU versions of the database were compared statistically using a chi-square test. There were no significant differences between the two forms of the American Indian database (for all comparisons the probability values ranged from 0.99 to 1.00).

DNA REPORT

D2S44			
BIN	RANGE	FREQUENCY	ADJ. FREQUENCY
1	0000-1196	.094	.094
2	1197-1352	.117	.117
3	1353-1507	.204	.204
4	1508-1637	.181	.181
5	1638-1924	.068	.092
6	1925-2088	.056	.092
7	2089-2351	.069	.092
8	2352-2522	.038	.092
9	2523-2692	.100	.100
10	2693-2862	.075	.092
11	2863-3329	.056	.092
12	3330-	.049	.092

D17S79			
BIN	RANGE	FREQUENCY	ADJ. FREQUENCY
1	0000-1196	.049	.145
2	1197-1352	.331	.331
3	1353-1507	.099	.145

4	1508-1637	.081	.145
5	1638-1788	.142	.145
6	1789-1924	.278	.278
7	1925-2088	.093	.145
8	2089-	.087	.145

D1S7			
BIN	RANGE	FREQUENCY	ADJ. FREQUENCY
1	0000-1637	.042	.075
2	1638-2088	.059	.075
3	2089-2351	.051	.075
4	2352-3033	.075	.075
5	3034-3329	.067	.075
6	3330-3674	.083	.083
7	3675-4323	.108	.108
8	4324-4821	.051	.075
9	4822-5219	.088	.088
10	5220-5685	.108	.108
11	5686-6368	.108	.108
12	6369-7241	.088	.088
13	7242-8452	.067	.075
14	8453-	.059	.075

D4S139			
BIN	RANGE	FREQUENCY	ADJ. FREQUENCY
1	0000-3329	.063	.125
2	3330-4821	.051	.125
3	4822-5219	.093	.125
4	52220-5685	.102	.125
5	5686-6368	.152	.152
6	6369-7241	.241	.241
7	7242-8452	.229	.229
8	8453-10093	.110	.125
9	10094-	.080	.125

YNH24: American Indian (Sioux)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	0	.000	0	.000
2	640-772	2	.013	0	.000
3	773-871	2	.013	0	.000
4	872-963	10	.063	0	.000
5	964-1077	0	.000	0	.000
6	1078-1196	1	.006	0	.000
7	1197-1352	16	.100	0	.000
8	1353-1507	31	.194	2	.025

9	1508-1637	29	.181	2	.025
10	1638-1788	1	.006	0	.000
11	1789-1924	6	.038	0	.000
12	1925-2088	2	.013	0	.000
13	2089-2351	11	.069	0	.000
14	2352-2522	6	.038	0	.000
15	2523-2692	16	.100	0	.000
16	2693-2862	12	.075	0	.000
17	2863-3033	2	.013	0	.000
18	3034-3329	7	.044	0	.000
19	3330-3674	3	.019	0	.000
20	3675-3979	1	.006	0	.000
21	3980-4323	1	.006	0	.000
22	4324-4821	0	.000	0	.000
23	4822-5219	0	.000	0	.000
24	5220-5685	0	.000	0	.000
25	5686-6368	1	.006	0	.000
26	6369-7241	0	.000	0	.000
27	7242-8452	0	.000	0	.000
28	8453-10093	0	.000	0	.000
29	10094-11368	0	.000	0	.000
30	11369-12829	0	.000	0	.000
31	12830-	0	.000	0	.000
	Total	160	1.003	4	.050

Note: single-band patterns are entered twice in data base

V1: American Indian (Sioux)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	1	.006	0	.000
2	640-772	0	.000	0	.000
3	773-871	0	.000	0	.000
4	872-963	0	.000	0	.000
5	964-1077	0	.000	0	.000
6	1078-1196	7	.043	0	.000
7	1197-1352	50	.309	7	.086
8	1353-1507	8	.049	0	.000
9	1508-1637	8	.049	0	.000
10	1638-1788	23	.142	4	.049
11	1789-1924	45	.278	4	.049
12	1925-2088	15	.093	1	.012
13	2089-2351	5	.031	0	.000
14	2352-2522	0	.000	0	.000
15	2523-2692	0	.000	0	.000
16	2693-2862	0	.000	0	.000
17	2863-3033	0	.000	0	.000
18	3034-3329	0	.000	0	.000
19	3330-3674	0	.000	0	.000

20	3675-3979	0	.000	0	.000
21	3980-4323	0	.000	0	.000
22	4324-4821	0	.000	0	.000
23	4822-5219	0	.000	0	.000
24	5220-5685	0	.000	0	.000
25	5686-6368	0	.000	0	.000
26	6369-7241	0	.000	0	.000
27	7242-8452	0	.000	0	.000
28	8453-10093	0	.000	0	.000
29	10094-11368	0	.000	0	.000
30	11369-12829	0	.000	0	.000
31	12830-	0	.000	0	.000
	Total	162	1.000	16	.196

Note: single-band patterns are entered twice in data base

MS1: American Indian (Sioux)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	0	.000	0	.000
2	640-772	0	.000	0	.000
3	773-871	0	.000	0	.000
4	872-963	0	.000	0	.000
5	964-1077	0	.000	0	.000

6	1078-1196	0	.000	0	.000
7	1197-1352	4	.029	0	.000
8	1353-1507	1	.007	0	.000
9	1508-1637	0	.000	0	.000
10	1638-1788	1	.007	0	.000
11	1789-1924	4	.029	1	.015
12	1925-2088	3	.022	0	.000
13	2089-2351	7	.051	0	.000
14	2352-2522	2	.015	0	.000
15	2523-2692	0	.000	0	.000
16	2693-2862	5	.037	0	.000
17	2863-3033	5	.037	0	.000
18	3034-3329	8	.059	0	.000
19	3330-3674	8	.059	0	.000
20	3675-3979	5	.037	0	.000
21	3980-4323	10	.074	0	.000
22	4324-4821	7	.051	0	.000
23	4822-5219	12	.088	0	.000
24	5220-5685	6	.044	0	.000
25	5686-6368	11	.081	0	.000
26	6369-7241	12	.088	0	.000
27	7242-8452	9	.066	0	.000
28	8453-10093	4	.029	0	.000
29	10094-11368	4	.029	1	.015

30	11369-12829	2	.015	0	.000
31	12830-	6	.044	0	.000
	Total	136	.998	2	.030

Note: single-band patterns are entered twice in data base

PH30: American Indian (Sioux)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	0	.000	0	.000
2	640-772	0	.000	0	.000
3	773-871	0	.000	0	.000
4	872-963	0	.000	0	.000
5	964-1077	0	.000	0	.000
6	1078-1196	0	.000	0	.000
7	1197-1352	0	.000	0	.000
8	1353-1507	0	.000	0	.000
9	1508-1637	0	.000	0	.000
10	1638-1788	0	.000	0	.000
11	1789-1924	0	.000	0	.000
12	1925-2088	0	.000	0	.000
13	2089-2351	0	.000	0	.000
14	2352-2522	0	.000	0	.000
15	2523-2692	0	.000	0	.000
16	2693-2862	0	.009	0	.000

17	2863-3033	2	.018	0	.000
18	3034-3329	4	.036	0	.000
19	3330-3674	0	.000	0	.000
20	3675-3979	2	.018	0	.000
21	3980-4323	2	.018	0	.000
22	4324-4821	1	.009	0	.000
23	4822-5219	6	.054	0	.000
24	5220-5685	9	.080	0	.000
25	5686-6368	17	.152	0	.000
26	6369-7241	27	.241	0	.000
27	7242-8452	21	.188	1	.018
28	8453-10093	11	.098	0	.000
29	10094-11368	2	.018	0	.000
30	11369-12829	0	.000	0	.000
31	12830-	7	.063	0	.000
	Total	112	1.002	1	.018

Notes: single-band patterns are entered twice in data base three three-band patterns observed

V1: American Indian (Other)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	2	.012	0	.000
2	640-772	0	.000	0	.000
3	773-871	0	.000	0	.000

4	872-963	1	.006	0	.000
5	964-1077	2	.012	0	.000
6	1078-1196	1	.006	0	.000
7	1197-1352	57	.331	6	.070
8	1353-1507	17	.099	0	.000
9	1508-1637	14	.081	1	.012
10	1638-1788	17	.099	3	.035
11	1789-1924	46	.267	7	.081
12	1925-2088	14	.081	0	.000
13	2089-2351	0	.000	0	.000
14	2352-2522	1	.006	0	.000
15	2523-2692	0	.000	0	.000
16	2693-2862	0	.000	0	.000
17	2863-3033	0	.000	0	.000
18	3034-3329	0	.000	0	.000
19	3330-3674	0	.000	0	.000
20	3675-3979	0	.000	0	.000
21	3980-4323	0	.000	0	.000
22	4324-4821	0	.000	0	.000
23	4822-5219	0	.000	0	.000
24	5220-5685	0	.000	0	.000
25	5686-6368	0	.000	0	.000
26	6369-7241	0	.000	0	.000
27	7242-8452	0	.000	0	.000

28	8453-10093	0	.000	0	.000
29	10094-11368	0	.000	0	.000
30	11369-12829	0	.000	0	.000
31	12830-	0	.000	0	.000
	Total	172	1.000	17	.198

Note: single-band patterns are entered twice in data base

YNH24: American Indian (Other)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	0	.000	0	.000
2	640-772	4	.025	0	.000
3	773-871	0	.000	0	.000
4	872-963	7	.043	1	.012
5	964-1077	3	.019	0	.000
6	1078-1196	7	.043	0	.000
7	1197-1352	19	.117	2	.025
8	1353-1507	33	.204	6	.074
9	1508-1637	22	.136	2	.025
10	1638-1788	11	.068	0	.000
11	1789-1924	11	.068	0	.000
12	1925-2088	6	.037	1	.012
13	2089-2351	8	.049	0	.000
14	2352-2522	5	.031	1	.012

15	2523-2692	10	.062	0	.000
16	2693-2862	8	.049	0	.000
17	2863-3033	2	.012	0	.000
18	3034-3329	2	.012	0	.000
19	3330-3674	2	.012	0	.000
20	3675-3979	1	.006	0	.000
21	3980-4323	0	.000	0	.000
22	4324-4821	0	.000	0	.000
23	4822-5219	0	.000	0	.000
24	5220-5685	1	.006	0	.000
25	5686-6368	0	.000	0	.000
26	6369-7241	0	.000	0	.000
27	7242-8452	0	.000	0	.000
28	8453-10093	0	.000	0	.000
29	10094-11368	0	.000	0	.000
30	11369-12829	0	.000	0	.000
31	12830-	0	.000	0	.000
	Total	162	.999	13	.160

Note: single-band patterns are entered twice in data base

MS1: American Indian (Other)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	0	.000	0	.000

