



DEPARTMENT OF DEFENSE
ARMED FORCES INSTITUTE OF PATHOLOGY
WASHINGTON, DC 20306-6000

Armed Forces Medical Examiner
System (40-31a)

AFIP Accession Number 3004951-00
MACDONALD, Jeffrey
AFDIL Case No. 1999C0438
No. 75-26-CR-3
No. 90-104-CIV-3-F

Honorable James C. Fox
United States District Judge
Alton B. Lennon Federal Building
Room 213
2 Princess/Water Streets
Wilmington, NC 28401

MAR 10 2006

REPORT OF LABORATORY EXAMINATION

1. The evidence and references received are located in Appendix 1.

2. **Methods**

DNA was extracted, amplified and analyzed for autosomal Short Tandem Repeats (STRs) and mitochondrial DNA.

3. **Results**

The autosomal STR results and statistical calculations are listed in Appendix 2.

The mitochondrial DNA sequence information and database search results are listed in Appendix 3.

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4. Conclusions: Autosomal STRs and Mitochondrial DNA:

Based upon nuclear and mitochondrial DNA analysis, AFDIL Specimen Nos. 46A (E-211, Q125) and 98A (E-3, Q100.1) are consistent with originating from Colette MacDonald. Based upon nuclear DNA analysis, Kimberley MacDonald (AFDIL Specimen Nos. 196A, and 196G) and Kristen MacDonald (AFDIL Specimen Nos. 197A and 197E) are excluded as being the contributors of AFDIL Specimen Nos. 46A and 98A.

Conclusions: Autosomal STRs:

The following samples yielded autosomal STR profiles consistent with one another:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No., or Reference</u>
46A	Hair Root	E-211, Q125
98A	Hair Root	E-3, Q100.1
195A/195E/195J	Paraffin Blocks	Colette MacDonald Reference

Based upon autosomal STR analysis, the following specimens were not consistent with any other evidentiary samples tested:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>Reference</u>
196A/196G	Paraffin Blocks	Kimberley MacDonald Reference
197A/197E	Paraffin Blocks	Kristen MacDonald Reference
198A	Paraffin Block	Gregory Mitchell Reference
199A	Blood	Jeffrey MacDonald Reference

Based upon autosomal STR analysis, the following specimens yielded insufficient data to render a conclusion:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No., or Reference</u>
05A	Hair Roots	Helena Stoeckley Reference
52A	Hair Root	E-4, Q118
195B	Paraffin Block	Colette MacDonald Reference
196E	Paraffin Block	Kimberley MacDonald Reference
197C	Paraffin Block	Kristen MacDonald Reference

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4. Conclusions: Autosomal STRs Continued:

Based upon autosomal STR analysis, the following specimens yielded no reportable results:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No., or Reference</u>
48A	Hair Root	E-209, Q88
75A	Hair Root	E-303, Q79
104A(1)	Hair Root	E-301, Q78
104A(2)	Hair Root	E-301, Q78
112A(5)	Hair Root	D-229, Q96.5
195N	Paraffin Block	Colette MacDonald Reference

Conclusions: Mitochondrial DNA:

The following samples yielded mitochondrial DNA sequences consistent with one another (Group A):

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No., or Reference</u>
46A	Hair	E-211, Q125
52A	Hair	E-4, Q118
71A(1)	Vial Contents	E-303, Q79
71A(3)	Vial Contents	E-303, Q79
97A(1)	Vial Contents	E-3, Q100
98A	Hair	E-3, Q100.1
101A(1)	Vial Contents	E-205, Q89
101A(2)	Vial Contents	E-205, Q89
104A(2)	Hair	E-301, Q78
112A(4)	Hair	D-229, Q96.4
112A(5)	Hair	D-229, Q96.5
112A(7)	Hair	D-229, Q96.7
112A(9)	Hair	D-229, Q96.9
195A/195B	Paraffin Blocks	Colette MacDonald Reference
196A/196E2	Paraffin Blocks	Kimberley MacDonald Reference
197A/197E	Paraffin Blocks	Kristen MacDonald Reference

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4. Conclusions Mitochondrial DNA Continued:

The following samples yielded mitochondrial DNA sequences consistent with one another (Group B):

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No., or Reference</u>
51A(2)	Hair	E-5, Q119
58A (2)	Hair	E-52NB, Q87
112A(3)	Hair	D-229, Q96.3
199A	Blood	Jeffrey MacDonald Reference

Based upon mitochondrial DNA analysis, the following specimens were not consistent with any other samples tested:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No., or Reference</u>
58A(1)	Hair	E-52NB, Q87
75A	Hair	E-303, Q79
91A	Hair	D-237, Q137
05A	Hair	Helena Stoeckley Reference
198A	Paraffin Block	Gregory Mitchell Reference

