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2 already under oath in this matter.

3 THE WITNESS: Okay, Your Honor.

4 FRED SALEM ZAIN was thereupon called as a witness
5 by the State, and having been previously duly sworn,
6 testified further as follows:

7 THE COURT: You may proceed, Mr. Cummings.

8 DIRECT EXAMINATION

9 BY MR. CUMMINGS:

10 Q You are F. S. Zain, Master Sergeant with the
11 C.I.B. in Charleston, is that correct?

12 A Yes, sir, that's correct.

13 Q And you testified yesterday and were in the
14 process of testifying when we recessed for the day, is
15 that correct?

16 A Yes, sir.

17 MR. CUMMINGS: F. S. Zain was declared an expert
18 by this Court in serology and hair identification.

19 Q Is that correct?

20 A Yes, sir, that's correct.

21 THE COURT: Mr. Cummings, I can hardly hear you.
22 I wonder if you would speak up just a little bit.

23 MR. CUMMINGS: I will speak up.

24 Q At this time I'd like to show you what has
25 been marked for identification as State's Exhibit 25,

and ask you if you have seen that?

(The item referred to was thereupon handed to the witness.)

A Yes, sir, this is a container which has marked as the known blood specimen of Mr. Woodall. This was received at the serology lab, which I spoke of yesterday, and remained in a sealed condition in the refrigerator in the serology section. I removed this particular item from the refrigerator after it was brought to the laboratory and performed an ABO typing and a secretor status typing on this particular item. The case number of S-87-079, which is on the outside of the envelope, State's Exhibit 25, and my initials which are right here in blue of FSZ, as well as on the back portion of the styrofoam container. The other initials of TAS are Trooper Ted A. Smith, who is under my supervision and direction in the serology section.

MR. CUMMINGS: Your Honor, at this time the State would move into evidence State's Exhibit No. 25.

THE COURT: Any objection?

MR. SPURLOCK: No objection.

THE COURT: It will be admitted without objection.

STATE'S EXHIBIT NO. 25

The item referred to, previously marked for

identification, was thereupon received in evidence.

MR. SPURLOCK: May we approach the bench?

Whereupon the following proceedings were had at the bench, out of the hearing of the jury:

MR. SPURLOCK: For the sake of the record, Your Honor, the defendant once again objects to the entry of the blood and all of the further scientific evidence in this case on the basis taken up in the motions to suppress the non-voluntariness --

THE COURT: For the same reasons, I will overrule the objection and allow their admission, but you may note your objection for the record.

Whereupon the following proceedings were had in the hearing of the jury, there being present the same parties as heretofore noted, including the defendant and his counsel:

THE COURT: Thank you, counsel.

You may proceed, Mr. Cummings.

Q I'd like to show you what has been marked for identification as State's Exhibit 40, and ask you if you can identify that?

(The item referred to was thereupon handed to the witness.)

A This particular envelope was submitted to the

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2 laboratory. It contains known facial hair, more
3 specifically, beard hair from Mr. Woodall. The
4 initials and the case number are what I showed to
5 you-all yesterday, S-87-104 and my initials. This
6 envelope contained hair samples which were submitted
7 for hair comparison and examination.

8 Q And I'd like to show you State's Exhibit No.
9 42, and ask you if you can identify that?

10 (The item referred to was thereupon handed to the
11 witness.)

12 A There again, this is the same envelope which
13 I referred to yesterday. It has a case number S-87-96
14 there at the end of my finger as well as my initials
15 FSZ. This particular envelope was submitted to the
16 laboratory and was marked as having suspected hairs.
17 taken from Ms. [REDACTED] vehicle. Hair samples were
18 removed from this envelope and mounted for comparison
19 purposes with known hair specimens of Ms. [REDACTED] as
20 well as known hair specimens from Mr. Woodall.

21 Q Did you perform an examination upon the hairs
22 in State's Exhibit No. 42?

23 A Yes, sir, I did.

24 Q And did you remove the samples from there?

25 A Yes, sir, I did.

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Q Do you have those samples with you?

A Yes, sir.

Q Are they the same samples that were in State's Exhibit 42?

A Yes, sir, they are.

Q And have they been in your custody all this time?

A Yes, sir, they've been in my sole care and custody from the time I received the envelopes and removed the hairs, mounted the hairs specifically for examination, and retained the slides after the examination in my personal evidence locker at the bureau, and have remained in that locker until I brought them here to court today.

Q May I have those hairs that were removed from State's Exhibit 42 and used for comparison.

(The item referred to was thereupon handed to Mr. Cummings.)

MR. CUMMINGS: I would like at this time to have this marked as State's Exhibit No. 47.

STATE'S EXHIBIT NO. 47 FOR IDENTIFICATION

The item referred to was thereupon marked as above indicated.

(The item referred to was thereupon handed to

defense counsel.)

MR. CUMMINGS: And the State would move to have State's Exhibit No. 47 admitted into evidence at this time.

THE COURT: It will be admitted.

MR. SPURLOCK: May it please the Court, let the record reflect our continuing objection to the admission of each and every one of these items.

THE COURT: It shall and it does. It will be admitted.

STATE'S EXHIBIT NO. 47

The item referred to, previously marked for identification, was thereupon received in evidence.

Q Do you also have with you the contents of State's Exhibit No. 40?

A Yes, sir, I do.

Q May I have that, please.

A Yes.

(The item referred to was thereupon handed to Mr. Cummings.)

Q Has it been in your custody from the time you removed it from State's Exhibit No. 40 until this very moment?

A Yes, sir, it has.

MR. CUMMINGS: I'd like to have this marked for identification as State's Exhibit No. 48.

STATE'S EXHIBIT NO. 48 FOR IDENTIFICATION

The item referred to was thereupon marked as above indicated.

Q Now, is that the known hair of Glen Woodall?

A This is the hair removed from Ms. [REDACTED] car.

Q And No. 47 was the --

A Known hair specimen --

Q Known hair specimen --

A Facial hair specimen of Mr. Woodall.

MR. CUMMINGS: Your Honor, I reversed those two statements.

Q Did you perform any analyses upon the exhibits found in Ms. [REDACTED] car? In other words, State's Exhibit No. 48, were the hair samples provided you in State's Exhibit No. 47?