2	640-772	0	.000	0	.000
3	773-871	0	.000	0	.000
4	872-963	0	.000	0	.000
5	964-1077	0	.000	0	.000
6	1078-1196	0	.000	0	.000
7	1197-1352	2	.017	0	.000
8	1353-1507	2	.017	0	.000
9	1508-1637	1	.008	0	.000
10	1638-1788	5	.042	0	.000
11	1789-1924	1	.008	0	.000
12	1925-2088	2	.017	0	.000
13	2089-2351	4	.033	0	.000
14	2352-2522	1	.008	0	.000
15	2523-2692	4	.033	0	.000
16	2693-2862	1	.008	0	.000
17	2863-3033	3	.025	0	.000
18	3034-3329	8	.067	0	.000
19	3330-3674	10	.083	0	.000
20	3675-3979	4	.033	0	.000
21	3980-4323	9	.075	0	.000
22	4324-4821	6	.050	0	.000
23	4822-5219	6	.050	0	.000
24	5220-5685	13	.108	0	.000
25	5686-6368	13	.108	0	.000

26	6369-7241	10	.083	1	.017
27	7242-8452	8	.083	1	.000
28	8453-10093	5	.042	0	.000
29	10094-11368	1	.008	0	.000
30	11369-12829	0	.000	0	.000
31	12830-	1	.008	0	.000
	Total	120	.998	1	.017

Note: single-band patterns are entered twice in data base

PH30: American Indian (Other)					
Bin	Range (bp)	Count	Fraction	S.B. Patt.	S.B. Fr.
1	0-639	0	.000	0	.000
2	640-772	0	.000	0	.000
3	773-871	0	.000	0	.000
4	872-963	0	.000	0	.000
5	964-1077	0	.000	0	.000
6	1078-1196	0	.000	0	.000
7	1197-1352	0	.000	0	.000
8	1353-1507	0	.000	0	.000
9	1508-1637	0	.000	0	.000
10	1638-1788	0	.000	0	.000
11	1789-1924	0	.000	0	.000
12	1925-2088	0	.000	0	.000

13	2089-2351	0	.000	0	.000
14	2352-2522	0	.000	0	.000
15	2523-2692	1	.008	0	.000
16	2693-2862	0	.000	0	.000
17	2863-3033	0	.000	0	.000
18	3034-3329	3	.025	0	.000
19	3330-3674	2	.017	0	.000
20	3675-3979	1	.008	0	.000
21	3980-4323	4	.034	0	.000
22	4324-4821	1	.008	0	.000
23	4822-5219	11	.093	1	.017
24	5220-5685	12	.102	0	.000
25	5686-6368	16	.136	0	.000
26	6369-7241	19	.161	1	.017
27	7242-8452	27	.229	2	.034
28	8453-10093	13	.110	0	.000
29	10094-11368	5	.042	1	.017
30	11369-12829	1	.008	0	.000
31	12830-	2	.017	0	.000
	Total	118	.998	5	.085

Notes: single-band patterns are entered twice in data base five three-band patterns observed

DNA PROBES – STDS2					
	PROBE	BAND	BAND	BAND	BAND

		1 HIGH	1 LOW	2 HIGH	2 LOW
1	D2S44	2993	2896	1852	1776
2	D17S79	2066	1971	1573	1518
3	D1S7	4654	4505	4262	4156
4	D4S139	6760	6487	3515	3418
5	D14S13	1670	1617		
6	D16S85	1653	1600		

K562 CELL LINE BASE PAIR STANDARDS.

10/1/92

DNA PROBES - STDS					
	PROBE	BAND 1 HIGH	BAND 1 LOW	BAND 2 HIGH	BAND 2 LOW
1	D2S44	2993	2896	1852	1776
2	D17S79	2066	1971	1573	1518
3	D1S7	4654	4505	4262	4156
4	D4S139	6860	6537	3515	3418

K562 CELL LINE BASE PAIR STANDARDS.

2/11/91

4/5/89

PROBE	CELL LINE RANGE (bp)	
	HIGH	LOW
D2S44	2991	2912

	1848	1796
D17S79	2066 1572	1975 1521
D16S85	1653	1600
D1S7	4651 4237	4507 4156
D14S13	1652	1617

DNA PROTOCOL REVIEW (OCTOBER 2, 1992)

ARCHIVED

Effective December 7, 1990 - June 2, 1996

MR. HICKS

K. W. Nimmich

DNA PROTOCOL REVIEW COMMITTEE MEETING 9/25/92

PURPOSE: To advise of the results of the DNA Protocol Review Committee's meeting on 9/25/92.

RECOMMENDATION: None. For information only.

DETAILS: On 9/25/92, members of the DNA Protocol Review Committee met to review the results of research regarding the use of modified electrophoresis tanks which provide for passive buffer circulation. All members found the modified tanks superior to the existing tanks for analytical gel electrophoresis. The modified tanks allow for a more uniform separation of fragments across the gel. Quality control tests were performed on the modified tanks resulting in the production of approximately 200 autoradiographs. Visual and computer image analysis of these autoradiographs determined no difference existed in the allelic control fragment sizes as compared to the use of existing electrophoresis tanks. The only change to the DNA Analysis Unit RFLP protocol will be the addition of 15 minutes to the analytical gel electrophoresis for a total of 17 hours 15 minutes when using the modified tanks. The use of the modified electrophoresis tanks in casework can take place

immediately. Additional tank conversions to the modified system will take place over the next few months as money becomes available. In the meantime, either existing tanks or modified tanks may be used in casework.

All data generated by DNAU corresponding to the modified tanks has been forwarded to FSRTC, Quantico.

1 - Mr. Hicks, Rm. 3090

1 - Mr. Kearney, FSRTC

1 - Mr. Nimmich, Rm. 3266

1 - Mr. Bigbee, Rm 3905

1 - Mr. Adams, Rm, 3905

1 - 80-921

MEMORANDUM FROM NIMMICH TO HICKS ON CHANGES TO DNA PROTOCOL (JUNE 17, 1994)

ARCHIVED

Effective December 7, 1990 - June 2, 1996

6/17/94

To: Mr. Hicks

From: K. W. Nimmich

Subject: CHANGES TO DNA UNIT PROTOCOL FOR THE ANALYSIS OF DNA BY THE RESTRICTION FRAGMENT LENGTH POLYMORPHISM ANALYSIS

PURPOSE: To recommend several changes to the protocol used by the DNA Analysis Units (DNAU) of the FBI Laboratory for the analysis of DNA by the restriction fragment length polymorphism (RFLP) technique.

RECOMMENDATION: That the changes to the document, *Procedures for the Detection of Restriction Fragment Length Polymorphisms in Human DNA*, which are described in this memorandum, be approved.

DETAILS: On March 11, 1994, a meeting was convened at FBI headquarters to discuss changes to the captioned protocol. In attendance were: SAs LAWRENCE A. PRESLEY and JENIFER A. LINDSEY, representing the DNAU II, and DRs F. SAMUEL BAECHTEL and CATHERINE T. COMEY, representing the Forensic Science Research and Training Center (FSRTC), FBI Laboratory. The scientific and experimental support for the proposed changes

to the protocol were discussed and it was the consensus of the group that the proposed changes be adopted. Independent of this meeting, the proposed changes were discussed telephonically with DR. BRUCE BUDOWLE, FSRTC, by SA PRESLEY. DR. BUDOWLE was in agreement with the group on the acceptability of the changes.

Changes to the protocol covered by this memorandum relate to the use of DNA probes to two additional genetic loci, D5S110 and D10S28. The following changes have been made:

(1) Section XI POST-HYBRIDIZATION WASHES

The number of post-hybridization washes and their duration have been appended to the table in this section for probes to locus D5S110. The conditions for locus D10S28 were already in this table; however the number of washes has been reduced from two to one and the wash duration has been changed from 30 minutes to 10 minutes.

(2) Section XIII BLOT STRIPPING PROCEDURE

The blot stripping agitation time range has been changed from 45 - 90 minutes to 60 - 90 minutes. In addition, a footnote has been added to step three to indicate that blots probed at locus D5S110 must undergo an additional stripping session to insure probe removal from the blot.

(3) Appendix C PREPARATION AND USE OF DNA PROBES

The numbers of disintegrations/minute of radioactively-labeled DNA probe that must be

added to a 60 ml hybridization solution to probe loci D5S110 and D10S28 have been specified.

A copy of each of the altered pages has been enclosed with this memorandum. The new protocol pages will bear the date 6/16/94.

[. . .]

XI. Post-Hybridization Washes

1. Pour off the hybridization solution slowly. The membranes will stick to the bottom of the container. Capture the last drops that collect at the corner of the container with a Kimwipe. Discard the Kimwipe into a radioisotope waste container.

2. Carry out the following washes, using enough wash solution to fill the container one-half full.

A. 15 minutes in 2X SSC + 0.1% SDS at room temperature

B. 15 minutes in 2X SSC + 0.1% SDS at room temperature

C. 0.1X SSC + 0.1% SDS at 65°C. The conditions of this final, high stringency, wash(es) will vary according to the probe that has been used:

Probe (locus)	Number of washes	Length of each wash
YNH24 (D2S44)	1	10 min
V1 (D17S79)	1	10 min
MS-1 (D1S7)	2	30 min
PH30 (D4S139)	2	30 min
CMM101 (D14S13)	1	30 min

3'HVR (D16S85)	1	10 min
TBQ7 (D10S28)	1	10 min
LH1 (D5S110)	1	10 min

NOTE: The 0.1X SSC + 0.1% SDS used for the final stringency washes must be at 65°C before it is added to the membranes.

3. Lightly blot the membrane on #3 Whatman - DO NOT LET THE MEMBRANE DRY OUT!

XIII. Blot Stripping Procedure

1. Remove plastic wrap from membranes.

2. Place membranes in the following solution:

   110 ml formamide
   20 ml 20X SSPE
   10 ml 20% SDS
   Q.S. with H2O to 200 ml.

3. Shake membranes for 60–90 minutes at 65°C. Decant the stripping solution.*

4. Rinse the stripped blot in 200 ml of 0.1X SSC + 0.1% SDS for 1 minute at room temperature.

5. Place the blot on filter paper to remove excess fluid. Relabel the membrane with ballpen if required.

6. Place the blot in the hybridization solution for the next probing.

NOTE: If membranes are to be stored for an indefinite period of time, carry out the stripping and

* When stripping probe locus D5S110 from the membrane, step 3 must be repeated once.

rinsing steps as described. Then, rewrap the membranes with plastic wrap and freeze at -80°C.

APPENDIX C

PREPARATION AND USE OF DNA PROBES

A. Commercially-obtained DNA probes

1. Hybridization concentrations

DNA probes that have been prelabeled with radioisotope can be obtained commercially. This includes probes to the variable number tandem repeat (VNTR) loci as well as probes to the viral DNAs that make up the molecular size markers. The concentrations of probe that are required for each of the VNTR loci are shown in the following table.