Based upon mitochondrial DNA analysis, the following specimens yielded inconclusive sequence information:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>CID No., FBI No.</u>
48A	Hair	E-209, Q88
71A(2)	Vial Contents	E-303, Q79
93A	Hair	E-124, Q93
104A(1)	Hair	E-301, Q78
112A(1)	Hair	D-229, Q96.1
112A(2)	Hair	D-229, Q96.2
112B(2)	Hair	D-229, Q96
112A(6)	Hair	D-229, Q96.6
113A	Hair	D-229, Q96

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4. Conclusions Mitochondrial DNA Continued:

Based upon mitochondrial DNA analysis, the following specimen yielded no mitochondrial DNA sequence information:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>	<u>Exhibit No.</u>
112A(8)	Hair	D-229, Q96.8



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Appendix I:

The following specimens were received May 17, 1999 from the Federal Bureau of Investigation, Washington, DC:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
01A	Slide, "Q128...E-5 fibers..."
02A	Vial, "#13..."
03	Bag of Mounted Hairs, "70A-CE-3668-1B4"
04A	Container of Hairs from Kristen MacDonald, "Government Exhibit 293..."
05A	Bag of Hairs, "...Head hair of Helena Stoeckley..."
06A	Bag of Hairs, "Q25..."
07A	Bag of Hairs, "...Mr. McDonald...Q26..."
08A	Bag of Hairs, "...Q27..."
09A	Bag of Hairs, "...Q28..."
10A	Bag of Hairs and Fibers, "...Q29..."
11A	Bag of Hairs or Fibers, "...Q31..."
12A	Bag of Hairs, "...Q32..."
13A	Bag of Hairs and Fibers, "...Q33..."
14A	Bag of Hairs, "...Q30..."
15A	Bag of Hair, "...Q34..."
16A	Bag of Hairs, "...Q35..."
17A	Bag of Hairs, "...Q36..."
18A	Bag of Hairs, "...Q37..."
19A	Bag of Hairs and Fibers, "...Q38..."
20A	Bag of Hairs, "...Q39..."
21	Slide Mailers with Hairs, "...K27..."
22	Slide Mailer with Hairs "...K26...Pamela Kalin Head Hair..."
23A	Envelope with Comb, "Violet M. Kalin..."
24	Slide Mailers with Hairs, "...K25..."
25	Slides with Hairs, "...K24..."
26A	Envelope with Comb, "Head hairs Mrs. Kassab 28 Feb 71..."
27A	Bag of Hairs, "...Miss Vicki Kalin..."
28A	Vial, "Q22 E-7 Hair..."
29A	Vial, Q23 "Hair samples ...clothing in closet in north bedroom E9..."
30A	Vial, Q24, "Hair samples...dress...north bedroom closet..."
31	Bag of Mounted Hairs, "...K23..."
32A	Vial, Q18, "Hair samples...pillows..."
33A	Vial, Q19, "Hair samples...dress..."
34A	Vial, Q20, "Hair samples...blue coat..."
35A	Vial, Q21, "Hair samples...yellow coat..."

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Appendix 1 Continued:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
36A	Slide, "E-313 C-FP-82-70..."
37A	Slide, "Pubic Hair..."
38A	Slide Mailer, "E321 black no root Q53..."
39A	Slide, "E321 black and grey root..."
40A	Test tube, "F-2 known blood from J.R...."
41A	Test tube, "D-239..."
42A	Slide, "#6 fiber"
43A	Vial, "#6..."
44A	Vial, "Q125...Debris...MBR..."
45A	Slide with Fibers, "...Q125..."
46A	Slide with Hair, "...Hair...Q125..."
47A	Vial, "Fibers/hairs..."
48A	Slide with Hair, "...Q88..."
49A	Slide with Hair, "...Q88..."
50A	Slide Mailer "...Q88..."
51A	Slide with Hairs, "Q119..."
52A	Slide with Hair, "Q118..."
53A	Slide with Fibers, "Q117..."
54A	Vial, "...Q118.1..."
55A	Slide with Hair, "...Q87..."
56A	Slide with Hair, "from vial...Q87..."
57A	Slide Mailer, "...Q87..."
58A	Slide with Hair, "...Q87..."
59	Container with Fibers, "...Q87..."
60A	Vial, "Q87...P-C-FP..."
61A	Vial, "#9...Q139.1..."
62A	Slide with Fibers, "...Q139..."
63A	Slide Q138, "...#8 fiber hair..."
64A	Vial, "...Q138.1..."
65A	Vial, "...Q135.1..."
66A	Slide, "...fibers...Q135"
67A	Vial, "...Q134.1..."
68A	Slide Q134, "...fibers..."
69A	Container with Fibers, "...Q79..."
70A	Container with Wood Chips, "...Q79..."
71A	Vial, "...Q79..."
72A	Container with Paper and a Wood Chip, "...Q79..."