A Yes, sir, an examination was made of the hair samples which were removed from Ms. [REDACTED] vehicle. Upon examination, the hair specimens examined, the majority of the hair specimens were similar and consistent with the microscopic characteristics of the known hair samples of Ms. [REDACTED]. Upon examination of

1 the particular hair specimens from the vehicle, there
2 was a hair, which is one particular hair that was
3 neither head hair nor was it pubic hair, that was
4 dissimilar in nature to Ms. [REDACTED] known hair
5 samples. In other words, what I'm saying is that the
6 particular hair could not have originated from her.
7 There was, in fact, a hair specimen which was compared
8 with and identified as a facial hair which was compared
9 with the known facial hair of Mr. Woodall.
10

11 Q What do you look for in hair comparisons?
12 Can you explain to the jury?

13 A Hair comparisons are simply this, the
14 comparisons are done with a microscope, they are done
15 with what is called specifically a comparison
16 microscope. A comparison microscope enables an
17 individual to examine, two items in this case, two hair
18 samples at the same time. You can line them up side by
19 side and then you can look at the external and internal
20 characteristics, microscopically, of each individual
21 hair. Hair is mounted in a particular substance which
22 allows an individual to look inside the hair. Most of
23 us can pretty much tell if you think you may have
24 blonde hair or brown hair, black hair. There are
25 unique characteristics and there are general

characteristics of each and every individual's hair specimens. The characteristics of each hair are compared not only within the sample you examine, but also compared with the, for example, unknown hair specimen that you are trying to make the comparison with. The microscopic characteristics, we routinely examine for 15 characteristics. The 15 characteristics which we examined for have separate components. For example, we could say a car would be a characteristic, but yet the components of that car would be like the headlights, the taillights, the doors, just to give you an analogy of what we're talking about here. The characteristics were examined by routine examinations and a comparison was made. Comparison of the hair from Ms. [REDACTED] vehicle was, in fact, identified as being a facial hair, more specifically a beard hair. The characteristics which were identified from that hair were in general terms the same microscopic characteristics which I identified from a known beard hair of Mr. Woodall. More specifically, there were some unique characteristics which were also identified as being the same characteristics as were found in Mr. Woodall's beard hair.

Q Did you bring or make this morning a chart

1
2 that may aid the jury in the explanation of some of the
3 things you look for in hair comparisons?

4 A Yes, sir, I did just for the jury's
5 convenience. I prepared a hand drawn chart. So you'll
6 have to excuse the circles on it, whatever, but it will
7 give you a general idea of what some microscopic
8 characteristics are and what some of the terminology of
9 those microscopic characteristics are.

10 MR. CUMMINGS: Your Honor, may I approach the
11 bench with whichever counsel?

12 Whereupon the following proceedings were had at
13 the bench, out of the hearing of the jury:

14 MR. CUMMINGS: Your Honor, this chart was just
15 hastily drawn up this morning solely as an aid to the
16 jury. It has not been shown to defense counsel. In
17 fact, we just decided this morning to make it up. And
18 I would like to give them the opportunity to see if
19 they want to object to it.

20 THE COURT: Do you want to check that with your
21 expert?

22 MR. SPURLOCK: We do object to its use, Your
23 Honor.

24 THE COURT: On what basis?

25 MR. SPURLOCK: No proper foundation being laid for

its use.

THE COURT: That's the basis for the objection?

MR. SPURLOCK: Yes.

THE COURT: Lay a foundation and use it.

Whereupon the following proceedings were had in the hearing of the jury, there being present the same parties as heretofore noted, including the defendant and his counsel:

Q Let me hand you this chart you just gave me and ask you who prepared that chart?

(The chart referred to was thereupon handed to the witness.)

A I did.

Q And from what did you prepare it?

A It was prepared basically from a hair examination booklet that is given to individuals that attend the FBI Academy on hair comparison examinations.

Q And what was the purpose of preparing that?

A Simply to show some of the internal characteristics which are identifiable by microscope. Also to give a general idea of what a blunt ended or beard or facial type hair would look like.

MR. CUMMINGS: Your Honor, I would now like to have this marked as State's Exhibit No. 49.

STATE'S EXHIBIT NO. 49 FOR IDENTIFICATION

The item referred to was thereupon marked as above indicated.

MR. CUMMINGS: And move its admission.

THE COURT: Over the objection previously noted it will be admitted.

STATE'S EXHIBIT NO. 49

The item referred to, previously marked for identification, was thereupon received in evidence.

Q Sergeant Zain, would you place this where you can best use it to aid the jury.

A Okay.

Q Sergeant Zain, can you explain what has been prepared upon that chart?

A Simply the circle, which I spoke of earlier, is what would be what the field would look like if you look through a microscope. It has no bearing on the hair itself. That's just looking through a microscope. The item within that circle would be what a hair specimen could look like. The hair specimen in general would consist of an outer border. It would also consist of what is called a cuticle, which is a small area on the lining of the hair. You also have a cortex. A cortex is simply the major body of a hair.

In other words, the majority of your hair is called a cortex. You also have a medulla. A medulla is the center portion of the hair. An ovoid body and pigment granules are particular characteristics of certain types of hair. An ovoid body appears just like a hole in the hair. Pigment granules, of course, give a certain color to the hair as well as are unique in distinguishing certain types of hair as far as race or origin, whether a hair would be Caucasian, negroid, or mongoloid. And those are the three classifications for types of hair. You have cortical fusi, which are identifiable in certain components of hair, whether a hair is a mature hair or what stage a hair may be in. This particular section or portion is showing say like from a mid portion of a hair to the end or the tip. The tip region of the hair is another characteristic that we examine. Why I have this rounded off with the little markings on the end is the best way I can portray what the beard hair looked like both from the vehicle of [REDACTED] as well as the known facial hair of Mr. Woodall because it shows that it has been rounded off with some age after it has been clipped or trimmed, whereas when you clip or trim beard hair, you'll have diagonal cuts on the tip ends of the

1 particular hair specimen. The medulla I just put in in
2 a colored type of ink is to show that it was the center
3 of the hair because you can have variations in medulla,
4 depending on the type of hair or the type of hair area
5 it may have originated from. Extending out past say
6 midline the hair, you go into what is called midline,
7 to the root portion of the hair, which is also examined
8 for certain microscopic characteristics and are part of
9 the routine examination.
10

11 Q Sergeant Zain, how many total characteristics
12 do you search for in a common practice of hair
13 identification and comparison?

14 A There are routinely examined 15 major
15 category or characteristics which we routinely examine
16 for and compare with. I might add that in those 15
17 general characteristics which we examine for, each one
18 of those characteristics may have anywhere from one to
19 possibly five or six specific components of each
20 characteristic. The best way I can explain that is
21 give you a direct example. Say for example if we
22 looked for damage that may have been done to a hair, we
23 would look to see whether it has been cut, crushed,
24 broken, or burned. The crushed, cut, broken, or burned
25 portions are the components that we would look under

1 the category of damage as a characteristic to the hair.
2 Another category we would look into would be as far as
3 artificial treatment, whether a specific hair sample
4 has been bleached, died, and possibly the length of
5 time since the treatment may have occurred to the hair.
6

7 Q How many of these characteristics did you
8 look for in the known hair of Glen Woodall and the
9 unknown hair which came from the console of Rebecca
10 Mowery's vehicle?

11 A All of the major categories were covered on
12 the examination of both hair samples as well as the
13 major categories which I've just explained. There were
14 over 25 specific components of each characteristic which
15 were also compared.

16 Q How many of those were similar between
17 State's Exhibit 48 and 47?

18 A All of the characteristics, general category,
19 as well as specific components, were consistently the
20 same both in the hair from Ms. [REDACTED] vehicle as well
21 as the known facial hair of Mr. Woodall.

22 Q Did you find any of those characteristics
23 that were dissimilar?

24 A The total overall and general viewing of both
25 hair specimens, I would have to conclude not only with

1
2 the experience in hair examinations, but in the
3 scientifically compared examination, that the
4 characteristics were the same, and there was no
5 indication of dissimilarities other than length.

6 Q Based upon your examination, have you been
7 able to form an opinion as to whether or not it is
8 likely that the hair found on the console of the
9 vehicle used in [REDACTED] rape was the same as
10 the hair taken from the face of Glen Woodall?