Probe (locus)	DPM/60 ml of hybridization solution
YNH-24 (D2S44)	3.0 × 10 7
V1 (D17S79)	3.0 × 10 7
MS1 (D1S7)	3.0 × 10 7
PH30 (D4S139)	1.5 × 10 7
CMM101 (D14S13)	3.0 × 10 7
TBQ7 (D10S28)	3.0 × 10 7
LH1 (D5S110)	1.5 × 10 7

3.0 × 10 7

The concentration of radioactive viral DNA probe placed into a hybridization solution is a function of the species of DNA. The following table illustrates those differences.

MW Standard	Lifecodes (Extended)
Viral DNA	ΦX174
	Lambda
DPM/60 ml hybridization solution	
	1.3×10^6
	8.0×10^6

2. Use of commercially-obtained DNA probes

Some commercially-obtained DNA probes are obtained in combination. That is, one vial will contain labeled probe to the single VNTR locus and probes to the viral molecular weight markers. In other cases, labeled single locus probes will be obtained separately from labeled viral DNA probes. For the latter situation, appropriate volumes of each of the probes are combined into one tube prior to denaturation.

06.16.94

RFLP PROTOCOL ADDITIONS (JUNE 27, 1994)

ARCHIVED

Effective December 7, 1990 - June 2, 1996

To: All DNAU Personnel

From: Unit Chief, Larry A. Presley

Re: RFLP Protocol Additions

A memorandum dated 6/17/94 has been approved to incorporate DNA probes D5S110 and D10S28 into our current RFLP protocol.

Our policy will be to utilize the current 6 available probes to obtain 4 conclusive interpretable results in routine casework.

All DNA Unit personnel currently using RFLP analysis should insure that a copy of the additional information is incorporated into their current protocols. A copy of the memorandum is attached.

RFLP ANALYSIS IN ROUTINE CASEWORK (SEPTEMBER 22, 1994)

ARCHIVED

Effective December 7, 1990 - June 2, 1996

Date: 9/22/94

To: All examiners and technical support staff

From: DNA Unit Chief

Re: RFLP Analysis in Routine Casework

Beginning October 1, 1994, all RFLP casework, with or without a subject, should when possible be subjected to probing using the current six probes we have on line. All unsubs and no matches will be sized and entered into CODIS. Any questions regarding this policy can be directed to me.

Thanks

/s/ Larry

MEMORANDUM FROM J. J. KEARNEY TO MR. AHLERICH ON CHANGES TO DNA PROTOCOL (MARCH 17, 1995)

ARCHIVED

Effective December 7, 1990 - June 2, 1996

Date: 3/17/95

To: Mr. Ahlerich

From: J. J. Kearney

Subject: CHANGES TO DNA ANALYSIS UNIT PROTOCOL FOR THE ANALYSIS OF DNA BY THE RESTRICTION FRAGMENT LENGTH POLYMORPHISM ANALYSIS

PURPOSE: To recommend that a change be made to the protocol used by the DNA Analysis Unit of the FBI Laboratory for the analysis of DNA by the restriction fragment length polymorphism (RFLP) technique.

DETAILS: Section XI of the RFLP protocol document describes the conditions for the post-hybridization washing of blots produced during the RFLP procedure. The conditions for washing blots probed at locus D10S28 will be changed from one-ten minute wash to two-30 minute washes. This alteration in wash conditions will result in a reduction in the background intensity of autoradiograms produced by blots probed at locus D10S28. A copy of the altered protocol page is enclosed with this memorandum. The new protocol page bears the date 3/16/95.

RECOMMENDATION: That the change to the protocol document Procedures for the Detection of

Restriction Fragment Length Polymorphisms in Human DNA, which is described in this memorandum be approved.

[. . .]

XI. Post-Hybridization Washes

1. Pour off the hybridization solution slowly. The membranes will stick to the bottom of the container. Capture the last drops that collect at the corner of the container with a Kimwipe. Discard the Kimwipe into a radioisotope waste container.

2. Carry out the following washes, using enough wash solution to fill the container one-half full.

A. 15 minutes in 2X SSC + 0.1% SDS at room temperature

B. 15 minutes in 2X SSC + 0.1% SDS at room temperature

C. 0.1X SSC + 0.1% SDS at 65C. The conditions of this final, high stringency, wash(es) will vary according to the probe that has been used:

Probe (locus)	Number of washes	Length of each wash
YNH24 (D2S44)	1	10 min
V1 (D17S79)	1	10 min
MS-1 (D1S7)	2	30 min
PH30 (D4S139)	2	30 min
CMM101 (D14S13)	1	30 min
3'HVR (D16S85)	1	10 min

TBQ7 (D10S28)	1	10 min
LH1 (D5S110)	1	10 min

NOTE: The 0.1X SSC + 0.1% SDS used for the final stringency washes must be at 65C before it is added to the membranes.

3. Lightly blot the membrane on #3 Whatman - DO NOT LET THE MEMBRANE DRY OUT!

03.16.95

RFLP DEVELOPMENT REPORT
(SEPTEMBER 21, 1995)

MEMORANDUM

Date 9/21/95

To: Mr. Ahlerich

From R. S. Murch

Subject: IMPLEMENTATION OF A PROTOCOL FOR THE CHEMILUMINESCENT DETECTION OF RFLPs BY THE DNA ANALYSIS UNIT

PURPOSE: To inform that a protocol for the chemiluminescent detection of restriction fragment length polymorphisms (RFLPs) has been developed, and that the protocol be adopted by the DNA Analysis Unit for the analysis of DNA by RFLP-based methods.

RECOMMENDATION: That the protocol document, CHEMILUMINESCENT DETECTION OF RFLPs, described in this memorandum be approved for the analysis of RFLPs by the DNA Analysis Unit.

DETAILS: Since the adoption of method's for the analysis of RFLPs by the DNA Analysis Unit of the FBI Laboratory, reagents and procedures have been developed that permits the detection and analysis of RFLPs via chemiluminescence. Research into chemiluminescence-based RFLP analysis began at the Forensic Science and Research Center under the direction of DR. BRUCE BUDOWLE, resulting in the publication "A Chemiluminescence-based Detection System for Human DNA Quantitation and Restriction Fragment

Length Polymorphism (RFLP) Analysis" by MR. ALAN GIUSTI and DR. BUDOWLE. Further research was conducted in the DNA Analysis Unit (DNAU) under the direction of MR. GIUSTI to test the effect of several modifications to the published protocol, followed by validation research to ensure the continued high quality of RFLP analysis by the DNAU. Based on the results of this research and the numerous advantages of chemiluminescence over radioisotope-based detection procedures, it is recommended that the DNAU adopt the procedures required for the performance of this technique.

The chemiluminescent RFLP analysis protocol examines the same VNTR loci currently analyzed in forensic casework; thus there is no loss of information by adopting this protocol. The advantages of a chemiluminescence-based RFLP analysis are significant for the following reasons: the reagents are non-toxic, there are no radioactive materials used, which obviates the safety hazards associated with radioisotopes, the time to generate results is reduced from days to hours, which will dramatically reduce the case turnaround time, and the purchase of bulk quantities of reagents of high stability will improve the ability of the unit to perform quality control procedures. Although the chemiluminescent protocol is essentially similar to the current RFLP analysis protocol, a number of reagents and procedures are different; however, this should require only a short period of training for the examiners and technicians in the DNAU to become familiar with the process.

The findings of the implementation and validation research have been presented to the examiners of the DNAU and DR. BUDOWLE, and each has found the

methodology to be acceptable for use in the DNAU. Furthermore, a manuscript is in preparation for submission to a peer-reviewed journal detailing the implementation and validation research.

This protocol, in its entirety, will be included in the revised version of the DNAU protocol " Procedures for the Detection of Restriction Fragment Length Polymorphisms in Human DNA".

SECTION 1
QUALITY CONTROL PROCEDURES FOR MATERIALS AND REAGENTS USED IN CHEMILUMINESCENT RFLP ANALYSIS

1.1 Membrane QC

The membrane used for chemiluminescence-based RFLP analysis is Biodyne A (Pall Biosupport, Glen Cove, NY), an*amphoteric membrane. For each new lot of membrane that is received, a QC membrane for that lot will be generated as described below:

A gel containing the following samples is run according to the protocol for the resolution of DNA fragments on an analytical gel (Section 2.1).

Lane 1: Analytical visual marker

Lanes 2, 7, 11, 15:
Molecular weight markers (BRL DNA Analysis Marker System)

Lanes 3-6, 8-10, 12-14:
200 ng K562 HaeIII-digested DNA

Lane 16: Blank

After electrophoresis, the DNA is transferred from the gel to an 11 X 14.5 cm membrane from the

new lot according to the protocol in Section 2.2. This membrane is hybridized, along with three null membranes (see Section 1.2 for description of the null membrane), to the alkaline phosphatase-tagged probe for the VNTR locus D2S44 as described in Section 2-3 and subjected to stringency washes as described in Section 2-4. The addition of the null membranes reduces the general membrane background which may occur when only one or two membranes are hybridized. To conserve reagents, the processing of the null membranes is stopped after the stringency washes (Section 2.4). Processing of the null membranes resumes with the membrane stripping protocol (Section 2.6). A lumigraph is generated as described in Section 2-5. After assessment of the lumigraph by the DNAU Unit Chief, the membrane is stripped according to the protocol in Section 2.6. After the membrane has been blotted dry, it is immersed in 250 mL of 2X SSC for fifteen minutes at room temperature on an orbital shaker with moderate agitation. Perform the post-hybridization wash protocol from Section 2.4 (steps ld - 5), through the lumography protocol (Section 2.5). The results of this lumigraph are reviewed also by the DNAU Unit Chief. The membrane lot is considered acceptable for use if all fragments of the molecular weight markers are visible and the appropriate fragments are visible in each of the K562 HaeIII-digested DNA lanes on the initial lumigraph, and if there are no visible fragment bands from the VNTR profiles of the K562 DNA or the molecular weight markers after the stripping protocol.

1.2 VNTR Probe QC

The alkaline phosphatase-tagged VNTR probes are commercially prepared. Each new lot of probe

will be tested to establish that the fidelity and sensitivity of the lot is adequate for use. To test these parameters, a dilution series membrane is generated according to the protocols described in Sections 2-1 and 2-2, containing the DNAs as described below:

Note: Null membranes are generated using this configuration.

