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STATE OF OHIO
OFFICE OF THE ATTORNEY GENERAL
JIM PETRO, ATTORNEY GENERAL

Memorandum

To: Jim Petro, State of Ohio Attorney General
James V. Canepa, Chief Deputy Attorney General

From: Elizabeth Benzinger, Ph.D.

Date: October 28, 2005

Subject: Clarence Elkins DNA Reports

I have reviewed reports from Cellmark dated 9-30-04, 9-16-05, 10-10-05, 10-11-05 and from Laboratory Corporation of America dated 5-4-99 as well as spoken to Cellmark Forensic Analyst Cassie Johnson on October 26, 2005. I have reviewed the data underlying the Cellmark Y-STR conclusions regarding Brooke Sutton's pink panties, Judith Johnson's vaginal swab and Judith Johnson's right hand thumb fingernail cutting and concur with the interpretations that Earl Mann and Noah Sutton cannot be excluded as contributors to a mixed Y-STR profile on the pink panties; Noah Sutton cannot be excluded as the contributor of the Y-STR profile from Judith Johnson's right thumb fingernail sample; that Earl Mann cannot be excluded as the contributor of the Y-STR profile from Judith Johnson's vaginal swab and that Clarence Elkins is not the source of the DNA from any of these items.

Summary

Based on DNA testing reported by Cellmark Diagnostics, Clarence Elkins is not the source of the DNA from the pink panties from Brooke Sutton, the vaginal swab from Judith Johnson or the right hand thumb fingernail clipping from Judith Johnson.

Based on mitochondrial DNA testing performed by Laboratory Corporation of America (Labcorp), Clarence Elkins (as well as Judith Johnson and Brooke Sutton) is not the source of a hair recovered from possible fecal matter on the nightgown of Brooke Sutton.

Based on the data obtained thus far, there are persuasive associations between Earl Mann and DNA from the Sutton pink panties and Johnson vaginal swab. To further clarify this association, BCI has requested Cellmark to perform additional testing to verify Earl Mann's sample.

The potential of secondary transfer of DNA from Earl Mann to a child to the evidence has been considered and deemed unlikely. With respect to the vaginal sample from Judith Johnson, a third transfer step would presumably be needed.



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EXHIBIT

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Background--DNA Analysis Methods

Short Tandem Repeat (STR) Analysis is the standard and most common DNA analysis method in use today. This method works by measuring individual-specific length differences on various regions of the somatic chromosomes. Somatic chromosomes are those chromosomes that are present in all individuals whether male or female. Each person has two copies of each somatic chromosome, one having come from the mother and the other having come from the father and will therefore give two different types in each DNA test. As such, individuals can be differentiated from each other as well as from parents and siblings. STR analysis is the method used by BCI.

The statistical estimates of profile frequency obtained for full STR profiles are often in excess of one in several quadrillion. The frequency estimate is a measure of how rare the particular profile is. For example, if a frequency of one in four quadrillion is calculated, the DNA analyst might say, "The testing I have done is sufficient to have eliminated all but one in four quadrillion individuals who are not the source of the DNA."

The STR test is a complex of several individual DNA tests. If all of the tests give valid data, then the test is said to have produced a full profile. Each individual test adds power to the final frequency estimate. Full profiles maximize the statistical power of the test. If some of the tests fail to provide useful data, then a partial profile is said to be obtained and the corresponding frequency estimate will be less powerful. When mixtures of DNA are present in a sample, it is sometimes possible to identify major and minor contributors based on the relative amounts of DNA from each person present.

Y-STR analysis is a set of STR tests, so designated because it detects individual-specific length differences on the Y chromosome. X and Y are the two sex-determining chromosomes. Females have two copies of X whereas males have one copy of X and one copy of Y. Only males can be typed using Y-STRs. Since each male has only one Y chromosome, only one DNA type is obtained from each test. Y chromosomes are passed from father to son and hence an entire male lineage (grandfather, father, uncles, son, brothers) will all have the same Y-STR type. Y-STR analysis is particularly suited for testing evidence consisting of mixtures of male and female DNA. Since females do not have any Y chromosomes, Y-STR analysis can detect very small quantities of male DNA even when mixed with much larger quantities of female DNA.

Since differences on only one chromosome are being examined, the amount of variation detectable by Y-STR tests is not as great as that of regular STR tests and so the statistical estimates of profile frequency are less individualizing, not exceeding 1 in 4000 individuals. Partial profiles will produce even less powerful estimates.

The individualizing (or discrimination) power of a method should not be confused with the reliability of the method: an exclusion using any method is 100%; a matching profile in any method is a matching profile. Frequency estimates address only the relative possibility of a coincidental match.

Mitochondrial DNA (mtDNA) Analysis relies upon DNA found in subcellular compartments called mitochondria. This DNA is different from the nuclear DNA used in STR testing and it is more concentrated. The major application of mtDNA analysis is hair shafts and extremely small or degraded samples. mtDNA is always inherited from the mother, meaning it is passed down the maternal lineage of the family. The same mtDNA type will be present in the mother, all of her children and all of the children of her daughters but not of her sons.

Again, the amount of variation detectable is limited and so statistical estimates are small compared to standard STR analysis.

Background—The likelihood of secondary transfer of DNA after casual contact is poor. Primary transfer of DNA occurs when a person touches another person, a gun, windowsill, knife handle or other object and leaves sufficient DNA to be detected. Primary transfer of DNA is well recognized and frequently documented in forensic DNA casework.

Secondary transfer of DNA would be the transfer of DNA from the first person to a second person and then onto a third person or object. While certainly possible in the case of large quantities of bodily fluids, detectable secondary transfer after casual contact has not been found to occur with any frequency. If secondary contact were to occur, the resulting DNA profile would be a mixture of the first and second person rather than a single profile from the first person. A review of peer-reviewed literature concerning the forensic primary and secondary transfer in a forensic context was published in the Journal of Forensic Science in 2002 (J. Forensic Sci. 47:442-450).

Background-Evidence

The following evidence is the subject of Y-STR and mtDNA analysis:

A swabbing from the outside sides of Brooke Sutton's pink panties. Per a conversation with Cassie Johnson of Cellmark on October 26, 2005, the outer sides of the underwear were swabbed, where one might expect to touch the garment if pulling it off.

A vaginal swab from Judith Johnson

Right hand thumbnail clipping from Judith Johnson.

A hair recovered from possible feces on the nightgown of Brooke Sutton

The results of the testing are summarized in the table below:

| Item | Test | Brooke Sutton | Noah Sutton | Judith Johnson | Clarence Elkins | Cig butt said to be from Earl Mann |
|-----------------------------------|----------------|----------------------|--------------------------|-----------------------|------------------------|-------------------------------------------|
| Pink Panties | Cellmark Y-STR | excluded | included minor: 2 in 580 | excluded | excluded | included major: 0 in 4004 |
| Johnson vaginal swab | Cellmark Y-STR | excluded | excluded | excluded | excluded | included partial profile: 28 in 580 |
| Johnson nail clipping | Cellmark Y-STR | excluded | included 1 in 580 | excluded | excluded | excluded |
| hair from Sutton nightgown | Labcorp mtDNA | excluded | excluded | excluded | excluded | excluded |