11 A As I stated in my report, that the
12 microscopic characteristics of the facial hair of Mr.
13 Woodall were consistent with the microscopic
14 characteristics of the hair which was taken from the
15 vehicle of Ms. [REDACTED]. That's a general statement. To
16 further the opinion would simply be to state that I saw
17 -- had no reason to believe that the hair could not
18 have originated from Mr. Woodall, and it would be very
19 highly unlikely that due to no dissimilarities
20 identifiable and distinguishable, that the hair could
21 have originated from anyone else.

22 Q Sergeant Zain, I'd like to show you State's
23 Exhibits 36 and 22, and ask you if you have seen them?

24 (The items referred to were thereupon handed to
25 the witness.)

1
2 A Yes, sir, on State's Exhibit 22, this is what
3 we commonly refer to as a sex crime evidence kit. This
4 particular item contains items that are taken at the
5 time of an examination by a physician of a sex related
6 type of incident. This particular box or sex crime kit
7 was submitted to the laboratory. The specific date was
8 January 23rd, 1987. It was submitted to me directly by
9 the investigator, Jim Scheidler. He submitted this
10 particular sex crime kit for examination and analysis
11 to determine particular things about the evidence that
12 was enclosed.

13 Q And how about the other sex evidence kit?

14 A This particular kit was submitted to me
15 specifically by Trooper O. S. Adkins on February 17th,
16 1987. There again, this is a sex crime evidence kit
17 and contains items that were collected by a physician
18 at the time of the examination. On the first kit the
19 lab number which was placed on this particular item
20 S-87-32, and my initials FSZ, contains items that were
21 collected at the time of examination of Ms. [REDACTED]. On
22 the second kit classified as S-87-72, and my initials
23 FSZ, which are in the front panel, this particular kit
24 had items that were collected on Ms. [REDACTED].

25 Q I'd like to show you State's Exhibit No. 5,

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2 State's Exhibit No. 11, and ask you if you had the
3 occasion to examine those?

4 (The items referred to were thereupon handed to
5 the witness.)

6 A Yes, sir, I did. On State's Exhibit No. 5,
7 the markings which I've placed on the inside of this
8 skirt of S-87-32, and my initials, it may be a little
9 hard for you to see, this particular item was submitted
10 as coming from Ms. [REDACTED] and was submitted along with
11 the sex crime evidence kit. The pair of panties that
12 are marked as State's Exhibit No. 11 also have my
13 markings of S-87-72 and my initials. These panties
14 were submitted with the sex crime kit of Ms. [REDACTED]
15 for examination.

16 Q When you receive an item or items for
17 examination, can you tell us what the procedure or
18 protocol that is generally used for testing for blood
19 and bodily secretions?

20 A Yes, sir, I can. Depending on the type of
21 items that are submitted to the bureau for examination,
22 specific procedures are as follows: For blood samples,
23 for example, a whole blood sample or a bloodstain type
24 item, we determine, one, whether the blood is human or
25 animal. This is, of course, if it's a known blood

1 sample from an individual, we still follow the same
2 protocol just like we wouldn't know who it may have
3 come from. We determine whether it is blood and
4 whether it's human blood. After this process is
5 followed, then we continue on and try to obtain as much
6 information from the blood, whether it be in stain or
7 liquid form, as we possibly can following our normal
8 routines at the section. The normal routine, as far as
9 blood typing, will consist of anywhere from seven to
10 possibly 14 blood typings. Now, this is on a blood
11 sample or bloodstain. On body fluids, more
12 specifically, if we are examining for seminal fluid, we
13 will test for, one, whether, in fact, there is seminal
14 fluid identifiable, and two, if there is seminal fluid
15 or semen identified, the protocol would be to obtain as
16 much information from the seminal fluid or secretion
17 mixtures that we possibly can. The routine protocol
18 for examination of semen or seminal fluid stains would
19 be anywhere from four to six blood typings depending on
20 the amount and depending upon the racial background of
21 the individuals that we have had evidence submitted
22 from.

23
24 Q And did you follow this procedure upon the
25 testing of any of these items?

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2 A Yes, sir, seeing how there is a known blood
3 specimen which we've already referred to from Mr.
4 Woodall, in each of these sex crime kits, State's
5 Exhibit No. 22 and State's Exhibit No. 36, these kits
6 not only contain secretion type of evidence, they also
7 contain known blood samples from Ms. [REDACTED] and also
8 from Ms. [REDACTED]. So the protocol for the blood was
9 followed and protocol for the seminal fluid and
10 secretion identification also was followed.

11 Q Can you tell the jury what, if anything, you
12 found from the examination of the items of clothing
13 that were submitted to you, the rape kit from the case
14 of [REDACTED], the rape kit from the case of [REDACTED]
15 [REDACTED], and the known blood sample of Glen Woodall?

16 A Yes, sir, specifically state, and I would
17 like to just follow the routine of each report that was
18 issued out so that the jury can reference the case
19 numbers which I refer to on the evidence. On S-87-32,
20 which more specifically pertain to the sex crime
21 evidence kit, there was also a skirt, shirt, socks,
22 panties, bra, and jacket of Ms. [REDACTED] submitted for
23 examination. The results of the examinations were as
24 follows: That spermatozoa, which are the male sperm
25 cell, and seminal fluid, were identified on the vaginal

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2 smear slide, vaginal swab, and skirt. A vaginal smear
3 slide for your-all's information is the smear slide
4 which is made at the time of the examination by the
5 examining physician. He makes a smear slide and will
6 check the slide to see if there's any motile sperm
7 cells where, in fact, to identify whether intercourse
8 has occurred in the individual that he's examining. A
9 vaginal swab is used to make the smear slides. The
10 vaginal swab also has another purpose. If seminal
11 fluid is identified on the vaginal swab, then that
12 gives us material that we can examine to not only
13 identify sperm cells from the swab, but also to
14 identify any blood typing information that may have
15 been contributed by the semen donor. There also was a
16 skirt which sperm and seminal fluid were identified on.
17 Stains of human blood were also identified on the
18 panties. No seminal fluid or blood were identified on
19 the other items which I've mentioned. I requested at
20 that time that a known blood specimen should be
21 submitted for comparison purposes. That statement is
22 only to say that we weren't requesting a known blood
23 specimen from Ms. [REDACTED]. We were requesting any and
24 all blood samples from possible suspects at the time.
25 On S-87-72, which is the other sex crime kit, and other

1 items of evidence that I have in front of me, there
2 were a skirt, socks, sweater, bra, and panties also
3 submitted at the same time as these items. The results
4 were simply that seminal fluid and sperm were
5 identified on the vaginal slides, vaginal swab, and
6 panties. No sperm or seminal fluid were identified on
7 the remaining items. I did state at that time that
8 secretions identified on the vaginal slides, the
9 vaginal swab, and panties contained four genetic
10 markers which I can better show you on a chart that I
11 have drawn up, but I'll wait until I go through all the
12 reports before I do that. I also recorded out the
13 known blood specimen of Janet Johnson contained four
14 genetic markers which were used in comparison with the
15 secretions. These were reported out at that time
16 because I had already had submitted -- I didn't already
17 have submitted, excuse me -- this report was issued
18 after the known blood specimen of Mr. Woodall was
19 submitted. At this time I also reported the known
20 blood specimen of Mr. Woodall contained the following
21 blood characteristics or genetic markers, these also
22 are listed on a chart, which I will show you shortly.
23 I also reported the microscope characteristics of pubic
24 hair combings, which were submitted in the kit, were
25

1 consistent with microscopic characteristics of Ms.
2 [REDACTED] known pubic hair. I also stated the
3 microscopic characteristics of head hair from a
4 particular coat were similar to the microscopic
5 characteristics of Ms. [REDACTED] known head hair. The
6 combination of the information, as far as the blood
7 characteristics and the blood types, will be better
8 shown by the chart which I have in front of me here.