Lane 1: Analytical visual marker

Lane 2: Molecular weight markers (BRL DNA Analysis Marker System)

Lane 3: Blank

Lane 4: 500 ng K562 HaeIII-digested DNA

Lane 5: 400 ng K562 HaeIII-digested DNA

Lane 6: Molecular weight markers (BRL DNA Analysis Marker System)

Lane 7: 300 ng K562 HaeIII-digested DNA

Lane 8: 200 ng K562 HaeIII-digested DNA

Lane 9: 100 ng K562 HaeIII-digested DNA

Lane 10: Molecular weight markers (BRL DNA Analysis Marker System)

Lane 11: 50 ng K562 HaeIII-digested DNA

Lane 12: 25 ng K562 HaeIII-digested DNA

Lane 13: 10 ng K562 HaeIII-digested DNA

Lane 14: Blank

Lane 15: Molecular weight markers (BRL DNA Analysis Marker System)

Lane 16: Blank

This membrane is hybridized, along with three null membranes, with each new lot of alkaline phosphatase-tagged VNTR probe as described in Section 2-3 and subjected to stringency washes as described in Section 2-4. A lumigraph is generated as described in Section 2-5. The lumigraph results are reviewed by the DNAU Unit Chief; the probe lot is considered acceptable for use if the appropriate DNA profile for the locus under examination is observed for the K562 DNA samples ranging from 50 ng to 500 ng. A notation will be made regarding the lowest amount of DNA from which a profile is visible, to indicate the relative sensitivity of the probe lot. If any of the resulting DNA profiles from the K562 DNA samples exhibit bands in addition to the expected profile, that probe lot will be tested again, as described above, using a new dilution series membrane. The presence of additional bands in any of the K562 samples from the second hybridization will represent a failure of the probe lot.

1.3 Molecular weight marker and marker probe QC

The molecular weight markers and alkaline phosphatase-tagged probe for the molecular weight markers are commercially prepared. Each new lot of marker and probe is tested to establish that the fidelity and sensitivity of the lot is adequate for use. Further, as there may be some variation in the quantities of the DNAs comprising the marker fragments, different concentrations of the marker DNA is examined to determine the optimal concentration for use in RFLP analysis. To test these parameters, a membrane is generated according to the protocols

described in Sections 2-1 and 2-2, containing the DNAs as described below:

NOTE: The molecular weight marker DNA is from the lot under examination.

1X Molecular weight markers: 30 μL marker DNA (Solution A)

30 μL TE

140 μL Loading buffer CH

0.5X Molecular weight markers: 15 μL marker DNA (Solution A)

45 μL TE

140 μL Loading buffer CH

0.25X Molecular weight markers: 7.5 μL marker DNA (Solution A)

52.5 μL TE

140 μL Loading buffer CH

5 μL of each dilution is loaded into the appropriate lanes.

Lane 1: Analytical visual marker

Lane 2: 1X Molecular weight markers (BRL DNA Analysis Marker System)

Lane 3: 200 ng K562 HaeIII-digested DNA

Lane 4: 0.5 X Molecular weight markers (BRL DNA Analysis Marker System)

Lane 5: 200 ng K562 HaeIII-digested DNA

Lane 6: 0.25X Molecular weight markers (BRL DNA Analysis Marker System)

Lane 7: Blank

Lane 8: Blank

Lane 9: Blank

Lane 10: Blank

Lane 11: 1X Molecular weight markers (BRL DNA Analysis Marker System)

Lane 12: 200 ng K562 HaeIII-digested DNA

Lane 13: 0.5X Molecular weight markers (BRL DNA Analysis Marker System)

Lane 14: 200 ng K562 HaeIII-digested DNA

Lane 15: 0.25X Molecular weight markers (BRL DNA Analysis Marker System)

Lane 16: Blank

This membrane is hybridized, along with three null membranes, to the new lot of alkaline phosphatase-tagged molecular weight marker probe and the probe for the locus D2S44 as described in Section 2.3 and subjected to stringency washes as described in Section 2.4. A lumigraph is generated as described in Section 2.5. The lumigraph results are reviewed by the DNAU Unit Chief; the markers and marker probe lot are considered acceptable for use if all thirty bands of the molecular weight marker are visible and if there are no extreme disparities observed between the fragment intensities for each of the thirty bands. The dilution of the marker DNA that results in a band intensity most similar to the band intensity of the 200 ng K562 samples is designated as the working dilution for that lot of molecular weight markers and noted on the quality control review document by the reviewing official.

The other dilution tubes are discarded after this assay; any dilution more concentrated than the designated working dilution can be diluted also to the appropriate concentration.

1.4 Film QC

Due to the variable nature of the film emulsions used in the manufacture of the Kodak X-Omat RP film, it is necessary to determine the optimum exposure time for each new lot of film. To determine the optimum exposure time, a membrane with the same sample configuration as described in Section 1.2 is hybridized, along with three null membranes, to a probe for the VNTR locus D2S44, according to the protocols in Sections 2.3 through 2.5. The membrane packet is placed in a cassette with front and back films. The back film is developed after thirty minutes, and the front film after sixty minutes. These results will be examined to ascertain if longer or shorter times are required. The shortest exposure time permitted is fifteen minutes for the front film; no back film will be required under this situation. The longest exposure time permitted is two hours; beyond this time there is no increase in signal intensity. Suggested exposure times are:

15 minutes back, 30 minutes front

30 minutes back, 60 minutes front

60 minutes back, 90 minutes front

90 minutes back, 2 hours front

SECTION 2
CHEMILUMINESCENT DETECTION OF RFLPs

2.1 RESOLUTION OF DNA FRAGMENTS ON AN ANALYTICAL GEL

The analytical gels are composed of 1% low EEO agarose in 1X TAE buffer. The gel dimensions are 11 X 16 (100 mL).

1. Prepare 1 L of 1X TAE buffer per analytical gel setup (gel and tank buffer).

2. Prepare the analytical gel:

a. Weigh out 1.0 g agarose (BRL DNA Typing Grade TI) into a flask or bottle.

b. Add 100 mL 1X TAE buffer.

c. Bring to a boil to dissolve agarose.

d. Place at 56°C to equilibrate.

e. Place the gel tray on a leveling platform.

f. Place a 16-well comb into the gel tray.

g. Pour agarose into gel form.

h. et stand at least 15 minutes to cool.

3. Place the gel into the electrophoresis tank, e.g., BRL H5 Horizontal Gel Electrophoresis Apparatus.

4. Pour 900 mL 1X TAE buffer into the electrophoresis tank. The buffer should cover the gel to a depth of at least 0.5 cm. Remove the comb.

WELL NUMBER 1 IS DEFINED AS THE WELL. AT THE FAR LEFT SIDE OF THE GEL,

WITH WELLS TOWARD FRONT OF TANK. THIS WELL WILL RECEIVE VISUAL MARKER.

5. Prepare visual marker (Adenovirus II KpnI digest) for analytical gels

a. For each gel, aliquot 12 μL of the visual marker into individual tubes. Add 1 μL of ethidium bromide (5mg/mL) to each tube and incubate at room temperature 30 minutes.

b. Incubate at 56°C for 5 minutes prior to plating.

WELL 3 IS RESERVED FOR THE HAE III DIGESTED ALLELIC CONTROL

6. Plate 200 ng (8 μl) of Hae III-digested K562 DNA in lane 3.

5 μL OF THE APPROPRIATE DILUTION OF THE MOLECULAR WEIGHT MARKERS ARE PLACED INTO THE APPROPRIATE WELLS DEPENDING UPON THE NUMBER OF SAMPLES (QUESTIONED AND KNOWN) THAT MUST BE RUN IN THE GEL.

7. Prepare sample DNAs;

a. To the 14 μL digested DNA, add 4μL loading solution.

b. Mix, spin 2 seconds and carefully pipette the entire specimen into the well.

c. Repeat for all specimens. If less than 14 μL of the digested DNA is used, add TE to bring the volume to 14 μL.

8. Set the voltage at 28 volts (maximum amperage) for a run time of 17 hours.

9. The analytical gel run is considered complete when the top fragment band of the visual marker has migrated between 10 and 12 cm from the origin. If the top fragment band is not distinctly visible, the 1.699 kb band (second from top) should have migrated between 8 and 10 cm. from the origin.

10. After the electrophoresis is complete, the gel can be examined on the UV transilluminator to evaluate the fragment separation. Photograph gels with Polaroid #553 (ASA 400) for 1 second at f4.5 with a red filter.

2.2 SOUTHERN BLOTTING OF GELS ONTO NYLON MEMBRANES

1. Slide the gel from the tray, face down, into a plastic box that contains 0.5M NaOH/1.5M NaCl (denaturation solution), sufficient to cover the gel. Gently shake for 15 minutes. Ensure that solution covers gel and gel is not adhering to bottom of plastic box.

a. While gel is in denaturation solution:

   i. Place thin sponges, e.g. Lifecodes transfer sponges, (two per gel) in the transfer trays and add 10X SSC until sponges are saturated and solution level is just above bottom sponge.

   ii. Label membrane with the unique case identifier on the top left corner using a black, “U.S. Government” Skilcraff” pen.

b. Five minutes prior to end of denaturation soak:

i. Place an 11 X 16 cm BRL blot pad in a separate container of 1OX SSC. Note: Solution will not turn yellow. Blot pad will remain farm.

ii. With gloved hands, immerse Slowly (to ensure even wetting) an 11 X 14.5 cm Biodyne A membrane in 10X SSC in a separate container.

iii. Place both containers on an orbital shaker with gentle shaking for the duration of neutralization step.

2. Rinse gel in deionized or distilled water for 20 seconds. Gently shake by hand, then decant water. Soak gel in 1M Tri.s-Cl, pH 7.5 / 1.5M NaCl (neutralization solution) for 15 minutes on an orbital shaker with gentle agitation. Ensure that solution covers gel and gel is not adhering to bottom of plastic box.

3. Place blot pad on top of sponges. Carefully remove the gel from the neutralization solution. Place the gel onto the blot pad, keeping the original gel top face down on the blot pad with the gel origin nearest to you. With gloved fingers, press down carefully on the gel to remove any air bubbles.

4. Place the presoaked Biodyne A membrane onto the gel, labeled side facing up. Label will be located on the bottom right corner (origin end). Ensure that the edges of the membrane are square with the gel edges. Use a glass pipette to remove any air bubbles from under the membrane.

5. Cover the membrane with a piece of Whatman 3 MM Chr paper that has been cut to 11 X 14.5 cm and wetted with IOX SSC. Remove air bubbles from between the membrane and the Whatman paper using a glass pipette.

6. Place nine blot pads on top of the Whatman paper.

7. Place one 15 X 20 X 0.4 cm glass plates on top of the blot pads.

8. Allow the transfer to proceed until all blot pads are saturated, approximately 4-6 hours at room temperature. Transfer should not exceed six hours. Due to the limited volume of 1OX SSC, check periodically and add 1OX SSC accordingly. PO NOT ALLOW SOUTHERN BLOT TO DRY OUT.

9. Remove blot pads and Whatman paper.

10. Wash the membrane once by placing it in 0.2 M Tris, pH 7.5 / 2X SSC, sufficient to cover the membrane, for 15 minutes with gentle agitation. Blot the membrane on a sheet of Whatman 3 MM Chr.

11. Place each membrane in a folder made from a piece of Whatman 3 MM Chr paper, 13 X 34 cm, folded lengthwise; tape edges and place in an 80°C oven for 30 minutes.

