

**DEPARTMENT OF FORENSIC SCIENCE
MICROSCOPIC HAIR COMPARISON CASE REVIEW
GUIDELINES FOR TRANSCRIPT REVIEW**

This document is intended to provide guidance for the transcript review of Department of Forensic Science (DFS) microscopic hair comparison cases. Each case will be reviewed by a Review Team composed of two attorneys and one DFS scientist with experience as a DFS microscopic hair examiner.

Questions for Consideration During Review

In conducting its transcript reviews, the Review Team should consider the following three questions:

- (1) Did the examiner state that an evidentiary hair could be associated with a specific individual to the exclusion of all others?
- (2) Did the examiner assign a statistical weight or probability or provide a likelihood that the questioned hair originated from a particular source?
- (3) Does the testimony contain any other potentially misleading statements or inferences?

Consideration of Context

The Review Team should consider the entirety of an examiner's testimony when considering the review questions. For some testimony, an examiner may make such an obvious overstatement in connecting a specific individual to a questioned hair that no amount of limiting language or contextual consideration can clarify or justify the statement. With such obvious overstatements, the testimony should be flagged and appropriate notifications should be made.

In some cases, the context of the statement and any clarification or limiting language offered by the examiner may be expressed clearly enough that no reasonable person would misinterpret the examiner's response. In those instances, the Review Team may consider the surrounding explanation offered by the examiner, including the clarification or limiting language utilized, in assessing whether the testimony should be flagged and notifications should be made.

If the Review Team has any questions about whether the clarifying or limiting language utilized by the examiner is sufficient, the testimony should be flagged and the appropriate notifications should be made.

Examples of Testimony

The testimony examples provided below were flagged by the Forensic Science Board's Microscopic Hair Comparison Case Review Subcommittee during its review of 12 transcripts. These examples illustrate testimony of concern identified to assist with the transcript review;

they are not intended to provide a comprehensive listing of types of problematic testimony. The testimony examples are grouped into categories and included under the relevant question being considered. The language flagged by the Subcommittee as being of concern appears in bold in the examples.

QUESTION 1: Did the examiner state that an evidentiary hair could be associated with a specific individual to the exclusion of all others?

In reviewing testimony, the Review Team should consider any overreach in testimony by the examiner that would indicate the identification of a specific individual to the questioned hair.

Use of “Identical” or “Match”

The use of the terms “identical” or “match” to describe an association between two hairs is inappropriate.

Example 1:

Q. And how do these other characteristic other than sex, race and body location – how do they compare the two that we’re referring to?

A. I could find no inconsistencies in any measurable areas.

Q. So then **they were identical.**

A. **That’s correct.**

Use of Descriptive Terms (e.g., unlikely, uncommon, unusual)

The use of descriptive terms, such as “unlikely,” “uncommon,” or “unusual,” in order to strengthen an association is inappropriate.

Example 1:

The hairs that I found to be consistent with a particular person do have the possibility of coming from any one individual, but **it is, like I mentioned, in my opinion, unlikely that it came from another source except the one that I identified it with.**

Example 2:

The hair was consistent in visual and microscopic characteristics, and **it is an uncommon situation for me to not be able to differentiate individuals by an examination of their hair samples,** but there have been instances where I could not differentiate individuals based upon their hair.

Example 3:

Red hair is not a common hair color, I think, as all of us are aware; it is a fairly uncommon hair color. Also, the [pubic] hair is not very curly. Typically, pubic hair would

be more characteristically curly. **For this hair not to be the expected curliness makes it a little bit unusual, but the thing that makes it more unusual is the fact that it is reddish in color.**

Example 4:

It would be an unusual situation for hairs from two different individuals to have characteristics in common so much that I couldn't differentiate them, but it is not possible to positively identify the source of a hair.

Example 5:

Hairs cannot be identified as coming from a particular person as fingerprints can. When I make all of these determinations, my result, **if I find that they are consistent in all respects, then the hair either originated from the same source or originated from another source, from a person of the same race who had the same color, the same configuration of hair, and the same microscopic characteristics. And that, in my opinion, is unlikely,** but it is possible.