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<u>AFDIL</u> <u>Specimen No.</u>	<u>Specimen</u>
73A	Slide with Fibers, "...Q79..."
74A	Slide with Fibers, "...Q79..."
75A	Slide with Hair, "...Q79..."
76A	Slide with Hairs or Fibers, "...Q79..."
77A	Slide with Fibers, "...Q81..."
78A	Slide with Fibers, "...Q80..."
79A	Slide with Fiber, "...Q80..."
80A	Slide with Fiber, "...Q80..."
81A	Slide with Fiber, "A...Q80..."
82A	Slide with Fiber, "B...Q80..."
83A	Slide with Fiber, "...Q82..."
84A	Slide with Hair, "...Q82..."
85A	Slide with Hairs and/or Fibers, "...Q82..."
86A	Slide with Fiber, "...Q83..."
87A	Slide with Hairs and/or Fibers, "...Q92..."
88A	Slide with Hairs or Fibers, "...Q124..."
89A	Slide with Hair, "Hair...Q105..."
90A	Slide with Hair or Fibers, "Fibers...Q105..."
91A	Slide, "...Q137..."
92A	Vial, "...Q137.1...#7"
93A	Slide with Hair, "...Q93..."
94A	Slide with Hairs and/or Fibers, "...Q93..."
95A	Vial, "Q93...Hairs, Fibers #124..."
96A	Slide with Hairs or Fibers, "...Q100..."
97A	Vial Q100, unlabelled
98A	Slide with Hair, "...Q100.1"
99A	Slide with Hairs and/or Fibers, "...Q89..."
100A	Slide with Hairs and/or Fibers, "...Q89..."
101A	Vial, "...hairs, fibers removed from club..."
102A	Slide Mailer, unlabelled
103A	Container with Fibers, "...Q89..."
104A	Slide with Hairs, "...Q78..."
105A	Slide with Fibers, "...Q78..."
106A	Slide with Hairs and/or Fibers, "...Q78..."
107A	Container, "...Q78..."
108A	Container, "...wood chips...Q78..."
109A	Vial with White Fiber and Piece of Paper "15...Q78..."
110A	Vial, "Q96...hairs, fibers, etc..."
111A	Container, "...Q96..."

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<u>AFDIL Specimen No.</u>	<u>Specimen</u>
112A	Slide with Hair, "19 ½ ...Q96..."
113A	Slide with Hair, "...Q96..."
114A	Slide with Fibers, "...Q96..."
115A	Slide with Hairs and/or Fibers, "...Q96..."
116A	Vial with stained Fabric, "...area #3..."
117A	Slide with Hair or Fiber, "E-314-70"
118A	Slide with Hair or Fiber, "E-315-70"
119A	Slide with Hair or Fiber, "E-316-70"
120A	Slide with Hairs or Fibers, "EXE-320..."
121A	Slide with Hair or Fiber, "E-317-70"
122A	Slide with Hair or Fiber, "E-318-70"
123A	Slide with Hair or Fiber, "E-319-70"
124A	Slide with Hairs, "L1913 K3..."
125A	Slide with Hairs, "PC-L1913...8"
126A	Slide with Hairs, "PC-L1913...7 ½"
127A	Slide with Hairs, "...L1913 K3..."
128A	Slide with Hairs, "...L1913 K3..."
129A	Bag with Hairs, "K-3...Kristen MacDonald..."
130A	Container, "...PC-L1913...K3..."
131A	Bag with Hairs, "K-2...Kimberly MacDonald..."
132A	Container, "PC-L1913...K2..."
133A	Slide with Hairs, "...10 ¼"...K2..."
134A	Slide with Hairs, "...13 ¼" K2..."
135A	Slide with Hairs, "...K2..."
136A	Slide with Hairs "...13 ¼" K2..."
137A	Slide with Hairs, "...14 ¾"...K2..."
138A	Box, "...K15...Rt upper arm outside..."
139A	Film Canister, "K18, PMS...Left Forearm Top #17..."
140A	Box, "...K7..."
141A	Container, "K14...Rt Back of head..."
142A	Container, "K20...chest..."
143A	Container, "K12...back L side of head..."
144A	Container, "K13...8 back center of head..."
145A	Container, "K21 14, Navel..."
146A	Container, "K19...12 Rt chest..."
147A	Container, "...K11...6 over rt ear..."
148A	Container, "...K10...#5 center of head"
149A	Container, "...K22...15 pubic..."
150A	Box, "...K8...Rt Temple..."