12. Open folder and place membrane, DNA side facing up (non-labeled side), in the Stratalinker. Set Stratalinker by pressing “Energy”, “200” (equivalent to 20,000 μJ/cm2). Press “Start”. Energy scale will count down to zero. When Stratalinker signals completion, open door, remove membrane and close folder. Membrane can be hybridized at this point or stored in. a ziplock plastic bag at room temperature.

2.3 HYBRIDIZATION

NOTE: ONE PERSON SHOULD NOT HYBRIDIZE MORE THAN FOUR BOXES AT A TIME AS TIME AND TEMPERATURE FACTORS ARE CRITICAL.

1. Prepare 500 mL per hybridization box of a 1:10 dilution of ACESTM 2.0 Wash I solution (hereafter referred to as 1X Wash I solution), and 250 mL per hybridization box of a 1:20 dilution of ACESTI 2.0 Wash I solution (hereafter referred to 0.5X Wash I solution). Preheat solutions to 55°C prior to hybridization. Both solutions can be prepared a day in advance and stored at 55°C until ready for use, or incubate at 55'C approximately 2 hours prior to use. NOTE: Pre-heat Wash I concentrate at 55'C prior to making dilution to ensure that all solids are dissolved. If concentrate becomes cloudy, leave at room temperature until clear.

2. Add membranes, DNA side up, to the appropriate volume of BRL ACESTM 2.0 Hybridization solution (see table 1). Ensure that each membrane is covered with solution prior to adding next membrane. Prehybridize membranes for twenty minutes in a rotating water bath at 55°C in BRL ACESTM 2.0 Hybridization solution. The rotating speed dial should be set to approximately 60-70 rpm. A 50 ml plastic conical bottom tube is used to measure volumes.

Table I. Volumes for Chemiluminescent RFLP Prehybridizations and Hybridizations

Volumes for Chemiluminescent RFLP Hybridizations	
# Membranes	Prehybridization/Hybridization Volume (mL)
1-2*	30
3-4	
5-6	60
7-8*	

* Hybridization of 1-2 or 7-8 membranes may result in reduced band intensity and/or increased membrane background. Four to six membranes should be hybridized at one time.

3. Just prior to end of prehybridization, micro-centrifuge the tubes containing the appropriate chemiluminescent VNTR probe and the molecular weight marker (MWM) probe for five minutes.

NOTE: Due to the differences in the relative sensitivities of the alkaline phosphatase-tagged VNTR probes, the hybridization sequence for the VNTR loci is as follows:

D2S44

D10S28

D17S79

D5S110

D4S139

D1S7

4. Remove the hybridization box from the water bath and decant the prehybridization solution.

5. Add the appropriate volume of VNTR and MWM probe (see Table II) to a 50 ml, plastic tube containing the appropriate volume of hybridization solution (from Table I),

Table II. Probe Volumes for Chemiluminescent RFLP Hybridizations

Life Technologies (Gibco BRL)		
Probe for:	Probe volume, 30 mL hybridization	Probe volume, 60 mL hybridization
D1S7*	15 µL	30 µL
D4S139*	15 µL	30 µL
D5S110*	15 µL	30 µL
Molecular weight markers*	1.5 µL	3 µL
Lifecodes Corporation		
Probe for:	Probe volume, 30 mL hybridization	Probe volume, 60 mL hybridization
D2S44*	15 µL	30 µL
D10S28*	30 µL	60 µL
D1S7	30 µL	60 µL
Molecular weight markers	3.8 µL	7.5 µL
Promega Corporation		
Probe for:	Probe volume, 30 mL	Probe volume, 60 mL

	hybridization	hybridization
D2S44	30 μL	60 μL
D10S28	30 μL	60 μL
D17S79*	120 μL	240 μL

* Denotes primary probe source

6. Vortex briefly and add to the box containing the membranes. Rotate the box gently by hand to distribute the hybridization solution. NOTE: For 60 mL hybridizations, add the probe to 40 mL of solution, vortex gently and add to box with membranes. Add 20 mL of hybridization solution to tube (using tube markings), then add to hybridization box.

7. Hybridize membranes for twenty (20) minutes in a rotating water bath at 55°C in BRL ACES" 2.0 Hybridization solution. Ensure that the membranes are not adhering to each other, to ensure equal distribution of the probe. The rotating speed dial should be set to approximately 60-70 rpm. NOTE: TBQ7 (DIOS28) SHOULD BE HYBRIDIZED FOR 30 MINUTES UNDER THE ABOVE CONDITIONS.

2.4 POST-HYBRIDIZATION WASHES

1. Decant the hybridization solution from the box. Perform the following washes in the rotating water baths, using 250 mL of each wash solution:

NOTE: Make sure that membranes are not adhering to each other during all washes to ensure effective washing of all membranes.

a. 15 minutes in 1X Wash I solution at 55°C at 60-70 rpm

b. 15 minutes in 1X Wash I solution at 55°C at 60-70 rpm

c. 15 minutes in 0.5X Wash I solution at 55°C at 60-70 rpm

d. 5 minutes in 1X Final Wash solution at room temperature on orbital shaker with gentle agitation.

e. 5 minutes in 1X Final Wash solution at room temperature on orbital shaker with gentle agitation.

2. Place membranes DNA side up on a clean sheet of Whatman 3MM Chr for 5-10 minutes to draw off excess solution. Do not blot. Place air-dried membranes in plastic tub containing the appropriate volume of LumiPhos Plus (see Table 111). Make sure each membrane is covered by LumiPhos Plus before adding next membrane. Place tub on rocking platform (set to "31/z") for 5 minutes.

Table III. Membrane Number and Appropriate LumiPhos Plus Volumes

# Membranes	LumiPhos Plus Volume
1-2	15 mL
3 - 4	20 mL
5-6	25 mL
7-g	30 mL

3. Using blunt-end forceps, remove membranes from LumiPhos Plus. Drag membrane along side of tub to remove excess LumiPhos Plus.

4. Place membrane in plastic folder; wipe folder with Kimwipe to press out air bubbles and heat seal folder (impulse sealer set to " 5 '/z").

5. Trim excess plastic close to outer edge of heat seal and wipe edges with Kimwipe to remove excess LumiPhos Plus. Two membranes per folder can be accommodated.

2.5 LUMOGRAPHY

1. The membrane packets are stored overnight at room temperature in the dark, to allow for maximum light output.

2. In the darkroom under red light illumination, place the membrane packets DNA side down onto Kodak X-Omat RP film. Tape the membrane packets to this film. You can record the locations of membranes in contact with the film by writing directly on the film with a ball point pen. Place another sheet of Kodak X-Omat RP onto the back of the membranes and close the cassette. Keep the cassette at room temperature.

3. The Kodak X-Omat RP film on the back side and the front side of the membranes can be developed after an exposure period which is determined for the particular emulsion lot of the Kodak X-Omat RP film in use. This can range from fifteen minutes to sixty minutes for the back film, and thirty minutes to two hours for the front film. Film exposure times in excess of two hours are unnecessary, as it will not increase

band intensity, and will only increase the general background.

2.6 BLOT STRIPPING PROCEDURE

1. Prepare 250 mL 1X strip solution. Heat to 90-100° C on stirring hot plate or in microwave. NOTE: Solution will turn cloudy when at appropriate temperature.

2. Cut sealed edges of membrane packet, remove membrane with blunt-end forceps. Place membranes in plastic tub containing 250 mL of heated strip solution.

3. Place tub in rotating environmental shaker or rotating water bath at 65°C for fifteen minutes. Up to twelve membranes can be stripped in 250 mL. Pour off strip solution and soak membranes in 250 mL of 2X SSC for fifteen minutes at room temperature on an orbital shaker with moderate agitation. Membranes are blotted dry on Whatman 3MM Chr, then placed in Whatman 3MM Chr folders and stored in zip-lock plastic bags at room temperature to await further hybridizations. Alternatively, the membranes can be left in the plastic folder packet with the LumiPhos Plus, then stripped just prior to subsequent hybridizations.

SECTION 3
SOLUTIONS AND REAGENTS FOR THE CHEMILUMINESCENT DETECTION OF RFLPs

BLOTTING PADS: BRL 11 X 16 cm blotting pads (#24810-012)

DENATURATION SOLUTION:
0.5 M Sodium
Hydroxide

1.5 M Sodium Chloride

Prepare:

4.0 M Sodium Hydroxide* 250 mis
5.0 M Sodium Chloride- 600 mis
Bring to a volume of 2 L with distilled water.

DEVELOPMENT FOLDERS:

BRL PhotoGeneTM development folders (#18195-016)

HYBRIDIZATION SOLUTION:

BRL ACESTM 2.0 Hybridization Buffer (#14271-019)

Contains:

0.5 M Sodium Phosphate, pH 7.2
0.5 % (v/v) Tween 20
1 % (w/v) Hammersten Casein
0.02% (w/v) Sodium Azide

LOADING BUFFER CH:

10 mM Tris-Cl, pH 7.5
100 % glycerol
0.02% (w/v) Bromophenol blue
20 mM EDTA

Prepare:

2M Tris-Cl, pH 7.5 400 µL
10% glycerol 5 mL
Bromophenol blue 10 mg
0.5 M EDTA 2 mL
Bring to a volume of 50 mL with distilled water.

Note: Loading buffer CH is used only for dilution of Molecular Weight Markers (BRL #14402-010)

LUMIPHOS PLUS:

Chemiluminescent substrate, 100 mL prepared ready to use.

MOLECULAR WEIGHT MARKERS:

BRL DNA Analysis Marker DNA (#14402-010)

Contains a tube with the molecular weight markers in solution and a tube of loading buffer. Working solution is prepared based on results of Section 1.3.

MOLECULAR WEIGHT MARKER PROBE:

BRL ACESTM 2.0 Marker Probe Plus (#10306-025)

Contains 100 μL molecular weight marker probe specific for the DNA Analysis Marker DNA (#14402-010) and 125 mL LumiPhos Plus.

Lifecodes MW-100 Sizing Probe

A probe specific for the BRL DNA Analysis Marker DNA (#14402-010).

NEUTRALIZATION SOLUTION:

1.0 M Tris-Cl, pH 7.5
1.5 M Sodium Chloride

Prepare:

2.0 M Tris-Cl, pH 7.5* 1 liter
5.0 M Sodium Chloride* 600 mis
Bring to a volume of 2 L with distilled water.

20X SSC:

3.0 M NaCl
0.3 M NaCitrate

Commercially available as a solution ready to use; BRL 20X SSC (10 L, #15557-028) has been validated for use in this protocol.