9
10 Q I'd like you to refer to the chart and --
11 first, I'd like to ask you about this chart. Have you
12 inspected this chart as to its accuracy and is it
13 prepared with your approval?

14 A Yes, it is. It's simply a chart which
15 contains the information from my reports to make it
16 easier for you-all to read it straight across instead
17 of trying to just listen to me rattle on. And it will
18 give you a -- it will be easier to compare the blood
19 typings from Ms. [REDACTED], from Ms. [REDACTED], and also
20 from Mr. Woodall.

21 MR. CUMMINGS: Your Honor, on this particular
22 chart, I don't believe that defense counsel has seen
23 it.

24 MR. SPURLOCK: That's correct, Your Honor.

25 MR. CUMMINGS: And would like to -- it is purely

as an aid to the jury, not to speak in --

Whereupon the following proceedings were had at the bench, out of the hearing of the jury:

MR. HATCHER: Your Honor, this chart is consistent with the report, I believe, that they have seen heretofore and is nothing new to them.

THE COURT: Counsel.

MR. SPURLOCK: We do object to the use of this, Your Honor, on the basis that there's -- no proper foundation has been laid, No. 1. No. 2, use of it will, in fact, not aid the jury, but it is highly prejudicial to the defendant without any probative value.

THE COURT: You say it's prejudicial. It apparently just reflects the report which is going to be testified to. How is it more prejudicial than --

MR. SPURLOCK: Just to keep, Your Honor, from putting before the jury chart after chart after chart of data with no probative value we say is prejudicial.

MR. CUMMINGS: The object of the trial is to clarify for the jury and make as straight and clean by demonstrative, as well as oral evidence, and this can do nothing except aid the jury in its clarity.

THE COURT: I concur. I believe you've laid a

proper foundation. I believe it's not at all prejudicial and that it's simple aids in what otherwise might be confusing piecemeal evidence. I will allow you to have it marked and --

MR. SPURLOCK: We would register a continuing objection as to leaving that chart up there on the basis it's on the hair and it's prejudicial.

THE COURT: On the hair?

MR. SPURLOCK: Yes.

Whereupon the following proceedings were had in the hearing of the jury, there being present the same parties as heretofore noted, including the defendant and his counsel:

MR. CUMMINGS: I would like to have marked for identification as the next sequential number as State's Exhibit No. 50, and would move its introduction into evidence as an aid to the jury.

STATE'S EXHIBIT NO. 50 FOR IDENTIFICATION

The item referred to was thereupon marked as above indicated.

THE COURT: And for that reason it will be admitted subject to the objections that were made. And let the record reflect that the two previous exhibits are being removed so that that exhibit can be hung up.

STATE'S EXHIBIT NO. 50

The item referred to, previously marked for identification, was thereupon received in evidence.

A The chart that I was referring to is this, and this is simply the three reports, report on S-87-32, the report on S-87-72, and S-87-79, which was the known blood specimen of Mr. Woodall. One, that genetic markers, for summation, are simply blood characteristics or blood typings. The ABO blood type of Ms. [REDACTED] is a Type O. Another blood typing which is performed on blood and secretions is called a PGM blood type.

Q Sergeant Zain, can you wait one second.

MR. CUMMINGS: Let me approach the bench.

Whereupon the following proceedings were had at the bench, out of the hearing of the jury:

MR. CUMMINGS: I don't believe that the rear members of the jury can see that. I've asked that some small nails be gotten that we could drive into the cork board up there that would hold that up higher. If we would take a second and explain it.

THE COURT: Let's take a brief recess. I've got to arraign two of your criminals.

Whereupon the following proceedings were had in

the hearing of the jury, there being present the same parties as heretofore noted, including the defendant and his counsel:

THE COURT: Ladies and gentlemen, while we get some aids of our own, we are going to take a brief recess for about five minutes. So please don't get too far away.

The courtroom will remain seated while the jury recesses across the hall.

Whereupon a recess was taken, after which proceedings were resumed in the hearing of the jury as follows, there being present the same parties as heretofore noted, including the defendant and his counsel:

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2 THE COURT: The record will again reflect the
3 presence of the jury in the box, the prosecuting
4 attorney, the defense attorneys, and the defendant.

5 You may proceed.

6 DIRECT EXAMINATION

7 BY MR. CUMMINGS:

8 Q Sergeant Zain, you were explaining to the
9 jury the testing that you had done and what findings of
10 blood groups, I believe, you had found, and what these
11 blood groups indicate when we took a recess for other
12 purposes, to raise the chart there, is that correct?

13 A Yes, sir, that's correct.

14 Q Could you continue on from that point.

15 A Yes, sir, I could. The results that were
16 reported in the case S-87-32, S-87-72, and S-87-79 were
17 as follows: The known blood specimens that I refer to
18 in each one of the sex crime kits contained whole
19 bloods of Ms. [REDACTED] in one and Ms. [REDACTED] in the
20 other, and then of course, the known blood specimen,
21 which is in the styrofoam containers that we referred
22 to earlier. The ABO type of Ms. [REDACTED] is blood Type
23 O, the PGM blood type is what is called a 2+1-, GLO I
24 blood type is a 2-1, and the Le blood type or secretor,
25 which I can explain to you what a secretor is here

1
2 shortly, is an a-b+. On Ms. [REDACTED] her known whole
3 blood was typed as an ABO Type O, a PGM Type 1+, a GLO
4 I Type 2-1, and an a+b-, which is a non-secretor. At
5 this point I would like to explain to you what a
6 secretor and non-secretor individual is. A secretor
7 individual is an individual in a given population that
8 will have their ABO blood type, for example, in Ms.
9 [REDACTED] will be identifiable in her body fluids such as
10 her saliva, her vaginal secretions, her perspiration,
11 whatever. A non-secretor individual is an individual
12 that their ABO blood type is not identifiable from
13 their saliva, from their vaginal fluid, from their
14 other body fluids. In a male, if a male individual is
15 a non-secretor, you would not be able to identify that
16 individual's ABO blood type in their seminal fluid,
17 perspiration, saliva. Mr. Woodall's known blood
18 sample, which was an ABO Type B, a PGM Type 2+, and a
19 GLO I Type 2-1. He's also a Lewis or secretor, a-b+,
20 which is also a secretor individual. So the best thing
21 to remember is that Ms. [REDACTED] is an O. Mr. Woodall is
22 a B. Ms. [REDACTED] is a secretor. Mr. Woodall is a
23 secretor. Ms. Johnson is a non-secretor. Therefore,
24 her ABO Type O would not be in her body fluid. And
25 that's important because when a sex crime kit is taken

1 and vaginal samples are taken and vaginal samples are
2 tested, you would not find ABO Type O that could
3 originate from Ms. [REDACTED] whereas in Ms. [REDACTED]
4 body fluids, say the vaginal swabs and the kits, we
5 would be able to identify an ABO Type O from her body
6 fluids and from the vaginal secretions. In the
7 evidence spoken of earlier from Ms. [REDACTED] we referred
8 to a vaginal swab and a skirt, identified sperm cells
9 and seminal fluid from the vaginal swab and skirt of
10 Ms. [REDACTED] The blood typings which I identified from
11 the mixture of secretions on the vaginal swabs and
12 skirt was an ABO Type B and an ABO Type O. The PGM
13 type was a 2+1-. The PGM blood type of 2+1- is the
14 same as Ms. [REDACTED] PGM type, as you can see. The
15 numbers and the plus and minuses are the same.

