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CLERK OF THE DOUGLAS COUNTY DISTRICT COURT
CASE NUMBER: DG-2023-CR-300181
PII COMPLIANT

IN THE DISTRICT COURT OF DOUGLAS COUNTY, KANSAS

STATE OF KANSAS, Plaintiff, vs. TERRENCE EDWARD SHANNON, Jr., Defendant.	))))))))	Case No. 2023CR300181

TERRENCE SHANNON'S MOTION FOR *DAUBERT* HEARING AND TO EXCLUDE EXPERT TESTIMONY

COMES NOW, Terrence Shannon, by and through his attorneys Tricia Bath and Thomas J. Bath, Jr., and moves the Court for an order excluding the testimony and reports of Jennifer Hewitt as the proposed testimony is inadmissible per K.S.A. 60-456(b), *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993), K.S.A. 60-401(b) and Kansas case law. Mr. Shannon requests a hearing on this issue prior to trial.

ANTICIPATED FINDINGS OF FACTS

1. The day after the alleged incident a SANE examination was done. This examination included the collection of swabs from numerous locations on the complaining witness' (hereinafter "M.N.") body and clothing.
2. Police later collected a mouth swab from Terrence for DNA comparison.
3. Per a KBI report, examination of the vaginal and external genital swabs revealed no male DNA.
4. As to swabs from M.N.'s underwear, the KBI report states: "Due to an

insufficient amount of male DNA, this sample was not selected for further testing at this time."

5. The KBI did not (or was unable to) scientifically *confirm* the presence of "male DNA."
6. Further, the KBI report did not indicate whether the "male DNA" is the same on the two underwear swabs or whether it could be from more than one male.
7. Even assuming what was found was, in fact, "male DNA" there is no evidence that it is a match to Terrence Shannon.
8. The discovery produced by the State contained only the KBI report. Defense counsel subpoenaed the bench notes and testing documents from the KBI.
9. Expert review of these testing documents disclose that Quantifiler Trio, was the quantitation kit used by the Kansas Bureau of Investigation laboratory. This kit has a reported dynamic (readable) range down to .005 nanograms / microliter (ng/uL).
10. None of underwear samples extracted and quantified resulted in a value **above** .005 ng / uL of "male DNA."
11. The underwear swabs resulted in values of .004 ng/uL (inside crotch of underwear) and .002 ng / uL (outside crotch of underwear).
12. Any value below .005 ng / uL may not be reproducible.
13. The manufacturer of the Quantifiler Trio states in the user guide that the .005 ng / uL is the lower limit for *reproducible* quantitation results. The manufacturer warns

that results lower than this are highly variable and could be the result of background noise from the instrument or background DNA in the sample.

14. The KBI protocol manual has no protocol for what lowest limit may qualify for amplification.

15. However, other sections of the KBI protocol manual discuss quantitation (and amplification) and demonstrate that the KBI is aware quantitation levels as low as those found here may not accurately reflect the presence of DNA.

16. Without: (1) repeat quantitation to determine if these values are reproducible; or (2) without Y-STR analysis to establish whether male DNA is in fact present, it is not scientifically accurate to report the definitive presence of "male DNA."

ARGUMENT AND AUTHORITIES

Pursuant to *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579 (1993) and K.S.A. 60-456(b) the Court is placed in the role of a "gatekeeper" to determine whether a witness qualifies as an expert and if the testimony satisfies K.S.A. 60-456. *Daubert* requires the court to be the "gatekeeper" to assess the reasoning and methodology underlying a proposed expert's opinion. This includes a determination whether the opinion is scientifically valid and applicable to a particular set of facts. It also requires the Court to "ensure the reliability and relevancy of expert testimony." *Kumho Tire Co. v. Carmichael,* 526 U.S. 137, 152 (1999).

For expert testimony to be admitted, the Court first must determine whether: "(1) the testimony is based on sufficient facts or data; (2) the testimony is the product of reliable principles and methods; and (3) the witness has reliably applied the principles and methods to the facts of the case." Under this framework which Kansas shares with the federal courts, a district court is required to act as an evidentiary gatekeeper by assessing the reliability and relevancy of expert testimony in a particular case under a number of nonexclusive factors, including:

> (1) [W]hether the theory or technique can be (and has been) tested; (2) whether it has been subject to peer review and publication; (3) whether, in respect to a particular technique, there is a high known or potential rate of error and whether there are standards controlling the technique's operation; and (4) whether the theory or technique has general acceptance within a relevant scientific community.