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Appendix 1 Continued:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
151A	Box, "K9...#4 above L. Ear"
152A	Box, "...K6...Left Temple area"
153A	Film Canister, "RT Forearm..."
154A	Box, "...K17...11 Left Upper arm outside..."
155A	Slide with Hair, "...Q77..."
156A	Bag of Hair, "...Colette MacDonald...K1..."
157A	Container, "...K1..."
158A	Slide with Hair, "...17...K1..."
159A	Slide with Hair, "...K1..."
160A	Slide with Hair, "1...K1..."
161A	Slide with Hair, "2...K1..."
162A	Slide with Hair, "4...K1..."
163A	Slide with Hair, "3...K1..."
164A	Slide with Hair, "5...K1..."
165A	Slide with Hair, "... K1..."
166A	Slide with Hair E-324, Q42, "A 9901110182J..."
167A	Slide with Hair E-324, Q41, "A...99011101825..."
168A	Slide with Hair E-324, Q40, "A...9901110182J..."
169A	Slide with Hair, "E-308 E-309..."
170A	Slide with Hairs, unlabelled
171A	Slide with Hair, unlabelled
172A	Slide with Hair, unlabelled
173A	Slide with Hair, unlabelled
174A	Slide with Hair, "305"
175A	Slide with Hair, unlabelled
176A	Slide with Hair, "...left leg"
177A	Slide with Hair, unlabelled
178A	Slide with Hair, "...left Arm MacD"
179A	Slide with Hair, "Head..."
180A	Vial, "Hair sample...Right Leg of CPT MacDonald"
181A	Vial, "Hair sample...head of CPT Jeffrey MacDonald..."
182A	Vial, "Hair sample...left arm pit of CPT Jeffrey MacDonald..."
183A	Vial, "hair sample...left leg..."
184A	Vial, "hair sample...left arm of CPT MacDonald..."
185A	Vial, "hair sample...pubic area of cpt MacDonald"
186A	Vial, "hair sample...right arm of Capt. MacDonald"
187A	Vial, "Hair sample...chest of Cpt. MacDonald..."
188A	Vial, "Hair sample...right arm pit of Cpt. MacDonald..."

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Appendix 1 Continued:

The following specimens were received December 29, 1999 from the Forensic Analytical Specialty, Hayward, CA:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
189A	Bag with Fabric, "...urine sample..."
190A	Bag with Fabric, "...D127-3..."
191A	Bag with Fabric, "...D127-5..."
192A	Bag with Fabric, "...D56-9..."
193A	Bag with Fabric, "...D56-7..."
194A	Bag with Fabric, "...D60-11..."

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Appendix 1 Continued:

The following specimens were received August 31, 2004 from the Armed Forces Institute of Pathology, Washington DC:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
195A	Paraffin block with tissue, "A-29-70"
195B	Paraffin block with tissue, "A-29-70"
195C	Paraffin block with tissue, "A-29-70"
195D	Paraffin block with tissue, "A-29-70"
195E	Paraffin block with tissue, "A-29-70"
195F	Paraffin block with tissue, "A-29-70"
195G	Paraffin block with tissue, "A-29-70"
195H	Paraffin block with tissue, "A-29-70"
195I	Paraffin block with tissue, "A-29-70"
195J	Paraffin block with tissue, "A-29-70"
195K	Paraffin block with tissue, "A-29-70"
195L	Paraffin block with tissue, "A-29-70"
195M	Paraffin block with tissue, "A-29-70"
195N	Paraffin block with tissue, "A-29-70"
195O	Paraffin block with tissue, "A-29-70"
195P	Paraffin block with tissue, "A-29-70"
195Q	Paraffin block with tissue, "A-29-70"
195R	Paraffin block with tissue, "A-29-70"
195S	Paraffin block with tissue, "A-29-70"
195T	Paraffin block with tissue, "A-29-70"
196A	Paraffin block with tissue, "A-30-70"
196B	Paraffin block with tissue, "A-30-70"
196C	Paraffin block with tissue, "A-30-70"
196D	Paraffin block with tissue, "A-30-70"
196E	Paraffin block with tissue, "A-30-70"
196F	Paraffin block with tissue, "A-30-70"
196G	Paraffin block with tissue, "A-30-70"
196H	Paraffin block with tissue, "A-30-70"
196I	Paraffin block with tissue, "A-30-70"
196J	Paraffin block with tissue, "A-30-70"
197A	Paraffin block with tissue, "A-31-70"
197B	Paraffin block with tissue, "A-31-70"
197C	Paraffin block with tissue, "A-31-70"
197D	Paraffin block with tissue, "A-31-70"
197E	Paraffin block with tissue, "A-31-70"

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Appendix 1 Continued:

The following specimen was received January 5, 2005 from the UVA Health System, Charlottesville, VA:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
198A	Paraffin block with tissue, "82-5026"

The following specimen was received February 24, 2005 from the Federal Bureau of Investigation, Quantico, VA:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
112B(2)	Microtube with hair, "99C-0438 112B(2)..."

The following specimens were received November 17, 2005 from the Federal Correctional Institution, Cumberland, MD:

<u>AFDIL Specimen No.</u>	<u>Specimen</u>
199A	Purple top tube with blood, "Jeffrey MacDonald..."
199B	Purple top tube with blood, "Jeffrey MacDonald..."