16
17 Q Sergeant Zain, would it be more helpful to
18 draw on the board how you test or what you go through
19 on the screening for the PGM type?

20 A Yes, it would, Mr. Cummings. If you would, I
21 can go ahead go on through this and show the jury on
22 the board.

23 The GLO I type blood was a 2-1 also from the
24 secretions. And of course, an a-b+ would show that the
25 semen donor and the victim would have to be secretors

1 and that's what was identified. From the vaginal
2 slides, vaginal swabs, and panties of Ms. [REDACTED],
3 which these pair of panties and the slides and swab are
4 in the kit, I identified an ABO Type B, which is the
5 same as Mr. Woodall's, an ABO Type O, which could not
6 have originated from Ms. [REDACTED], a PGM 2+, and the
7 comma is in there because PGM 1+ was identified, and of
8 course, you can see she is a PGM 1+. Therefore, with
9 that evidence we know for sure that the semen donor had
10 to contribute this blood type. The 2+ had to come from
11 the semen donor. Now, I'll go into a further
12 explanation of that shortly. The GLO I type also is
13 the same, Ms. [REDACTED] Mr. Woodall, and also secretor
14 individual would have deposited the semen, especially
15 seeing how Ms. [REDACTED] is a non-secretor. I stated
16 earlier that a non-secretor individual would not have
17 -- be able to identify their blood type in their body
18 fluids. A secretor individual will. For example, Ms.
19 [REDACTED] is an O. She'll secrete an O. Mr. Woodall is a
20 B. He'll secrete a B. The other aspect of a secretor
21 individual is this, they will secrete their known ABO
22 blood type and an O. Of course, if you're an O, that's
23 all you're going to find, but if, for example, you were
24 an A secretor, I'm an A secretor individual, I will
25

At this time I would like to explain to you what I was referring to you, why there's a comma on this PGM blood type, right here. What I'm going to do is show you just a simple diagram of how I view or when I interpret an analogy of what I'm actually seeing. It best can be described on the blackboard. A PGM 1+, and in this case Ms. [REDACTED] is a 1+, would be, for

At this time I would like to explain to you what I was referring to you, why there's a comma on this PGM blood type, right here. What I'm going to do is show you just a simple diagram of how I view or when I interpret an analogy of what I'm actually seeing. It best can be described on the blackboard. A PGM 1+, and in this case Ms. [REDACTED] is a 1+, would be, for

1 example, this right here. A PGM say 2+ like Mr.
2 Woodall's would be -- and I'll put it like this -- the
3 PGM on Ms. [REDACTED] which was a 2+1-, would be like
4 this. This is a 2+1-. This is a 2+, 2+, 1-. As you
5 can see, these markers are in different places on the
6 board. So, therefore, it makes it pretty evident,
7 because of the positioning on the board, that they are
8 what I've written down, when you're interpreting the
9 results for a PGM blood type, these blood types can be
10 interpreted by the specific position that they are just
11 like on a photograph. In the secretions of Ms. [REDACTED]
12 we had a 2+ and a 1- that were identified. Now, to
13 explain more thoroughly, for example, this would be her
14 whole blood, and when you have secretions, the
15 secretions can mask or cover a blood typing if it's the
16 same. For example, you would have like what's called a
17 banding that would look like this. It would be more
18 intense, it would be larger, and in my past years of
19 experience, I've seen this occur many, many times in
20 mixtures of secretions, but in my conclusion in the
21 report, I stated that the PGM being a 2+1- was
22 consistent with Ms. [REDACTED] PGM 2+1-, instead of
23 saying that specifically the semen donor was a PGM 2+,
24 because in all reality, the person could be a 2+ or a
25

1
2 2+1-. That's possible. In Ms. [REDACTED] case it's a
3 different story. We know that she is definitely a 1+,
4 and we also know that from the secretions identified
5 from the vaginal swab and also from the panties, we
6 identified a 2+ that could not have originated from
7 her. There's no way that Ms. [REDACTED] could have
8 produced that PGM blood type. It had to come from the
9 semen donor. There again, the possibility is that the
10 semen donor could be a 2+ by itself or a 2+, 1+.
11 Considering the standpoint because one individual is
12 suspect for both -- being the semen donor in both
13 cases, there's no way that the semen donor, if he was
14 the assailant or the semen depositor in both cases,
15 could be a 2+, 1+, or a 2+1-. And what that says is
16 that the semen donor has to be an ABO Type B, a PGM 2+,
17 and a secretor or a-b+. On the other blood typing,
18 which is on the chart, of Glyoxalase, the semen donor
19 could be a 1, it could be a 2, or it could be a 2-1.
20 There's no way scientifically for me to say that the
21 semen donor is 100 percent a Glyoxalase 2-1 individual.
22 There's no way I can do that. What I can say by
23 interpretations, as well as visualization of the
24 evidence and comparing the two cases is one conclusion,
25 is that the semen donor is a B, a 2+, and a secretor.

1 A Glyoxalase I 2-1 blood type occurs in approximately
2 52 percent of the population of West Virginia. If the
3 semen donor was a Glyoxalase 2, and that's the long
4 word for GLO, if the semen donor was Glyoxalase 2, it
5 would occur in approximately 20 percent of the
6 population. If the semen donor was a 1, it would occur
7 in approximately 28 percent of the population. So in
8 essence, what I've done in the conclusion, without
9 being able to 100 percent scientifically state that the
10 semen donor is a Glyoxalase or a GLO Type 2-1
11 individual, is that you have given more of the benefit
12 of the doubt to the individual that is Glyoxalase 2-1
13 because of the percentage, because 20 or 28 percent is
14 quite a great difference than 51 or 52 percent. That
15 basically is the interpretation of the results that I
16 can explain by using the chart, Mr. Cummings.

17
18 Q Sergeant Zain, you have the figure up there
19 that's -- I believe it's 6 out of every 10,000 --

20 A Yes, sir, that's correct.

21 Q -- persons have the same blood grouping -- or
22 6 out of every 10,000 males have the same four
23 characteristic blood groupings as the defendant, Glen
24 Woodall, is that correct?

25 A That's correct, sir.

Q Upon what did you base that?