Example 6:

The hairs reportedly from the pubic area of the victim are consistent with the hairs reportedly from the pubic area of the defendant and **either originated from him or from another person of the same race who had the same color of hair, the same diameter, the same general configuration visually, and also the same microscopic characteristics. As I have previously mentioned, that would be unlikely.**

Example 7:

The hairs, although consistent with the hair samples, microscopically consistent with the hair samples from [the victim] it is not possible from a visual and microscopic examination to determine that the hairs actually came from her. **It's my conclusion that the hairs were consistent and, therefore, could have come from her or another source of Caucasian hairs that had the same visual and microscopic characteristics, and that would be an uncommon occurrence in my experience.**

Example 8:

I testified that the hairs were consistent, and that it is impossible by a visual and microscopic examination to say that a hair, or conclude that a hair came from a particular person to the exclusion of all others. It is a limitation of the science; however, the hairs were consistent in race, they were consistent in visual and microscopic characteristics, and, again, **although it's possible the hairs could match someone else's hair sample, it would be an unusual or uncommon situation.**

QUESTION 2: Did the examiner assign a statistical weight or probability or provide a likelihood that the questioned hair originated from a particular source?

The use in testimony of statements assigning a statistical weight, probability or likelihood that an unknown hair was attributable to a known source would be a concern that should be flagged as there is no scientific support for such an assertion.

Improper Use of Statistics

Assigning statistics to particular characteristics of hair is inappropriate.

Example 1:

I make a brief description of the hair in my notes for my benefit, and this probably would not include all of the characteristics; but it's important to remember that my conclusion is based on what I see as I look at the hairs through the microscope. It's not what I – it's not – my conclusion is not based on my notes; but . . . I did describe the hairs as fine, black, Negroid head hairs, and **this is somewhat unique because in many cases, over fifty percent, Negroid hairs are actually dark brown with a hue rather than black.** . . .

Any Reference to Statistical Studies

While the Subcommittee did not discover in its review of transcripts any references to statistical or probability studies, those studies, including Barry Gaudette's studies on hair comparison evidence, have been improperly cited by hair examiners. Any such references by an examiner, unless the examiner has indicated that the use of these studies is inappropriate, should be flagged.

Any Use of Probability or Likelihood

Any statements by an examiner that assigns a probability or likelihood that an unknown hair is attributable to a known source should be flagged.

Example 1:

When we make a hair comparison and get what we point out as a hair to be consistent with the sample reportedly from a particular person **it is in my opinion that it is unlikely that that hair came from somebody else other than the person to which I have said that the hair is consistent or found to be consistent with.**

Example 2:

I don't use a mathematical probability, but very seldom do I ever see hairs from two different individuals that are so nearly alike that I can't tell them apart. And based upon that, and my experience of doing these exams for about twenty-three years, **certainly the probability in my opinion would have to be high that they did come from this person**

because of what I've said, the fact that very seldom do I ever find hairs from two different people that are so nearly alike I can't tell them apart.

Assigning Weight Without Statistics

Example 1:

A. There are three major conclusions I can reach. The most positive conclusion that I can give with respect to a hair comparison is that the hairs are microscopically alike in all identifiable characteristics and could have originated from a certain individual. A reputable examiner can never say a hair originated from a certain individual and not from somebody else in that race group. So, it is not a positive identification. But, the conclusion is the hairs either originated from that person or compared with hairs microscopically the same. It is very seldom that I work a case from other people when I cannot tell the difference in the hairs between them.

The other conclusion is the hairs are microscopically different and in my opinion did not originate from this individual. And the last conclusion would be there are some real minute differences with my questioned and known hairs, which would not allow me to discount the person as the source, but the minor differences will not allow me to make a conclusion.

...

Accordingly, my conclusion was this single head hair of Caucasian origin could have originated from this individual.

Q. Those two conclusions with respect to the defendant and the victim, **were those conclusions you reached on your relative scale your most positive conclusion, less positive, or middle.**

A. **This would be the most positive conclusion I could arrive at.**

QUESTION 3: Does the testimony contain any other potentially misleading statements or inferences?

In reviewing transcripts, any false or misleading statements or inferences made by an examiner should be flagged. These statements or inferences may be the use of an examiner's experience to bolster his or her testimony that an unknown hair originated from a known source, misstatements on the degree of certainty regarding the race of an unknown hair, and other misstatements or inferences that may mislead the trier of fact.

Use of Experience

It is inappropriate for an examiner to utilize his or her personal experience as an examiner to bolster his or her testimony and provide additional support for an association.

Example 1:

I don't use a mathematical probability, but very seldom do I ever see hairs from two different individuals that are so nearly alike that I can't tell them apart. **And based upon that, and my experience of doing these exams for about twenty-three years, certainly the probability in my opinion would have to be high that they did come from this person because of what I've said, the fact that very seldom do I ever find hairs from two different people that are so nearly alike I can't tell them apart.**

Example 2:

Q. But these match in all characteristics which you're able to observe, is that correct?

A. That's correct.

Q. Have you ever known in your years of experience two hairs from two different individuals to match in the same manner that they have matched?