State v. Lyman, 311 Kan. 1, 21, 455 P.3d 393 (2020)

Moreover, the party presenting the expert must show that the expert's findings are based on sound science, which requires some objective, independent validation of the expert's methodology. *Id.* at 22.

The State provided Mr. Shannon with a KBI report indicating that "male DNA" was located on swabs from M.N.'s underwear. The defense anticipates that the State will seek to admit this report to corroborate M.N's claim that that Mr. Shannon digitally penetrated her vagina as she stood near him in the bar (essentially, suggesting that

because M.N. claims Mr. Shannon, a male, touched her vagina, the fact that there is "male DNA" on her underwear lends credibility to her claim). However, other—confirmed--scientific evidence belies any such suggestion by the State.[1]

The claim that "male DNA" was located on the underwear swabs is not scientifically valid and should be excluded. The defense does not suggest that the methods used were not valid and reliable methods. However, it is the interpretation of the data—calling it "male DNA" or even "DNA" (either in a report or in testimony)--that is invalid. Doing so contravenes the instructions for the equipment used by the KBI in that the results they seek to call "DNA" are below the readable range of the kit, may not be reproducible, are highly variable and may be the result of background noise from the instrument or background DNA in the sample. It also contravenes what the KBI has acknowledged as valid science that instructs that quantitation levels as low as those found in the underwear may not accurately reflect the presence of DNA.

As noted above, the KBI report was produced without bench notes or testing documents. Once those were requested and received by the defense and reviewed by the defense expert, it was revealed that the State did not engage in (1) repeat quantitation to determine if these values are reproducible; or (2) Y-STR analysis to establish whether

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[1] Significant to such a suggested conclusion is the fact that other swabs examined by the KBI (from M.N.'s buttocks and inner thigh), revealed the presence of male DNA—which was scientifically confirmed by Y-STR testing. This testing of the buttocks swab revealed the presence of DNA from at least 3 different males, none of which was Terrence Shannon (Terrance is *scientifically* excluded from this sample). The Y-STR testing of the inner thigh swab revealed the presence of DNA from at least 2 different males. The partial haplotype profile from this sample was not suitable for comparison to determine whether Mr. Shannon could be included. *See* report of S. Beine (Attachment A).

male DNA is in fact present. The failure to do further testing to confirm the presence of "male DNA" should prevent the State from definitively reporting that the same was present in the underwear swabs as that is not a scientifically valid statement. Such a statement in the KBI report or in testimony from their expert would be based on insufficient data and unreliable application of reliable scientific principles. Under *Daubert*, the report as written and any testimony suggesting the definitive presence of "male DNA" in the underwear swabs should be excluded.

WHEREFORE, Mr. Shannon objects to the introduction of KBI reports or testimony until the court has held a *Daubert* hearing.

Respectfully submitted,

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CERTIFICATE OF SERVICE

A copy of the above was delivered utilizing the court's e-filing system.

/s/ Tricia A. Bath
Tricia A. Bath

FORENSIC ADVISING

FA1452 – Case Review Summary

Douglas County Case #:
DG 2023 CR 300181
State of KS vs. Terrance Shannon, Jr.

Summary Requested By:
Thomas J. Bath, Jr.
Bath & Edmonds
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Overland Park, KS 66204

Kansas Bureau of Investigation (KBI) case #: W23-05131

The information that was received and evaluated as part of the comprehensive case review process includes but is not limited to: lab reports, bench notes, worksheets, laboratory manuals, and protocols. Upon careful review of this information, expert witness testimony may be necessary.

The following observations were noted in the review of the case file materials submitted for evaluation:

KBI report #1

Portions of 11 swabs (from 6 areas) were analyzed by the KBI. This includes Items:

1.1 Vaginal swabs
1.2 External genital swabs
1.3 Buttocks swabs
1.4 Inner thigh swabs
1.6 Swabs from inside crotch of underwear
1.7 Swabs from outside crotch of underwear

The KBI performed DNA testing on the swabs.

The report separates these samples into three categories.