A For every individual blood type, for example, an ABO blood type of an A occurs in approximately 43 percent of a given population. An O occurs in approximately 43 percent of a given population. AB occurs in approximately 11 percent of a given population. And an ABO Type AB individual occurs in approximately 3 percent of a given population. The same type of frequency breakdown can be said about PGM blood types. For example, a PGM Type 1+ occurs in approximately 40 percent of the population. A PGM Type 2+1- occurs in approximately 3 percent of a population. The same for a PGM Type 2+. For Glyoxalase or GLO Type I 2-1, as I stated earlier, we use a statistic that's 52 percent of a population could have a GLO Type 2-1. And as far as the Lewis blood typing, which designates whether a person is a secretor individual or not, 72 percent of a given population are classified as secretors, 22 percent are classified non-secretors, and 6 percent are classified as not being able to identify one way or another whether they're secretors or not.

Q In that 6 out of 10,000, does that include any age breakdowns or is that total population?

A Sir, that is based specifically just on male

1
2 population of Cabell County. That is the general
3 population of the State transferred on down. It pretty
4 much remains the same on down through the county, but
5 it is specifically just for male population with no age
6 breakdown.

7 Q So that would include any one year old or a
8 100 year old?

9 A Yes, sir, that's correct.

10 Q Does it take into any factors as to race?

11 A No, sir, it does not.

12 Q Could you tell from your examination what the
13 race of the depositor was?

14 A The blood typing systems which we run, there
15 are typings which can be done that can distinguish, say
16 for example, between black populations and white
17 populations, or black and Mediterranean type
18 populations is more accurate, than Caucasian
19 populations. There was no indication by any of the
20 blood typings that they occurred from any other
21 individual other than from a Caucasian race.

22 Q Do those figures take into account whether
23 the person is bearded?

24 A No, sir.

25 Q Hair color?

A No, sir.

Q Whether they're circumcised or not?

A No, sir.

MR. SPURLOCK: Objection. He's leading the witness, Your Honor.

THE COURT: Overruled.

Q Have you taken any studies or referred to any studies done of the census figures for Cabell County, West Virginia?

A We do have a manual that was published by West Virginia University which was based on the 1980 census of the State of West Virginia.

Q And based upon --

MR. SPURLOCK: May we approach the bench, Your Honor?

THE COURT: Please.

Whereupon the following proceedings were had at the bench, out of the hearing of the jury:

MR. SPURLOCK: The defendant is going to object to this, Your Honor. It's a 1980 manual. It's seven years ago. Too old to be of any relevance to 1987, first of all. Second of all, the man did not author the manual and we would have to have it authenticated.

MR. CUMMINGS: Your Honor, as to what he has

referred to to make his studies and the basis of his opinions and reports, he can use to give these bases.

MR. SPURLOCK: May it please the Court, we have gone to great lengths not to object, to allow the State to go ahead with this kind of evidence because it's already been done by a chemist and so forth, but this getting into demographics is also outside the scope of this man's expertise. He's not a demographer.

THE COURT: In your opening statement you opened the door by referring to the fact you could line 170 men along the wall --

MR. HATCHER: 200.

THE COURT: I think it was 170 that you would line up along the wall here and that you could -- each one of them have this blood type. I believe you opened the door to this and I believe that the question of whether or not this is up-to-date can be gone into on cross-examination and is a question for the jury to determine. So I'm going to allow you to continue.

MR. SPURLOCK: Let the record reflect our objection, Your Honor.

Whereupon the following proceedings were had in the hearing of the jury, there being present the same parties as heretofore noted, including the defendant

and his counsel:

THE COURT: You may continue, counsel.

Q Have you determined, based upon that U. S. Census Bureau, census of 1980, the number of males in Cabell County between the ages of 25 and 34?

A The specific number, I don't recall specifically. As far as the age breakdown between 24 years old to 35 years of age, or something along this line, in Cabell County was around 50,000 people, to the best of my recollection.

Q Of that age of males?

A I don't recall.

MR. CUMMINGS: Your Honor, may I approach the witness and show him the statistical survey upon which he had referred to?

THE COURT: If it will refresh his recollection.

Q I would like to show you from the 1980 population housing characteristics for West Virginia, and ask if you would refresh your memory.

THE COURT: Please speak up, Mr. Cummings. The air conditioning is on and we need to hear you.

A Yes, Mr. Cummings, as I stated, I knew it was around 50,000 is the male population of Cabell County, more specifically 50,227 males in the '80 census

1 statistics from Cabell County.

2 Q Of those, based upon that figure of 6 in
3 10,000, how many would be the maximum that would have
4 the same blood characteristics of Glen Woodall?
5

6 A Well, approximately 30 individuals if you're
7 going with 6 people in 10,000, and you've got a little
8 over 50,000 people, then it would be about 30 people in
9 the county approximately, and that's 30 people that
10 could have the same characteristics which I have
11 previously spoken of.

12 Q In that same book on the next page is there a
13 breakdown for the number of males age 25 to 34?

14 MR. SPURLOCK: May it please the Court, we will
15 register another objection. Trooper Zain has already
16 testified that his blood analysis cannot show age. Mr.
17 Cummings is creating artificial age brackets that are
18 not found in the testimony by this expert. We have no
19 objection, Your Honor, if indeed, the blood groupings
20 can show age. We say they cannot. Therefore, Mr.
21 Cummings is attempting to narrow the number of possible
22 donors by an artificial manner, which is not true,
23 Judge.

24 MR. CUMMINGS: Your Honor, the testimony of other
25 persons has been that the perpetrator is approximately

1 30 years of age. In order -- and that was from the
2 testimony of [REDACTED] and [REDACTED] that he
3 was approximately 30 years of age, which is in the age
4 group I am asking about to show the number of male
5 persons that the 1980 census has in this county of that
6 age.
7

8 MR. SPURLOCK: May it please the Court, my
9 recollection of her testimony, that's not correct.

10 THE COURT: I also have the same recollection, and
11 for that reason, I will sustain the objection.

12 Q Based upon your examination of the seminal
13 fluids or the remains of seminal fluids and the blood
14 of [REDACTED] [REDACTED], and Glen Woodall, can
15 you express an opinion or likelihood of whether or not
16 the same person is the perpetrator of this rape or
17 these rapes?

18 A As I stated earlier, my opinion, based on the
19 examination of the tests and interpretation of the
20 results, which I drew on the chalkboard, I would 100
21 percent state that the semen donor would have to be a B
22 type individual. The individual would have to be a PGM
23 Type 2+ individual. And the individual would also have
24 to be a secretor individual. As far as the Glyoxalase
25 blood type or GLO I blood type, I would not conclude or

1
2 offer an opinion to any percentage of that other than
3 that particular blood type occurs in a certain
4 percentage of the general population of West Virginia,
5 as well as other populations of the United States and
6 any Caucasian population, but of the three out of the
7 four, I would have to say that three of them 100
8 percent came from the semen donor.

9 MR. CUMMINGS: Thank you. No further questions of
10 this witness.

11 THE COURT: You may inquire after a brief recess.

12 Ladies and gentlemen, we're going to take a recess
13 of about ten minutes if you will recess cross the hall.
14 We're going to take a break and bring you back in a few
15 minutes.