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Appendix 1 Continued:

After examination at AFDIL, the following samples were subdivided and labeled as follows::

<u>AFDIL</u> <u>Specimen No.</u>	<u>Specimen</u>
51A(1)	Hair
51A(2)	Hair
51A(3)	Hair
58A(1)	Hair
58A(2)	Hair
65A(1)	Vial Contents
65A(2)	Vial Contents
71A(1)	Vial Contents
71A(2)	Vial Contents
71A(3)	Vial Contents
97A(1)	Vial Contents
101A(1)	Vial Contents
101A(2)	Vial Contents
101A(3)	Vial Contents
101A(4)	Vial Contents
104A(1)	Hair
104A(2)	Hair
112A(1)	Hair
112A(2)	Hair
112A(3)	Hair
112A(4)	Hair
112A(5)	Hair
112A(6)	Hair
112A(7)	Hair
112A(8)	Hair
112A(9)	Hair

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Appendix 1 Continued:

Evidence Tested at AFDIL:

<u>AFDIL Specimen No.</u>	<u>CID No.</u>	<u>FBI No.</u>	<u>Government Exhibit No.</u>	<u>Specimen</u>	<u>DNA Systems Tested</u>	<u>Disposition of Evidence</u>
46A	E-211	Q125	GX-105	Hair with root	mtDNA/STRs	C
48A	E-209	Q88		Hair with root	mtDNA/STRs	R
51A(2)	E-5	Q119	GX-281	Hair	mtDNA	C
52A	E-4	Q118	GX-280	Hair with root	mtDNA/STRs	R
58A(1)	E-52NB	Q87	GX-362	Hair	mtDNA	C
58A(2)	E-52NB	Q87	GX-362	Hair	mtDNA	R
71A(1)	E-303	Q79	GX-327	Vial Contents	mtDNA	C
71A(2)	E-303	Q79	GX-327	Vial Contents	mtDNA	C
71A(3)	E-303	Q79	GX-327	Vial Contents	mtDNA	C
75A	E-303	Q79	GX-327	Hair with root	mtDNA/STRs	R
91A	D-237	Q137	GX-285	Hair	mtDNA	C
93A	E-124	Q93		Hair	mtDNA	C
97A(1)	E-3	Q100		Vial Contents	mtDNA	C
98A	E-3	Q100.1		Hair with root	mtDNA/STRs	R
101A(1)	E-205	Q89	GX-307	Vial Contents	mtDNA	C
101A(2)	E-205	Q89	GX-307	Vial Contents	mtDNA	C
104A(1)	E-301	Q78	GX-325	Hair with root	mtDNA/STRs	C
104A(2)	E-301	Q78	GX-325	Hair with root	mtDNA/STRs	R
112A(1)	D-229	Q96.1	GX-107	Hair	mtDNA	C
112A(2)	D-229	Q96.2	GX-107	Hair	mtDNA	C
112A(3)	D-229	Q96.3	GX-107	Hair	mtDNA	C
112A(4)	D-229	Q96.4	GX-107	Hair	mtDNA	R
112A(5)	D-229	Q96.5	GX-107	Hair with root	mtDNA/STRs	R
112A(6)	D-229	Q96.6	GX-107	Hair	mtDNA	C
112A(7)	D-229	Q96.7	GX-107	Hair	mtDNA	R
112A(8)	D-229	Q96.8	GX-107	Hair	mtDNA	R
112A(9)	D-229	Q96.9	GX-107	Hair	mtDNA	C
112B(2)	D-229	Q96	GX-107	Hair	mtDNA	C
113A	D-229	Q96	GX-107	Hair	mtDNA	C

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Appendix 1 Continued:

References Tested at AFDIL:

<u>AFDIL Specimen No.</u>	<u>Name Association</u>	<u>Specimen</u>	<u>DNA Systems Tested</u>	<u>Disposition of Evidence</u>
05A	Helena Stoeckley	Hairs with roots	mtDNA/STRs	R
195A	Colette MacDonald	Paraffin block	mtDNA/STRs	R
195B	Colette MacDonald	Paraffin block	mtDNA/STRs	C
195E	Colette MacDonald	Paraffin block	STRs	R
195J	Colette MacDonald	Paraffin block	STRs	R
195N	Colette MacDonald	Paraffin block	STRs	R
196A	Kimberley MacDonald	Paraffin block	mtDNA/STRs	C
196E	Kimberley MacDonald	Paraffin block	mtDNA/STRs	C
196G	Kimberley MacDonald	Paraffin block	STRs	R
197A	Kristen MacDonald	Paraffin block	mtDNA/STRs	R
197C	Kristen MacDonald	Paraffin block	STRs	C
197E	Kristen MacDonald	Paraffin block	mtDNA/STRs	R
198A	Gregory Mitchell	Paraffin block	mtDNA/STRs	R
199A	Jeffrey MacDonald	Blood	mtDNA/STRs	R

Pursuant to the court order dated March 26, 1999, all specimens will be returned to the submitting agencies, unless the specimen was consumed during testing.