1. 1.1 and 1.2: "No male DNA detected; therefore, these samples were not processed further."
2. 1.3 and 1.4: "No male haplotype was obtained"
3. 1.6 and 1.7: "Due to an insufficient amount of male DNA, this sample was not selected for further testing at this time".

Serology not performed

Serology is the testing of samples for the presence of body fluids. The KBI has protocols for the testing of samples for the presence of blood, semen / seminal fluid and saliva.

The KBI did not conduct any serology testing.

Instead, these items were sampled and forwarded directly to DNA analysis. This is not uncommon in cases of alleged fondling / digital penetration as no depositing of body fluids is expected in those cases.

Quantitation

One of the steps in DNA analysis is quantitation. This step attempts to estimate the amount of both human and male DNA within a sample. The value obtained is used by the analyst to determine if sufficient DNA is present to proceed with DNA profiling and if so, how much sample to use for downstream analysis steps.

DNA profiling is the process through which DNA profiles are generated from both questioned and known samples so that the profiles may be compared to one another. The current method used at the KBI for DNA profiling is PCR using STRs.

Quantifiler Trio, the quantitation kit used by the Kansas Bureau of Investigation laboratory has a reported dynamic (readable) range down to 0.005 nanograms / microliter (ng/uL).

Any value below this **may not** be reproducible.

Further, a value below 0.005 ng/uL could be from background signal and not indicative of DNA.

The manufacturer of the Quantifiler Trio states in the user guide that the 0.005 ng / uL is the lower limit for *reproducible* quantitation results. The manufacturer warns that results lower than this are highly variable and could be the result of background noise from the instrument or background DNA in the sample.

None of the samples analyzed in this case resulted in a value **above** 0.005 ng / uL of male DNA. See below.

Item	Suspected Quantity of Male DNA	% below dynamic range
1..1 – Vaginal swabs	0.0000 ng / uL	N/A
1.2 – External genital swabs	0.0000 ng / uL	N/A
1.3 – Buttocks swabs	0.0023 ng / uL	54%
1.4 – Inner thigh swabs	0.0013 ng / uL	74%
1.6 – Swabs from inside crotch of underwear	0.0004 ng / uL	92%
1.7 – Swabs from outside crotch of underwear	0.0002 ng / uL	96%

The KBI manual has no protocol listing a "lower limit" quantity for amplification.

However, the KBI protocol does state that samples with less than 0.0035 ng/uL may be considered for Y-STR amplification depending upon case-specific circumstances. The protocol does not elaborate on how much lower a quantitation value can be and still be considered for Y-STR amplification, nor does it state what type of circumstances would qualify a sample for this testing and which circumstances do not.

Please note that both samples analyzed for Y-STR's (1.3 and 1.4) in this case, exhibited quantitation levels below 0.0035 ng/uL.

Samples containing no male DNA (1.1 vaginal swabs and 1.2 external genital swabs)

Two samples tested were reported as "no male DNA detected" – 1.1, vaginal swabs and 1.2, external genital swabs. These samples were analyzed through the quantitation step of DNA testing and the quantity of male DNA detected was zero. No further testing was performed on these samples.

Uncertainties Whether the Samples Contain "Male DNA" (1.6 and 1.7 underwear)

Two samples tested were reported as "due to an insufficient amount of male DNA, this sample was not selected for further testing at this time" – 1.6, swabs from inside crotch of underwear and 1.7, swabs from outside crotch of underwear.

Given that these samples exhibiting the possible presence of male DNA fall well under the documented dynamic range for this quantitation kit, without further analysis to confirm the presence of male DNA (repeat quantitation) or attempted Y-STR analysis to possibly establish even a partial haplotype profile, these quantitation values alone cannot be considered conclusive evidence of male DNA on these items.

Manufacturer information

Although Quantifiler Trio is highly sensitive and can detect levels of DNA similar to those detected in this case, throughout the published user guide for this particular quantitation kit, the manufacturer lists the 0.005 ng / uL as the lower limit for *reproducible* quantitation results. The manufacturer warns that results lower than this are highly variable and could be the result of background noise from the instrument or background DNA in the sample.

KBI protocols

Section 11.4.2.1 of the Quantitation section of the KBI procedure manual states:

> Should a quantitation value greater than 0.005 ng/uL exist for the small autosomal target of the NAC, notify the DNA technical leader for guidance.

This suggests that results below 0.005 ng/uL (5 pg/uL) in the negative control, which should be free of DNA, are to be ignored.