16 The courtroom will remain seated while the jury
17 recesses.

18 Whereupon a recess was taken, after which
19 proceedings were resumed in the hearing of the jury as
20 follows, there being present the same parties as
21 heretofore noted, including the defendant and his
22 counsel:

23 THE COURT: Let the record reflect the presence of
24 the jury in the box, the prosecuting attorney, the
25 defense attorney, and the defendant.

You may proceed, counsel.

CROSS-EXAMINATION

BY MR. SPURLOCK:

Q Sergeant Zain, do you remember the preliminary hearing in this case?

A Yes, sir, several of them.

Q Good. In that in response to a question I asked you concerning blood, I said, "You cannot testify with any degree of certainty that this defendant is the person that the blood came from?" Your response was, "I cannot say that a particular blood or body fluid 100 percent came from the individual." I said, "You cannot say this?" Your answer was, "No, sir." So I ask you again today, can you tell that that blood belongs to the defendant?

A Based on the blood characteristics?

Q No, sir, not based on blood characteristics. Can you state that that is Woodall's blood, please?

A It was marked as being taken from Mr. Woodall.

Q I'm talking about the bottom line conclusion of your testimony, based on all of your statistics, can you state that that is the blood of Glen Woodall?

A We're combining here. I think I'm answering

one question and you're asking another. As far as the specific specimen which I received from Mr. Woodall, I would say, yes, I could say it came from Mr. Woodall. As far as secretions --

Q That's not my question, Trooper Zain. My question is, is the blood found -- can you state that the blood found in these ladies in the semen is Glen Woodall's blood?

A Well, sir, there --

Q Yes or no, please?

A There was no blood found. As far as the secretions and the blood typings, I cannot 100 percent say that it came from Mr. Woodall.

Q Thank you. In other words, you cannot say that the blood that came from the fluids that came from the victims is Woodall's blood, can you? Yes or no?

A There again, there was no blood found in the fluids. The blood typings, as a general statement, you cannot say that a secretion containing blood typings could come from Mr. Woodall 100 percent.

Q Let me ask you another question. Concerning the Glyoxalase you've mentioned --

A Yes, sir.

Q -- can you determine from semen whether

you're dealing with a Glyoxalase 1, 2, 2-1?

A Yes, sir.

Q In the semen you examined what were you dealing with, please?

A In the blood characteristic which is on the chart that I identified was a Glyoxalase 2-1.

Q Thank you very much. Concerning the hair sample that you talked about, how many pieces of hair were there?

A From the vehicle or from the known blood specimen of Mr. Woodall?

Q From all of the above.

A There were --

MR. HATCHER: I don't think he can answer that properly, all of the above, from the vehicle, and how many were taken from his beard, one or the other. It can't be all of the above.

THE COURT: I think it is a multiple question. You'll have to --

MR. SPURLOCK: All right, Judge, I'll rephrase my question.

Q How many pieces of hair did you examine that your examination would indicate belonged to a perpetrator of the offense, whoever that might be?

1
2 A Out of the multiple hair specimens that were
3 taken from the vehicle of Ms. Mowery, there was quite a
4 large amount of variety of hair, head hair, pubic hair,
5 et cetera. From those sweepings from Ms. [REDACTED] car,
6 I identified one facial hair. As far as Mr. Woodall's
7 known facial hair specimen, I believe there was
8 somewhere in the proximity between 12 and 20 because
9 that is what I had requested for comparison purposes.

10 Q From Ms. Mowery's vehicle there was one hair,
11 was there not?

12 A There was one facial hair identified from the
13 sweepings which contained numerous hairs.

14 Q This one facial hair which you're saying
15 bears similar characteristics to Mr. Woodall's facial
16 hair? Within the sweepings there was only one of
17 those, wasn't there?

18 A There was only one that I identified, yes,
19 sir.

20 Q Yes, sir. Is hair comparison a subjective
21 examination, Trooper Zain?

22 A Subjective from which standpoint?

23 Q Can you state objectively that that hair
24 sample belonged to Glen Woodall?

25 A I would say with the -- as I stated earlier,

1 in the opinion of the comparisons, based on the
2 microscopic characteristics compared from the known
3 beard hair of Mr. Woodall and the microscopic
4 characteristics from the hair identified coming from
5 [REDACTED] vehicle, that the consistencies were
6 100 percent, and it is very highly likely that they
7 came from the same individual.
8

9 Q But your answer is it was highly likely. You
10 can't say it did, can you?

11 A There again, from the standpoint of
12 scientifically stating from the characterization on the
13 examination, I would say that there was nothing to show
14 me in the examination that they originated from another
15 individual.

16 Q Since you used one hair from the vehicle to
17 link this hair to the defendant, can you state that it
18 would be possible for one hair, this one hair, to fall
19 within the range of characteristics exhibited by other
20 individuals, please?

21 A Well, most hairs, whether it be head hair or
22 pubic hair or facial hair or other body area hair,
23 would still have the certain number of characteristics
24 which we use for comparison. The point being is that
25 under the 25 or more characteristics and components of

those characteristics which were compared, which are the routine comparisons, there was none found that were dissimilar from the hair from the vehicle and the known facial hair of Mr. Woodall.

Q Sergeant Zain, isn't it true that hair contains many ovoid bodies or few ovoid bodies or no ovoid bodies?

A That's possible --

Q So you're wishing this jury to believe.

MR. CUMMINGS: Objection, Your Honor. He asked a question and he didn't give him a chance to respond.

MR. SPURLOCK: He answered it. He said it's possible.

THE COURT: Overruled.

Q You're asking this jury to believe that based on one hair found in that vehicle, your comparison of that one hair to hair samples from the defendant, that it's the same hair, only one hair?

A I would say in my opinion that there was nothing to rule out that it could not have originated from the same individual.

Q But you're not saying it is the same individual and you cannot say that, can you?

A I could not say that, that's correct.

Q Thank you. Thank you. Have you, in your years of experience with hair, ever known hair to travel on people's clothing?

A There has been transfer of hair during the process of crimes and that's primarily what I deal with. As far as origin, I really couldn't say.

Q So you couldn't say where that hair that was found, one hair, facial hair that was found in Ms. [REDACTED] vehicle, you don't know where that came from, do you?

A As I stated earlier, no, sir.

Q You don't know whether it might have come from the mall on a person with hair similar to Glen Woodall, buying and selling at the mall, onto the clothing of the victim, and into the car, do you?

A As far as speculation, I guess that is possible.

Q Yes, sir. So your conclusion, once again, would be the same as it was in the preliminary hearing concerning the hair sample, is the best that I can say is that it was similar, is that right?

A Yes, sir, the best that I can say is it is similar, but that all characteristics were the same in comparison.

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Q Concerning the item of facial hair you examined, how long was it, please?

A I do not recall specifically the length of the hair. I do not recall.

Q Thank you, Trooper Zain. Let's look at the bottom line figures there for a moment. You've testified that 6 in 10,000 males are represented in that sample. Don't you really mean 6 in 10,000 people, male and female, Sergeant Zain, based on the textbooks that you read?

A No, sir.

Q You're saying that is 6 out of 10,000 males?

A 6 out of 10,000 subtracting the female population, that's correct.

Q If you add the female population, what do you have, please?

A A little over .12, .13 in the State of West Virginia.

Q You're talking that percentage of a 10,000 sample in the State of West Virginia, are you not?