TRANSFER SOLUTION:

10X SSC

Prepare:

20X SSC 1 liter
distilled water 1 liter

TRANSFER SPONGES:

Lifecodes Corporation Transfer Sponges (#957050)

WASH I CONCENTRATE:

BRL ACESTI 2.0

Wash Buffer I Concentrate (#10354-017)

Contains:

0.5 M Sodium Phosphate, pH 7.2
5 % (v/v) Tween 20

1X WASH I SOLUTION:

50 mM Sodium
Phosphate, pH 7.2
0.5 % Tween 20

Prepare:

Wash I Concentrate 100 mls
distilled water 900 mls
Heat solution to 55°C prior to use.

0.5X WASH I SOLUTION:

50 mM Sodium Phosphate, pH 7.2
0.5 % Tween 20

Prepare:

Wash I Concentrate 50 mis
distilled water 950 cols

Heat solution to 55°C prior to use.

10X FINAL WASH BUFFER:

BRL ACESTM 2.0 10X Final Wash Buffer (#10355-014)

Contains:

0.1 M Tris-HCI, pH 8.6
1.5 M Sodium Chloride

1X FINAL WASH SOLUTION:

10 mM Tris-HC1, pH 8.6
0.15 M Sodium Chloride

Prepare:

10X Final Wash Buffer 100 MIS
distilled water 900 mis
Final Wash is a room temperature wash.

10X STRIP SOLUTION:
0.1 M Tris-Cl, pH 7.5
10 mM EDTA
5 % Tween 20

Prepare:

2.0 M Tris-Cl, pH 7.5* 100 mis
0.5 M EDTA* 40 mis
100 % Tween 20 100 mis
Bring to a volume of 2L with distilled water.

1X STRIP SOLUTION:
10 mM Tris-Cl, pH 7.5
10 mM EDTA

0.5 % Tween 20

Prepare:

2.0 M Tris-Cl, pH 7.5* 100 mis
0.5 M EDTA* 40 mis
100 % Tween 20 100 mis
Bring to a volume of 2 with distilled water.

1X STRIP SOLUTION:

10 mM Tris-Cl, pH 7.5
1 mM EDTA
0.5 % Tween 20

Prepare:

lox Strip Solution 50 mis
distilled water450 mis

VNTR LOCUS OLIGONUCLEOTIDE PROBES.

D2S44 Lifecodes Corporation NICE format
D2S44 Promega GenePrint Light (#DK5411)
DlOS28 Lifecodes Corporation NICE format
DlOS28 Promega GenePrint Light TBQ7 (#DK632A)
D17S79 Promega GenePrint Light D17S79 (#DK5431)
D5S110 BRL ACESTM Probe LH1 (#14232-011)
D4S139 BRL ACEST"‘ Probe pH30 (#24230-013)
D1S7 BRL ACESTI Probe MS1 (#14231-013)
D1S7 Lifecodes Corporation NICE format

The above listed probes have been validated for use in the FBI Laboratory's chemiluminescent RFLP detection protocol.

See FBI RFLP protocol for formula to prepare stock solution

CV OF THOMAS F. CALLAGHAN, PH.D.

EDUCATION

B.S. Biology, 1982

The Pennsylvania State University

Michigan State University, Molecular Genetics Program, 1984

Transfer with Thesis Adviser; Dr. H. J. Kung to Case Western Reserve University Medical School

Ph.D. Molecular Biology and Microbiology, 1992 Case Western Reserve University Medical School, Cleveland, OH

EMPLOYMENT

Chief Biometric Scientist, Biometrics Analysis Section, May 2010 — Present

Laboratory Division, Federal Bureau of Investigation

Responsibilities include Technical Lead for Advanced DNA Analysis for Human Identification and Individualization.

Chairman: CJIS Advisory Policy Board, Rapid DNA Task Force

Member: Scientific Working Group DNA Analysis Methods (SWGDAM)

Chairman: SWGDAM Investigative Genetic Genealogy Working Group

Member: CJIS Advisory Policy Board, Identification Services Subcommittee

Member: FBI Laboratory Research Review Team

Member: Organization of Scientific Area Committees (OSAC) Biological Sciences Area Committee (BioSAC) - 2013-2019

Member: International Association of Chiefs of Police - Forensic Committee

Special Assistant to the Executive Assistant Director, Science and Technology Branch August 2008 — May 2010

Federal Bureau of Investigation, Director's Office

Responsibilities include: FBI Science and Technology Biometrics Liaison Lead to the intelligence community. Technical Lead on FBI Rapid DNA Analysis Initiative.

Principle support to the Science and Technology Executive Assistant Director

CODIS Unit Chief, November 2003 - August 2008 Federal Bureau of Investigation, Laboratory Division

Responsibilities include: Supervision of seven FBI employees; Responsible for 60 contract employees, preparation of Unit's annual budget request; administration of contract for support of the CODIS program, including software development; manage daily operations of the National DNA Index System (NDIS); and monitor compliance of NDIS participating laboratories with Federal law. Also serve as Chair of the NDIS Procedures Board, Contracting Officer Technical Representative, FBI DNA Representative to Interpol Monitoring Experts Group and Department of Justice G8 DNA Technical Representative

Federal Convicted Offender Program Manager, September 1999- November 2003 Federal Bureau of Investigation, Laboratory Division

Responsibilities included: Establishment of Federal Convicted Offender (FCO) Program: design and distribution DNA sample collection kit; oversight of sample collection from 101 Federal Prison and 400 Federal Probation sites; management of FCO sample receipt, analysis and entry into the National DNA Index System (NDIS); CODIS Match confirmation and report preparation; training and supervision of CODIS Examiners and Technicians.

Forensic DNA Examiner and CODIS Program Manager, March 1997 - September 1999 Federal Bureau of Investigation, Laboratory Division

Responsibilities included: All duties of Forensic DNA Examiner and management of all DNA Unit CODIS Operations; training and supervision of two CODIS Technicians; development of procedures for DNA data entry into initial CODIS system; drafting of procedures and supervision of CODIS Match confirmations.

Forensic DNA Examiner, October 1994 - March 1997 Federal Bureau of Investigation, Laboratory Division

Responsibilities included: Serological and DNA examination of crime scene evidence; preparation of written results of examination; supervision of up to five Serology and DNA Technicians; oversight of evidence receipt, description, distribution to other Units and evidence return; and court testimony.

Forensic Scientist, March 1992 - October 1994 Pennsylvania State Police, DNA Unit

Responsibilities included: Design and supervision of 4,400 sq. ft. DNA Laboratory; establishment of Pennsylvania CODIS Program; training of Forensic DNA

Examiner; establishment of Quality Assurance Program for Forensic DNA Analysis; serological and DNA examination of crime scene evidence; preparation of written results of examination; court testimony; and administration of Federal DNA Grant funding.

PUBLICATIONS

Romsos EL, French JL, Smith M, Figarelli V, Harran F, Vandegrift G, Moreno LI, Callaghan TF, Brocato J, Vaidyanathan J, Pedroso JC, Amy A, Stoiloff S, Morillo VH, Czetyrko K, Johnson ED, de Tagyos J, Murray A, Vallone PM., J Forensic Sci. 2020 May;65 (3):953-959. doi: 10.1111/1556-4029.14267. Epub 2020 Jan 27. PMID: 31985834

Callaghan TF., Responsible genetic genealogy. Science. 2019 Oct 11;366(6462):155. doi: 10.1126/science. aaz6578.PMID: 316017452

Budowle, B., Onorato, A., Callaghan, T., Della Manna, A., Gross, A., Guerrieri, R., Luttman, J., McClure, D., Mixture Interpretation: Defining the Relevant Features for Guidelines for the Assessment of Mixed DNA Profiles in Forensic Casework. J. Forensic Sci, July 2009, Vol 54, No. 4, p.810-821

T Callaghan1, M Antczak, T Flickinger, M Raines, M Myers, H J Kung:A complete description of the EGF-receptor exon structure: implication in oncogenic activation and domain evolution., Oncogene. 1993 Nov;8(11):2939-48. PMID: 8414496

R G Goodwin, F M Rottman, T Callaghan, H J Kung, P A Maroney, T W Nilsen., c-erbB activation in avian leukosis virus-induced erythroblastosis: multiple epidermal growth factor receptor mRNAs are generated by alternative RNA processing: Mol Cell Biol. 1986

Sep;6(9):3128-33. doi: 10.1128/mcb.6.9.3128-3133.1986. PMID: 3023963

Cheng, J. F., R. Printz, T. Callaghan, D. Shuey an R. Hardison: The Rabbit C Family of Short, Interspersed Repeats: Nucleotide Sequence Determination and Transcriptional Analysis; J. Mot. Biol., Vol. 176, p. 1-8, 1984.

TRAINING

FBI Emerging Executive Training (September 2009)

FBI Executive Development Institute (March 2007)

FBI Contracting Officer Technical Representative Refresher Training (April 2005).

FBI Supervisor's Management Seminar (March 7-10, 2005)

FBI Laboratory Management Training Symposium (September 2004).

FBI Contracting Officer Technical Representative Training (CoTR January 2002).

CODIS Training (2008, 2001, 1993)

Expert DNA Testimony Workshop: September 1998

Forensic and Paternity Data Analysis: June 1996

PCR-Based DNA Typing Methods In-Service: October 1994

Combined DNA Index System (CODIS) Training: March 1994

Advanced Aspects of Forensic DNA Analysis Course: May 1993

FBI Forensic Applications of DNA Typing Methods School: September- October 1992

FBI Laboratory Application of DNA Typing Methods School: September- October 1992

NDIS SPECIMEN DETAILS REPORT
(FEBRUARY 11, 2004)

Locus: D8S1179
Alleles: 13, 15
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

D3S1358
Locus: D3S1358
Alleles: 15, 18
Partial: No
Front: SDE

Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

D18S51

Locus: D18S51
Alleles: 12
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE

Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

TPOX

Locus: TPOX
Alleles: 9, 11
Partial: No
Front: SDE
Import File
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted

User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

CSF1PO

Locus: CSF1P
Alleles: 11, 12
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

D13S317

Locus: D13S317
Alleles: 8, 12
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

D7S820

Locus: D7S820
Alleles: 11
Partial: No
Front: SDE
Import File: —

Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

D5S818

Locus: D5S818
Alleles: 12, 13
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7

Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

D16S539

Locus: D16S539
Alleles: 9, 12
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE

Agency: DCFBIWAD1
Date: 2/12/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 2/12/2004

Amelogenin

Locus: Amelogenin
Alleles: X, Y
Partial: No
Front: SDE
Import File: —
Event: Read
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Verified
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: Marked
User: JDMCATEE
Agency: DCFBIWAD7
Date: 2/11/2004
Event: (S) Submitted
User: RGUERRIE
Agency: DCFBIWAD1
Date: 4/2/2004
Event: (N) Processed
User: JBEHUN
Agency: DCFBINDIS
Date: 4/2/2004

REQUEST FOR TRANSCRIPT
TO CENTRE COUNTY
(MAY 30, 2023)

I. Case Information

Case Caption: Commonwealth v. Scott Williams

Docket Number: CP-14-CR-1169-2021

Presiding Judge: Marshall

Courtroom: Annex

Date(s) of Proceeding: 5/30/2023

Court Reporter Name: Jennifer Amentler

Type of proceeding (checked): ☑ Criminal

Is this transcript request associated with an appeal? ☑ No

Children's Fast Track: ☑ No

II. Requestor Information

I am Counsel for the Commonwealth

Court Appointed? ☑ No

Does this request qualify for a reduced rate pursuant to Rule 4007(E))? ☑ No

Name / Attorney ID: First Assistant DA Sean P. McGraw / 81584

Agency/Firm: District Attorney's Office

Address:

106 East High Street – Room 302
Bellefonte, PA 16823

Email: smegraw@centreda.org
Phone: 814-355-6735
Fax: 814-355-6756

III. Transcript Items Requested

☑ Entire proceeding

IV. Private Party Transcript Delivery and Cost

For original transcript requests, please select from the following:

Delivery Time:

☑ Ordinary

Cost per page (electronic format):

Ordinary: $2.50/page

Manner of Delivery: ☑ Electronic (PDF)

Other (if offered, extra charges may apply):

☑ Real Time Feed

Special requests (if offered):

☑ Include Word index

Are you requesting a copy of an existing transcript? ☑ No

/s/ Sean P. McGraw
Signature

JOINT STIPULATION #1 FOR OMNIBUS PRETRIAL MOTION HEARING (JUNE 30, 2022)

IN THE COURT OF COMMON PLEAS OF CENTRE COUNTY PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA

v.