Section 9.4.2.5.1 of the DNA Quality Manual states when referring to reagent blanks:

> Due to the increased sensitivity of quantitation methods, any values below 0.005 ng/uL are still considered blank if no DNA profile is obtained after amplification.

These sections, taken directly from the KBI manuals, demonstrate that the KBI is aware quantitation levels this low may not be reproducible and may not accurately reflect the presence of DNA.

Without: (1) repeat quantitation to determine if these values are reproducible; or (2) without an attempt at Y-STR analysis to establish whether or not any amplifiable male DNA is present, it is inaccurate and prejudicial to the accused to report the definitive presence of male DNA.

Y-STR testing (1.3 buttock and 1.4 inner thigh)

Y-STR testing is male specific DNA typing / profiling. This process completely ignores any female DNA within a sample and amplifies only the male DNA present. This analysis is highly beneficial for samples that contain higher quantities of female DNA mixed with lower quantities of male DNA.

The KBI performed Y-STR testing on the two samples with the highest quantitation results of possible male DNA – 1.3, Buttocks swabs and 1.4, Inner thigh swabs. Both of these samples were reported as "no male haplotype was obtained". This is true when analyzing the data using the KBI's thresholds for this particular amplification kit, Y-Filer Plus.

Based upon the review of the data, activity could be observed that was below the KBI's analytical threshold. The data was re-analyzed using lower threshold levels to determine if this activity was indicative of true alleles or simply artifacts. Partial haplotype profiles were observed.

1.3 – Buttocks swabs

The partial haplotype profile obtained from this item is consistent with a mixture of DNA from at least three males. Terrance Shannon, Jr. is excluded as a contributor to this partial, mixed, haplotype profile.

1.4 – Inner thigh swabs

The partial haplotype profile obtained from this item is consistent with a mixture of DNA from at least two males. This partial haplotype profile is not suitable for comparison purposes.

Not enough overlapping data exists between the two samples to make any statements about a possible common contributor, however based upon data at the DYS458 locus, it is possible the DNA detected on these two samples combined is from a total of 5 male contributors.

How was "DNA" deposited?

The level of DNA detected could be from virtually anything - including but not limited to the gloves of the SANE nurse, the swabs themselves, the swab boxes, the gloves of the analyst at the KBI, the cutting tool used by the analyst, any tweezers or forceps used by the analyst, or any of the tubes/wells used during the extraction process. This level of DNA could also be from several different forms of transfer - primary, secondary and tertiary transfer events could all explain a transfer of these levels of DNA.

Some examples of transfer to consider in this case are – primary transfer to the swabs from a male officer or other male medical staff present in the room or around the swabs while they were being collected or packaged. It is important to know the exact process used by the SANE nurse while collecting and packaging the evidence to determine if the swabs were exposed to any males that could have deposited DNA from a cough, sneeze or even talking around the evidence prior to packaging.

Primary, secondary and tertiary transfer are all possibilities given that the complaining witness was in a crowded bar and in close contact with several individuals throughout the night. DNA could have been inadvertently transferred to her body through her own hands, from a male(s) coughing, sneezing, or even talking around her depending upon which parts of her body were exposed.

These examples above represent a small number of possible transfer events that could explain the levels of male DNA detected in this case. Many other avenues exist of course and can be explored if specific possible scenarios arise.

Conclusion

In conclusion, two samples collected in this case may or may not contain male DNA (1.6 and 1.7, swabs from the underwear). There has been no attempt to verify the reported conclusion that male DNA is present and if present, no attempt to determine who that male DNA may have originated from has been made.

Two additional samples exhibit evidence of low-level mixtures of male DNA. Terrance Shannon, Jr is excluded as a contributor to the mixture of male DNA detected on Item 1.3, buttocks swabs. The mixture of male DNA detected on Item 1.4, inner thigh swabs is not suitable for comparison purposes.

If you have any questions, or require additional information, feel free to contact me.

The conclusions stated above are a true and accurate reflection of the review of the Forensic Biology case file as provided to me by the KBI. This review was completed in a scientific and unbiased manner with no preconceived notion of outcome and under no outside influence. This summary accurately details the opinions and interpretations of the undersigned.

Sincerely,

Stephanie Beine
Sr. Forensic Scientist
April 15, 2024