A I'm simply stating that the blood characteristics which were identified, in particular the ABO Type B, PGM Type 2+, GLO Type 2-1, and the individual being a secretor, and the percentage that

1
2 you would obtain from those blood characteristics, also
3 taking away the female population or multiplied against
4 the male population, which is 46 and 48 percent in this
5 State, that 6 people in 10,000 could have those four
6 characteristics.

7 Q Now, are we talking about 10,000 people or
8 10,000 males?

9 A We're talking about 10,000 males.

10 Q Yes, sir. Now, if you're dealing with a
11 population of 50,000 people, you've already testified
12 that you're dealing with 30 males?

13 A That's correct.

14 Q In you go to a population of 250,000,
15 Sergeant Zain, how many males are you talking about,
16 please?

17 A Whatever it would calculate out to be.

18 Q Can you calculate that out on the blackboard
19 for the jury, please?

20 A I'll just calculate it out here.
21 Approximately 750.

22 Q 750. So based on your calculations out of a
23 sample of 250,000 people, there would be 750 possible
24 people who match all of these 2+ 1's, 2+ minuses, and
25 so forth, right?

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A As far as the --

Q That you've linked into your final sample
over there of 6 in 10,000?

A The four blood characteristics are
specifically the blood characteristics of Mr. Woodall.

Q Yes, sir.

A Those same four blood characteristics, based
on a general Caucasian population, would be the number
which we just spoke of.

Q How many was that?

A 750.

Q 750?

A Yes, sir.

Q Yes, sir. Can you state, based upon your
scientific analysis, Sergeant Zain, whether this blood
came from a donor in Charleston, West Virginia? Do you
know that?

A No, sir.

Q Do you know whether it came from a donor in
Louisville, Kentucky?

A No, sir.

Q Do you know whether it came from a donor in
Wayne, West Virginia?

A No, sir.

Q Do you know anything about a donor that might have had these same characteristics from Chesapeake, Ohio?

A No, sir.

Q Yet all these people would have access to the mall, would they not, Sergeant Zain?

A Very possible, yes, sir.

Q So then your sample of the 50,000 people that you've testified to is highly artificial concerning the road network, proximity to the mall of all these cities, isn't it?

A I wouldn't say fictitious. It is just a statistic for the particular district population of the 1980 census.

Q Of Cabell County?

A That's correct.

Q As a matter of fact, the census from which you testified, and Mr. Cummings so kindly provided you, was 1980, was it not?

A Yes, sir, that is the manual which I have.

Q How long ago was that, Sergeant Zain?

A Seven years ago.

Q Does that accurately reflect the population of Cabell County today, Sergeant Zain?

1
2 A Realistically, no, because the population of
3 Cabell County is declining.

4 Q Yes, sir. Then your figures of 6 in 10,000
5 as relates to Cabell County and translated into 50,000
6 are not correct, are they?

7 A It would be less. It would be a lesser
8 number of individuals.

9 Q Would it be more if you consider the
10 tri-state area, Sergeant Zain?

11 A Of course.

12 Q Thank you. Let's assume arguendo, Sergeant
13 Zain, that you do eliminate the Glyoxalase factors
14 entirely from your results, can you calculate out what
15 the percentages of the population would be in the 6 in
16 10,000? What happens then, please?

17 A It's approximately .2.

18 Q What does that represent in a population of
19 10,000?

20 A Two people in 1,000.

21 Q And in 10,000?

22 A Ten times that, 20.

23 Q You've testified, Sergeant Zain, that all of
24 these factors led you to that conclusion. If you leave
25 out any one of the elements, the ABO, the PGM, the GLO,

1
2 or the Le in coming up with these statistical analyses,
3 you come up with different figures, don't you?

4 A Depending on each independent and separate
5 blood type, there could be a different population
6 distribution.

7 Q So your figures would be different, in other
8 words? Statistics would change, wouldn't they?

9 A It's really not based on statistics as much
10 as it's based on gene frequencies. Gene frequencies
11 fluctuate very slightly in given populations.
12 Statistics do fluctuate.

13 Q Aren't gene frequencies and gene statistics
14 the same thing the bottom line? Aren't we playing
15 semantics here together?

16 A Well, as a biologist, I look at gene
17 frequencies as not being statistics, but as genetic
18 characteristics and traits. Statistics is what we
19 refer to as you gave the example, an increase or
20 decline in the population of Cabell County.

21 Q When you use gene characteristics to produce
22 probabilities, have you not used statistics, Sergeant
23 Zain?

24 A You've used some type of statistical
25 calculation.

1
2 Q Thank you. You've stated that the unknown
3 hair found in [REDACTED] car was similar to
4 Glen's beard hair, have you not?

5 A Yes, sir, that's what I've stated.

6 Q You've also stated that the blood type as
7 determined from the semen from Ms. [REDACTED] is the same
8 as Glen's blood type, have you not?

9 A I've stated that it was consistent with his
10 blood typings.

11 Q So what you're saying is that an unknown hair
12 taken from [REDACTED] car and the blood type as
13 determined from [REDACTED] probably belonged to the
14 same person, did you not?

15 A I'm saying that they could have originated
16 from the same individual.

17 Q Therefore, if Glen Woodall did not have a
18 beard on January the 22nd, 1987, then the unknown hair,
19 one hair, from [REDACTED] car could not possibly
20 belong to Glen Woodall, could it?

21 A I would say if an individual was clean shaven
22 that they would not have been able to deposit the beard
23 hair.

24 Q Yes, sir. And then the blood type as
25 determined from [REDACTED] could not possibly be

Glen's blood, could it?

A The blood type -- if the individual was the same individual, if it were, the blood typings still, there again, would occur in the same amount of population.

Q What I'm asking you, Sergeant Zain, if Glen Woodall was clean shaven on January 22nd, and could not possibly have left that hair, and if you're saying the hair and the blood make this person similar to Glen Woodall, then it couldn't have been Glen Woodall, could it? Both cannot be true, in other words, Sergeant Zain? It's impossible, isn't it?

A I'm not drawing conclusions as to exactly who they may have come from. What I would do is go back to the scientific fact that the hair specimen was consistently the same as Mr. Woodall's. That the blood typing characteristics identified were the same as Mr. Woodall's. I would not -- and would not have any scientific basis to state that one or the other would have eliminated anybody.

Q Nor can you say one or the other would include anybody?

A Yes, one or the other, as far as statistics, would include in it the percentage of population we've

just gone over.

Q And --

A I do not represent exclusionary statistics. What this simply states as 6 in 10,000 is representative of excluding 99.94 percent of a given male population.

Q When we transfer that into numbers, we come up with -- depending on the sample we're dealing with, anywhere from 50 to 750 people in the tri-state area, don't we?

A It would consistently be the same for any given population, yes, sir.

MR. SPURLOCK: Thank you. You may inquire.

THE COURT: Your witness, counsel.

MR. CUMMINGS: No further questions.

THE COURT: You may step down.

(Witness excused)

Please return the exhibits to the court reporter.

MR. HATCHER: Could Mr. Cummings and I confer just a second, Your Honor, before we proceed?

(There was discussion between Mr. Cummings and Mr. Hatcher off the record and out of the hearing of the jury.)

Whereupon the following proceedings were had at