Disposition of evidence codes

S: Stored at AFDIL

C: Evidence consumed in testing process

R: Evidence to be returned to submitting agency

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Appendix 2: STR Results

LOCUS	46A Hair Root E-211, Q125	98A Hair Root E-3, Q100.1	195A Paraffin Block Colette MacDonald	195E Paraffin Block Colette MacDonald	195J Paraffin Block Colette MacDonald
D3S1358	15,18	15,18	15,18	15,18	15,18
TH01	9.3,---	9.3,---	INS	INS	NR
D21S11	31.2,32	31.2,32	INS	INS	NR
D18S51	13,19	INS	NR	NR	NR
PENTA E	INS	INS	NR	NR	NR
D5S818	9,12	9,12	9,12	9,12	9,12
D13S317	10,12	10,12	10,12	10,12	NR
D7S820	9,10	9,10	NR	INS	NR
D16S539	11,12	INS	NR	INS	NR
CSF1PO	11,12	INS	NR	NR	NR
PENTA D	INS	INS	NR	NR	NR
Amelogenin	X,---	X,---	X,---	X,---	X,---
vWA	16,---	16,---	16,---	16,---	16,---
D8S1179	13,---	13,---	INS	INS	NR
TPOX	10,11	10,11	NR	NR	NR
FGA	22,24	22,24	NR	NR	NR
Probability in the African American Population	1 in 320 quintillion	1 in 45.8 quadrillion	1 in 1.73 million	1 in 1.73 million	1 in 30.0 thousand
Probability in the Asian Population	1 in 736 quadrillion	1 in 128 trillion	1 in 255 thousand	1 in 255 thousand	1 in 14.7 thousand
Probability in the Caucasian Population	1 in 292 quadrillion	1 in 114 trillion	1 in 288 thousand	1 in 288 thousand	1 in 8.70 thousand
Probability in the Hispanic Population	1 in 2.95 quintillion	1 in 485 trillion	1 in 176 thousand	1 in 176 thousand	1 in 4.29 thousand

INS = Insufficient data to render a conclusion

NR = No results obtained

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Appendix 2 Continued:

STR Results:

LOCUS	196A Paraffin Block Kimberley MacDonald	196G Paraffin Block Kimberley MacDonald
D3S1358	NR	INS
TH01	NR	NR
D21S11	NR	NR
D18S51	NR	NR
PENTA E	NR	NR
D5S818	NR	11,12
D13S317	NR	INS
D7S820	NR	NR
D16S539	NR	NR
CSF1PO	NR	NR
PENTA D	NR	NR
Amelogenin	NR	X,---
vWA	14,16	INS
D8S1179	NR	NR
TPOX	NR	NR
FGA	NR	NR

INS = Insufficient data to render a conclusion

NR = No results obtained

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Appendix 2 Continued:

STR Results:

LOCUS	197A Paraffin Block Kristen MacDonald	197C Paraffin Block Kristen MacDonald	197E Paraffin Block Kristen MacDonald
D3S1358	16,18	NR	16,18
TH01	NR	NR	INS
D21S11	NR	NR	NR
D18S51	NR	NR	NR
PENTA E	NR	NR	NR
D5S818	9,11	INS	9,11
D13S317	NR	NR	NR
D7S820	NR	NR	NR
D16S539	NR	NR	NR
CSF1PO	NR	NR	NR
PENTA D	NR	NR	NR
Amelogenin	X,---	INS	X,---
vWA	14,16	INS	14,16
D8S1179	NR	NR	NR
TPOX	NR	NR	NR
FGA	NR	NR	NR

INS = Insufficient data to render a conclusion

NR = No results obtained

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Appendix 2 Continued:

STR Results:

LOCUS	05A Hairs with roots Helena Stoeckley	198A Paraffin Block Gregory Mitchell	199A Blood Jeffrey MacDonald
D3S1358	INS	14,16	14,16
TH01	INS	9,9.3	8,9.3
D21S11	INS	INS	30.2,31
D18S51	NR	NR	12,17
PENTA E	INS	NR	7,---
D5S818	INS	12,13	11,---
D13S317	INS	11,12	9,13
D7S820	NR	8,10	8,9
D16S539	NR	INS	7,12
CSF1PO	NR	NR	12,---
PENTA D	NR	NR	9,---
Amelogenin	X,---	X,Y	X,Y
vWA	NR	16,19	14,---
D8S1179	NR	INS	10,14
TPOX	NR	NR	8,11
FGA	NR	NR	20,24

INS = Insufficient data to render a conclusion

NR = No results obtained

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Appendix 3:

The following samples yielded mtDNA sequences consistent with one another (Group A):

CID No., FBI No.	E-211, Q125	CID No., FBI No.	E-4, Q118
AFDIL Sample No.	46A	AFDIL Sample No.	52A
Specimen:	Hair	Specimen:	Hair
Confirmed Regions:	16024-16391 57-369	Confirmed Regions:	16024-16138; 16210-16390 57-357

16127	N	121	G-A
121	G-A	263	A-G
263	A-G	315.1	C
315.1	C		

CID No., FBI No.	E-303, Q79	CID No., FBI No.	E-303, Q79
AFDIL Sample No.	71A(1)	AFDIL Sample No.	71A(3)
Specimen:	Vial Contents	Specimen:	Vial Contents
Confirmed Regions:	16024-16302 57-369	Confirmed Regions:	16132-16391 57-135;169-369

121	G-A	121	G-A
263	A-G	263	A-G
315.1	C	315.1	C

CID No., FBI No.	E-3, Q100	CID No., FBI No.	E-3, Q100.1
AFDIL Sample No.	97A(1)	AFDIL Sample No.	98A
Specimen:	Vial Contents	Specimen:	Hair
Confirmed Regions:	16024-16391 35-369	Confirmed Regions:	16024-16391 57-369