SCOTT R. WILLIAMS

No. CP-14-CR-1169-2021

JOINT STIPULATION NO. 1 FOR THE HEARING ON DEFENDANT SCOTT R. WILLIAMS' OMNIBUS PRETRIAL MOTION

The Commonwealth of Pennsylvania, by and through First Assistant District Attorney of Centre County Sean McGraw, and the Defendant, Scott R. Williams, by and through his counsel, Barbara A. Zemlock, Brian W. Perry, and Matthew M. McClenahen, submit this Joint Stipulation No. 1 in the hearing on Defendant Scott R. Williams' Omnibus Pretrial Motion.

1. During the investigation of the May 13, 1995, assault of T.L. ("the Victim"), police and medical personnel collected various items of evidence and conveyed them to the Federal Bureau of Investigation forensic laboratory ("the FBI Lab") for analysis.

2. Those items of evidence included vaginal and genital swabs taken from the Victim, denominated

"specimens Q1, Q2, and Q5" by the FBI Lab, with Q1 and Q2 from the vaginal swabs, and Q5 from the genital swab.

3. FBI analysis of Q1, Q2, and Q5 identified semen on them.

4. Using the Restriction Fragment Length Polymorphism ("RFLP") test, a DNA profile ("the RFLP Profile") was developed from this semen at genetic loci D2S44, D17S79, D1S7, D4S139, D10S28, and D5S110.

5. The RFLP Profile was uploaded into the FBI's Local DNA Index System ("LDIS") on September 24, 1999.

6. The RFLP Profile was searched against the DNA profiles of known offenders, and DNA profiles from crime scenes that had not been linked to a known offender, in the National DNA Index System ("NDIS") on February 4, 2000, and would have been searched through the NDIS automated computer search program once a week thereafter until RFLP testing was discontinued and no longer searched as of December 31, 2002.

7. This stipulation is effective only for purposes of adjudicating the claims set forth in Defendant's June 30, 2022, Omnibus Pretrial Motion.

Respectfully submitted:

/s/ Sean McGraw, Esquire
First Assistant District Attorney

/s/ Barbara A. Zemlock, Esquire

Date: May 22, 2023

POLICE CRIMINAL COMPLAINT
(MARCH 29, 2000)

COMMONWEALTH OF PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA,

v.

JOHN DOE, Unknown Male with Matching Deoxyribonucleic Acid (DNA) Profile developed at genetic locations: D2S44, D17S79, D1S7, D4S139, D10S28, D5S110,

Defendant.

Docket No.: CR-0000193-00
OTN: H206742-4

Magisterial District Number: 49-1-01
District Justice: Carmine W. Prestia
224 S. Fraser Street, P.O. Box 238
State College, PA 16804-0238
Telephone: 231-1420

Defendant's Sex:	Male
Defendant's SSN:	Unknown
Defendant's SID:	Unknown

Complainant/Incident Number: 3295-06687

Complainant/Incident Number if other participants: None

UCRINIBRS Code: PA0140300

I, Detective Thomas N. Jordan (Affiant) of State College Police Department

Officer Badge No.: 3232

Police Agency ORI No.: PA0140300

do hereby state:

1. ☑ I accuse the defendant whose name is unknown to me but who is described as:

Male, with matching DNA profile developed at genetic locations D2S44, D17S79, D1S7, D4S139, D10S28, and D5S110.

With violating the penal laws of Pennsylvania at the 900 block of South Pugh Street, State College, PA 16801 in Centre County on or about May 13, 1995 between 0200 and 0300 hours

Participants were:

John Doe, Male with Matching DNA Profile developed at genetic locations D2S44, D17S79, D1S7, D4S139, D10S28, and D5S110.

The acts committed by the accused were:

RAPE-Sec. 3121 (a)(1); (1 count) (F-1): In that the described defendant did, on or about the mentioned date and time and at the listed location, engage in sexual intercourse with Ms. T.L. by forcible compulsion

AGGRAVATED ASSAULT-Sec. 2702 (a)(1); (1count) (F-1): In that the described defendant did, on or about the mentioned date and time and at the listed location, attempt to cause serious bodily injury to another, or cause such injury intentionally, knowingly or recklessly under circumstances manifesting extreme indifference to the value of human life. To

wit: the defendant beat T.L. about the head area causing skull and numerous facial and nasal fractures.

ROBBERY-Sec. 3701 (a)(1)(ii); (1 count) (F-1): In that the described defendant did, on or about the mentioned date and time and at the listed location, in the course of committing a theft he did inflict serious bodily injury upon T.L. To wit: the defendant beat T.L. about the head and face area causing skull and facial fractures before stealing her purse which contained credit cards, a MAC, PA Drivers license and PSU ID card belonging to the victim.

INDECENT ASSAULT-Sec. 3126 (a)(2); (I count) (M•2): In that the described defendant did, on or about the mentioned date and time and at the listed location, have indecent contact with Ms. T.L. by forcible compulsion. To wit: the defendant did indecently touch the genital area of T.L. by forcible compulsion.

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all of which were against the peace and dignity of the Commonwealth of Pennsylvania and contrary to the Act, of Assembly, or in violation of

1. 3121(a)(1) of the Title 18 – PACC 1
2. 2702(a)(1) of the Title 18 - PACC 1
3. 3701(a)(1)(ii) of the Title 18 PACC 1
4. 3126(a)(2) of the Title 18 – PACC 1

3. I ask that a warrant of arrest or as summons be issued and that the defendant be required to answer the charges I have made. (In order for a warrant of arrest to issue, the attached affidavit of

probable cause must be completed and sworn to before the issuing authority.)

4. I verify that the facts set forth in this complaint are true and correct to the best of my knowledge or information and belief. This verification is made subject to the penalties of Section 4904 of the Crimes Code (18 PA. C.S. § 4904) relating to unsworn falsification to authorities,

/s/ Detective Thomas N. Jordan
(Signature of Affiant)

March 29, 2000

AND NOW, on this date 3/29 2000, I certify that the complaint has been properly completed and verified. An affidavit of probable cause must be completed in order for a warrant to Issue.

49.2.01
(Magisterial District)

/s/ {Illegible}
(Issuing Authority)

SEAL

SIMPLE ASSAULT-Sec. 2701 (a)(1)(1 count)(M-2): In that the described defendant did, on or about the mentioned date and time and at the listed location, attempt to cause or intentionally, knowingly or recklessly cause bodily injury to another. To wit: the defendant did cause bodily injury to T.L. by beating her about the head area causing numerous facial and nasal fractures and a skull fracture.

RECKLESSLY ENDANGERING ANOTHER PERSON-Sec. 2705 (1 count) (M-2): In that the above described defendant did, on or about the mentioned date and time and at the listed location, recklessly engage in conduct which placed T.L. in danger of death or serious bodily injury. To wit: the defendant did beat T.L. about the head and face area causing serious head and facial injuries.

THEFT BY UNLAWFUL TAKING OR DISPOSTION-Sec. 3921 (a) (1 count) (M-2): In that the above described defendant did, on or about the mentioned date and time and at the listed location, unlawfully take or exercise unlawful control over, movable property of another with the intent to deprive him (her thereof. To wit: the defendant did steal a purse belonging to T.L. which contained her apartment key, credit card, MAC, PSU student ID and drivers license.

RECEIVING STOLEN PROPERTY-Sec. 3925 (a) (1 count) (M-2): In that the above described defendant did, on or about the mentioned date and time and at the listed location intentionally receive, retain or dispose of movable property of another knowing that it has been stolen or believing that it has probably been stolen. To wit: the defendant did steal the purse and its contents from T.L. and receive

and/or dispose of those items (her apartment key, credit card, MAC, PSU student ID card and drivers license).

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all of which were against the peace and dignity of the Commonwealth of Pennsylvania and contrary to the Act of Assembly, or in violation of

1. 2701 (a)(1) of the Title 18 – PACC 1
2. 2705 of the Title 18 - PACC 1
3. 3921(a) of the Title 18 PACC 1
4. 3925(a) of the Title 18 – PACC 1

3. I ask that a warrant of arrest or as summons be issued and that the defendant be required to answer the charges I have made. (In order for a warrant of arrest to issue, the attached affidavit of probable cause must be completed and sworn to before the issuing authority.)

4. I verify that the facts set forth in this complaint are true and correct to the best of my knowledge or information and belief. This verification is made subject to the penalties of Section 4904 of the Crimes Code (18 PA. C.S. § 4904) relating to unsworn falsification to authorities,

/s/ Detective Thomas N. Jordan
(Signature of Affiant)

March 29, 2000

AND NOW, on this date 3/29 2000, I certify that the complaint has been properly completed and verified. An affidavit of probable cause must be completed in order for a warrant to Issue.

49.2.01
(Magisterial District)

/s/ {Illegible}
(Issuing Authority)

SEAL

AFFIDAVIT OF PROBABLE CAUSE

The affiant of this document, Detective Thomas N. Jordan swears that he is a Detective with the State College Police Department and has been so employed for over 20 years. The affiant is basing this affidavit on statements of Ms. T.L. in addition to facts gathered during the Investigation conducted as well as the forensic examination of scientific evidence gathered from the scene of the assault. The affiant believes that this all of this information is true and correct.