A. No.

Q. Have you ever done any studies as to whether hairs from different individuals would match?

A. Yes.

...

Q. [from court] **Could you estimate how many hair studies you have done?**

A. In the thousands.

...

Q. **Of all the thousands you've done, have you ever known two [hairs] to match up from two different people, to match up as that --**

A. No sir.

Q. -- as a matter of academic inquiry on your part to try to see how close hairs might match from similar people?

A. Yes.

Q. And, now describe briefly what you did in that regard.

A. **Well, I was involved in a study involving identical twins to see if we could distinguish between standard head and pubic hair samples from identical twins.**

...

Q. [w]hat then was the -- your experience with regard to your tests on identical twins?

A. **We found that we could distinguish between the two with a great degree of certainty.**

Q. **What then is your conclusion with regard to the two hairs?**

A. **That they're consistent in all measurable ways.**

Q. In any way that you can check it, they're identical.

A. That's right. (#11 – Browne)

Use of Racial Categories

DFS hair examiners used the following three racial categories in characterizing hair: Negroid, Caucasian and Mongloid. It would be inappropriate to affirmatively state that a hair was Negroid, Caucasian or Mongloid; instead, the examiner should have indicated the hair was “characteristically [Negroid, Caucasian or Mongloid].”

Example 1:

Q. Now, with regard to race, **we know both of them were from the black or Negro race.**

A. **That’s correct.**

Example 2:

Q. **So you could also tell that is was from a Caucasian person?**

A. **Oh, yes, most definitely.**

Limitations of Evidence

Any denial of the limitations of microscopic hair comparison testimony by an examiner should be flagged.

Example 1:

Q. **Would you agree with this statement [from the FBI Handbook] as far as microscopic examination of hairs and fibers that under the paragraph “limitations,” this is considered as not positive evidence?**

A. **No sir, I would not.**

Q. You disagree with that?

A. That is correct.

EXAMPLES OF APPROPRIATE TESTIMONY

The Subcommittee requested that the Review Team also be provided with examples of appropriate testimony in which hair comparison examiners acknowledged the scientific limitations of the analysis and presented a fair assessment for the factfinder regarding the probative nature of the hair comparison evidence. The examples provided below offer a sampling of appropriate testimony and are not intended to be exhaustive.

Example 1:

Q. On the hairs that you found on the glass can you state to the ladies and gentleman of the jury your finding?

A. They were characteristically Caucasian hairs

Example 2:

Q. Let me back up. The hairs you found in 59-B you said were Caucasian hairs?

A. Characteristically Caucasian hairs.

Q. Did you go any further?

A. No further examinations were conducted of the hair.

Q. What would that mean? Would it be consistent or inconsistent?

A. I did not do any further examination of the hair. So I could not say whether it would be consistent or inconsistent with [the defendant]. That is as far as I can testify.

Example 3:

Q. Your Item 22. Did you have occasion to examine the hair?

A. Yes, I did.

Q. What did you find with respect to the hair?

A. I found eight characteristically Caucasian hairs and hair fragments and animal hairs.

Q. Did you find any hairs consistent with [individual 1] or [individual 2]?

Q. Yes, I did. I found one hair and one hair fragment which exhibit the same visual and microscopic characteristics as the sample of [individual 1's] head hairs and this hair and hair fragment were different from the sample of [individual 2's] head hair.

Example 4:

Q. The fact that these two systems were consistent with all three does not mean it is not consistent with any other people.

A. No.

Q. When you use the word consistent or inconsistent are you saying when something is consistent that it is, in fact, the hair or are you certain that it is the hair of an individual?

A. No, I am not.

Example 5:

I might also mention here that hairs are not a positive means of identification in that I can never say that a hair originated from some person exclusively to the—or exclusively to the—I can't eliminate it from possibly coming from another person in that same group.

Example 6:

Q. Okay. So these were—these were Caucasian head hairs or fragments that you could not make an identification on or match with any other samples you had; is that right?

A. Well, I found no microscopic similarities between these hairs and any other persons I looked at.

Q. Okay.

A. And it's not an identification or match. With the limitation of hair microscopy as such, that you can only say they were microscopically similar.

Example 7:

Q. But you're not able to say that it's his hair?

A. No ma'am.

Q. You're simply saying you can't eliminate him as being a possible contributor of that hair.

A. That's right.

Q. There are people who have microscopically similar hair characteristics?

A. Absolutely.