121	G-A	121	G-A
263	A-G	263	A-G
315.1	C	315.1	C

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Appendix 3 Continued:

The following samples yielded mtDNA sequences consistent with one another (Group A) continued:

CID No., FBI No.	E-205, Q89	CID No., FBI No.	E-205, Q89
AFDIL Sample No.	101A(1)	AFDIL Sample No.	101A(2)
Specimen:	Vial Contents	Specimen:	Vial Contents
Confirmed Regions:	16132-16302 57-273	Confirmed Regions:	16024-16391 35-369
16264	N	121	G-A
121	G-A	263	A-G
263	A-G	315.1	C

CID No., FBI No.	E-301, Q78	CID No., FBI No.	D-229, Q96.4
AFDIL Sample No.	104A(2)	AFDIL Sample No.	112A(4)
Specimen:	Hair	Specimen:	Hair
Confirmed Regions:	16024-16390 57-369	Confirmed Regions:	16210-16302 57-135; 169-273
121	G-A	121	G-A
263	A-G	263	A-G
280	N		
315.1	C		
343	N		
345	N		

CID No., FBI No.	D-229, Q96.5	CID No., FBI No.	D-229, Q96.7
AFDIL Sample No.	112A(5)	AFDIL Sample No.	112A(7)
Specimen:	Hair	Specimen:	Hair
Confirmed Regions:	16024-16302 57-135; 169-273	Confirmed Regions:	57-135 169-273
121	G-A	121	G-A
171	N	263	A-G
263	A-G		

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Appendix 3 Continued:

The following samples yielded mtDNA sequences consistent with one another (Group A) continued:

CID No., FBI No.	D-229, Q96.9	Reference	Colette MacDonald
AFDIL Sample No.	112A(9)	AFDIL Sample No.	195A/195B
Specimen:	Hair	Specimen:	Paraffin Block
Confirmed Regions:	16132-16302	Confirmed Regions:	16024-16391 57-369

No Polymorphisms	121	G-A
	263	A-G
	315.1	C

Reference	Kimberley MacDonald	Reference	Kristen MacDonald
AFDIL Sample No.	196A/196E2	AFDIL Sample No.	197A/197E
Specimen:	Paraffin Block	Specimen:	Paraffin Block
Confirmed Regions:	16024-16391 57-369	Confirmed Regions:	16024-16391 57-369

121	G-A	121	G-A
263	A-G	263	A-G
315.1	C	315.1	C

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Appendix 3 Continued:

Mitochondrial DNA Database Search results for Group A:

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b														Total n=4839
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/ TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19	PAK n=8	
E-211, Q125 Hair	46A	681	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-4, Q118 Hair	52A	598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-303, Q79 Vial Contents	71A(1)	593	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-303, Q79 Vial Contents	71A(3)	541	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-3, Q100 Vial Contents	97A(1)	704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-3, Q100.1 Hair	98A	682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-205, Q89 Vial Contents	101A(1)	387	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-205, Q89 Vial Contents	101A(2)	704	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

Mitochondrial DNA Database Search results for Group A continued:

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b														Total n=4839	
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19	PAK n=8		
E-301, Q78 Hair	104A(2)	678	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D-229, Q96.4 Hair	112A(4)	277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D-229, Q96.5 Hair	112A(5)	462	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D-229, Q96.7 Hair	112A(7)	184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D-229, Q96.9 Hair	112A(9)	171	21	0	7	551	25	1	1	2	5	0	1	0	1	0	0	615
Colette MacDonald Paraffin Blocks	195A/195B	682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kimberley MacDonald Paraffin Blocks	196A/196E2	682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kristen MacDonald Paraffin Blocks	197A/197E	682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

The following samples yielded mtDNA sequences consistent with one another (Group B):

CID No., FBI No.	E-5, Q119	CID No., FBI No.	E-52NB, Q87
AFDIL Sample No.	51A(2)	AFDIL Sample No.	58A(2)
Specimen:	Hair	Specimen:	Hair
Confirmed Regions:	16024-16365 133-340	Confirmed Regions:	16024-16390 57-273

16193	C-T
16219	A-G
16362	T-C
152	T-C
204	T-C
239	T-C
263	A-G
309.1	C
315.1	C
326	N
334	N

16193	C-T
16219	A-G
16362	T-C
152	T-C
204	T-C
239	T-C
263	A-G

CID No., FBI No.	D-229, Q96.3	Reference	Jeffrey MacDonald
AFDIL Sample No.	112A(3)	AFDIL Sample No.	199A
Specimen:	Hair	Specimen:	Blood
Confirmed Regions:	16132-16390 57-273	Confirmed Regions:	16024-16569 1-576