On 13 May, 1995 Officer W. C. Muse of the State College Police Department was dispatched to the 900 block of South Pugh Street responding to a report of a female down in the roadway, Upon Officer Muse's arrival he was met by two females who were kneeling beside a woman who was lying on the grass beside Pugh Street. Officer Muse noticed that the "victim" was not wearing any pants or underwear and her face and head were covered with blood and

her right eye was swollen shut. He immediately requested an ambulance.

Officer Muse interviewed Ms. Carey Moser who stated that she was walking southbound on the 800 block of S. Pugh St. when she saw what she thought to be a shirt lying in the middle of the 900 block of Pugh St. As she drew closer she realized that it was a person lying in the middle of the road. Ms. Moser said that this woman was mumbling incoherently so Moser carried her off of the roadway to the grassy area. She was joined by Ms. Sylvia Feldman who was driving by and stopped to render assistance. Moser then got to a phone and called SCPD. The victim, Ms. T.L., was transported to Centre Community Hospital where it was determined that her head injuries needed specialized care and she was flown by helicopter to Gelsinger Medical Center.

Sgt. D. Leonard and Off, Muse began checking the area for pieces of evidence to help determine what happened to T.L., Blood stains on the sidewalk and grass and a lack of evidence on the roadway (no skid-marks, no debris, and nothing heard by neighbors) led officers to believe that Ms. was likely the victim of an assault. Sgt. Leonard summoned Del. R. Ralston and Det. T. Jordan to come to the scene. A search of the surrounding area revealed that several articles of clothing (pants, underwear and shoes) were lying in a flower bed near apartment # 921 S. Pugh Street. As this area was being processed, blood spatter found all over the side of the apartment building and on the vegetation near the building. Evidence at the scene indicates that the assault an Ms. T.L. continued in this area.

Due to the nature of the evidence discovered in this area, Officer Weaver, who was with Ms. T.L. at the hospital, was contacted and told to have hospital personnel treat this case as a sexual assault and gather evidence from her clothing and body, Officer Weaver contacted Geisinger Medical Center and made this request and then drove to Danville, PA to pick up the evidence gathered by medical personnel.

Ms. T.L. was admitted to the Geisinger Medical Center on 05/13/1995 and examined in the Emergency Department. As part of this examination, John J. Skiendzielowski, M.D, obtained two sets of vaginal swabs as well as pubic hair combings and pluckings. This evidence was placed in the appropriate specimen envelopes and along with other evidence gathered from her body sealed in a Sex Crimes Evidence Collection Kit. This kit along with the clothing that she was wearing and blood samples from were given to Officer C. Weaver of the State College Police Department, He then returned to State College PD with the evidence and secured the Sox Crimes Kit and blood in the evidence refrigerator and the clothing, which contained dried blood, was secured in an evidence locker.

I, Det. Thomas N. Jordan # 3232, 3232, BEING DULY SWORN ACCORDING TO LAW, DEPOSE AND SAY THAT THE FACTS SET FORTH IN THE FOREGOING AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, I NFORMATION AND BELIEF.

/s/ Det. Thomas N. Jordan
Signature of Affiant

Sworn Jo me and subscribed before me this 29th day of March, 2000 3/29/2000 Date

My commission expires first Monday of January, 2002

PROBABLE CAUSE CONTINUED

Interviews with the victim, T.L., were conducted by this affiant between May 16 and May 22, 1995. could recall very little about the events of 0611311-995 in the early AM hours. She did know that she was attacked from behind and struck in the head. She also did not have consensual sexual intercourse with anyone that morning.

On May 16, 1995, I prepared a forensic laboratory request outlining certain forensic examinations be performed on the evidence gathered from the body and clothing of T.L. as well as on Items gathered from the scene of the attack. This request and the evidence were forwarded to the Federal Bureau of Investigations Crime Laboratory 10th Street and Pennsylvania Ave., NA, Washington, D.C, On June 19, 1996,1 telephonically spoke to Agent Richard Reem who is assigned to the Serology/DNA unit of the FBI. Agent Ream reported that semen was found on the vaginal swabs contained In the Sex Crimes Evidence Collection Kit. I was informed by Agent Room that these semen samples, along with another semen sample found an evidence from case, would now be sent to the DNA Section of the Lab for DNA Analysis. DNA Forensic Examiner Melissa Smrz was assigned to perform DNA analysis on the semen located on the vaginal swabs and the genital swabbing. In a report dated January 2, 1996, Ms. Smrz reported that Deoxyribonucleic acid (DNA) profiles for genetic

loci D2S44, D17S79, D1S7, 00139, D10S28, and D5S110 were developed from HAE III digested high molecular weight DNA extracted from specimens Q-1 and Q-2 (vaginal swabs) and Q-5 (genital swabbing). This DNA profile, which was developed from semen taken from the vaginal area of T.L. was foreign to the DNA profile of T.L.. On 03/22/2000 Ms. Smrz confirmed that this foreign DNA profile is being maintained in a nationwide database known as the Combined DNA Index System (CODIS) for the purpose of searching and comparing against other DNA profiles within or added to this system, CODIS serves as a repository for DNA profiles submitted by participating states.

On 03/20/00 your affiant interviewed Forensic Scientist Supervisor Michael Kurtz of the Pennsylvania State Police, DNA Lab located at 80 N. Westmoroland Ave. Greensburg, PA. Mr. Kurtz stated that in 1995 Pennsylvania enacted Act 14 which mandates that a DNA profile be developed from blood samples provided by certain violent offenders. These DNA profiles are maintained in a database for comparisons with unidentified DNA profiles foreign to the victims that have been entered into the system. CODIS also acts as a database index comprised of DNA profiles from unsolved sexual assault cases as well as other serious, violent criminal offenses. Smrz stated that the unnamed person involved in the sexual assault of can be expected to have a DNA profile that matches the foreign DNA profile from the semen taken from the vaginal and genital swabs taken from an 05/13/1995, It is therefore expected that if the unknown assailant In the case has ever, or will ever have his DNA profile entered into the PA system, any other state's Indexing

system that participates in the Combined DNA Indexing System (CODIS) operated by the FBI, or the federal database, this system would identify and indicate that a possible match exists and a comparison for positive identification would be done.

WARRANT OF ARREST
(MARCH 28, 2000)

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF CENTRE

COMMONWEALTH OF PENNSYLVANIA,

v.

JOHN DOE, Unknown Male DNA Profile,
AT D2S44 D17279
D17S D4S139 D10S28 D5S110

Docket No: CR-0000193-00
OTN: H 206742-4
Charge 18 § 3121 §§ 1

Magisterial District Number: MDJ-49-1-01

If the defendant be found in said Commonwealth, and bring the defendant before us at

Carmine W. Prestia Jr.
224 S. Fraser Street
P.O. Box 238
State College, PA 16804-0238

to answer the Commonwealth or STATE COLLEGE POLICE upon the complaint or citation of JORDAN, THOMAS N charging the defendant with 18 § 3121 §§ 1 RAPE

Witness the hand and official seal of the issuing authority on this 24th day of March, 2000.

Warrant Control No: 0480041

Reason For Warrant: Felony

/s/ Carmine W. Prestia Jr.
Magisterial District Judge

WARRANT OF ARREST
(MARCH 28, 2000)

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF CENTRE

COMMONWEALTH OF PENNSYLVANIA,

v.

JOHN DOE, Unknown Male DNA Profile,
AT D2S44 D17279
D17S D4S139 D10S28 D5S110

Docket No: CR-0000193-00
OTN: H 206742-4

Magisterial District Number: MDJ-49-1-01
District Justice: Honorable Carmine W. Prestia Jr.
131 South Fraser Street
Suite 5
P.O. Box 238
Telephone: 814-231-1420

Charging Officer:	JORDAN, THOMAS N
WARRANT ID:	MDJS0015386172
Warrant Control No:	49-1-01-AW-0000134-2007
Issued For: Jon Doe Unknown Male DNA Profile	
Reason For Warrant:	Felony
Charge(s):	Offense Date
S 18 § 3121 § 51 RAPE	05/13/95

S 18 § 2702 §§ A1 05/13/95
AGGRAVATED ASSAULT

S 18 53701 SSA1II ROBBERY 05/13/95

TO POLICE OFFICER:

In the name of the Commonwealth of Pennsylvania, you are commanded to take the defendant, JON DOE UNKNOWN MALE DNA PROFILE, into custody. When the defendant is taken into custody, bring the defendant before me at the Court address shown above to answer the Commonwealth or STATE COLLEGE upon the complaint of JORDAN, THOMAS N charging the defendant with the offense(s) set forth above and further to be dealt with according to law.

Defendant Contact Information

Social Security Number: 000-00-0000
Address:
Jon Doe Unknown Male DNA Profile
AT D2S44 D17279
D17S D4S139 D10S28 D5S110
Telephone: (814)

Defendant Identification Information:

Age: 00
Gender: Y
Weight(lbs): 000
State: PA
Social Security Number: 000-00-0000
Expiration Date: 00/00/00

Defendant Vehicle Information

Registration Sticker (MM/YY): 00/0000
Oth.Veh.Cd: Y

ARREST WARRANT
(MARCH 28, 2000)

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF CENTRE

COMMONWEALTH OF PENNSYLVANIA,

v.

JOHN DOE, Unknown Male DNA Profile,

Docket No: MJ-49101-CR-0000193-2000
OTN: H 206742-4

Magisterial District Number: MDJ-49-1-01
District Justice: Honorable Carmine W. Prestia Jr.
131 South Fraser Street
Suite 5
P.O. Box 238
Telephone: 814-231-1420

Complaint No: NONE

Charging Officer: Affiant

Arresting Agency: Other

Reason For Warrant: Felony

Offense Date: 05/13/1995

Lead Offense: 18 § 3121 §§ 1 RAPE

Issued For: Jon Doe Unknown Male DNA Profile

WARRANT ID: DIS706618000

Warrant Control No: 49101-AW-0000050-2017

TO THE AGENCY: State College Police Department

In the name of the Commonwealth of Pennsylvania, you are commanded to take the defendant, Jon Doe Unknown Male DNA Profile, into custody. When the defendant is taken into custody, bring the defendant before me at the Court address shown above to answer the complaint charging the defendant with the offense(s) set forth above and further to be dealt with according to law.

Witness the hand and official seal of the issuing authority on this 20th day of June, 2017.

/s/ Carmine W. Prestia Jr.
Magisterial District Judge

June 20, 2017
Date

Warrant marked "UNSERVED: due to age, but NOT recalled on: 11-27-20

(handwritten appears: 11-27-20 or similar, unclear)

All Charge(s)

18 § 3121 §§ 1 (Lead) —	Rape
18 § 2702 §§ A1 —	Aggravated Assault
18 § 3701 §§ A1 II —	Robbery
18 § 3126 §§ A2 —	Indecent Assault
18 § 2701 §§ A1 —	Simple Assault
18 § 2705 —	Recklessly Endangering Another Person
18 § 3921 §§ A —	Theft By Unlawful Taking Or Disposition
18 § 3925 §§ A —	Receiving Stolen Property