16193	C-T
16219	A-G
16362	T-C
152	T-C
204	T-C
239	T-C
263	A-G

16193	C-T
16219	A-G
16362	T-C
16482	A-G
152	T-C
204	T-C
239	T-C
263	A-G
309.1	C
315.1	C

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Appendix 3 Continued:

Mitochondrial DNA Database Search results for Group B:

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b														Total n=4839
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/ TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19	PAK n=8	
E-5, Q119 Hair	51A(2)	551	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E-52NB, Q87 Hair	58A(2)	584	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D229, Q96.3 Hair	112A(3)	476	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jeffrey MacDonald Blood	199A	1124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

CID No., FBI No. **E-52NB, Q87**
 AFDIL Sample No. 58A(1)
 Specimen: Hair
 Confirmed Regions: 16024-16390
 57-369

16124 T-C
 16223 C-T
 73 A-G
 189 A-G
 195 T-C
 309.1 C
 315.1 C

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b														Total n=4839
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19	PAK n=8	
E-52NB, Q87 Hair	58A(1)	682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

CID No., FBI No. **E-303, Q79**
 AFDIL Sample No. 75A
 Specimen: Hair
 Confirmed Regions: 16024-16390
 57-369

16189 T-C
 16192 C-T
 16270 C-T
 73 A-G
 150 C-T
 263 A-G
 315.1 C

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b													Total n=4839		
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19		PAK n=8	
E-303, Q79 Hair	75A	681	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	5

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

CID No., FBI No. **D-237, Q137**
 AFDIL Sample No. 91A
 Specimen: Hair
 Confirmed Regions: 16024-16391
 133-369

16129 G-A
 16224 T-C
 16311 T-C
 16320 C-T
 146 T-C
 152 T-C
 263 A-G
 315.1 C

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b														Total n=4839
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19	PAK n=8	
D-237, Q137 Hair	91A	606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

Reference **Helena Stoeckley**
 AFDIL Sample No. 05A
 Specimen: Hair
 Confirmed Regions: 16024-16391
 57-347

16080 A-G
 16183 A-C
 16189 T-C
 16356 T-C
 263 A-G
 282 T-C
 309.1 C
 309.2 C
 315.1 C

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b														Total n=4839
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19	PAK n=8	
Helena Stoeckley Hair	05A	662	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

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Appendix 3 Continued:

Reference **Gregory Mitchell**
 AFDIL Sample No. 198A
 Specimen: Paraffin Block
 Confirmed Regions: 16024-16391
 35-369

16093 N
 16167 N
 16209 T-C
 16223 C-T
 16311 T-C
 73 A-G
 189 A-G
 200 A-G
 263 A-G
 315.1 C

Specimen	AFDIL Spec. No.	No. Bases ^a	Number of Observations ^b													Total n=4839	
			AFAM n=1148	AFSL n=109	AFEG n=75	CAUC n=1655	HIS n=686	JPN n=163	KOR n=182	THAI n=52	CHN/TAI n=329	NAV n=146	APA n=180	GUAM n=87	IND n=19		PAK n=8
Gregory Mitchell Paraffin Block	198A	702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (Standard Hypervariable Regions one and two consist of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

Refer to Interpretation Key for detailed information about the table.

AFMES-DNA

SUBJECT: Consultation Report

AFIP Accession Number 3004951-00

AFDIL Case No. 1999C0438

No. 75-26-CR-3

No. 90-104-CIV-3-F

MAR 10 2006

INTERPRETATION KEY

DNA is extracted from selected specimens. Multiple copies of a specific region of mitochondrial DNA (mtDNA) are generated using the polymerase chain reaction (PCR). This region is known to have variability within the human population. The predominant base composition (or sequence) is determined using automated DNA sequencing chemistry and gel electrophoresis. The base composition consists of adenine (A), cytosine (C), guanine (G), and thymine (T). Sequence information is analyzed to determine variability when compared to a published standard sequence (Anderson, et al. 1981. *Nature* 290:457-465). The sequence of the submitted evidentiary material is compared to the sequence obtained from the reference(s).

1. The confirmed region refers to the base positions within the mtDNA genome that are reported.
2. The following notations may apply:
 - a. The appropriate letter (e.g. T-C) designates a transition or transversion polymorphism.
 - b. A "D" designates a deletion.
 - c. A number following a decimal point designates an insertion. The specific base insertion is designated by the appropriate letter (e.g. 315.1 C).
 - d. A "N" designates a position that could not be confirmed.
3. The table provides information regarding the number of confirmed bases generated and the number of times each sequence has been observed in the following databases (sequence ranges vary): African American (AFAM), African-Sierra Leone (AFSL), Egyptian (AFEG), Caucasian (CAUC), Hispanic (HIS), Japanese (JPN), Korean (KOR), Thai (THAI), Chinese/Taiwanese (CHN/TAI), Navajo (NAV), Apache (APA), Guam (GUAM), Indian (IND), and Pakistani (PAK).

^a number of bases of sequence information obtained from the PCR products of DNA extracted from the specimen (total sequence consists of approximately 610 bases)

^b number of occurrences of specimen sequence information when compared to a database of unrelated individuals in a specific population

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