

1 other?

2 A Yes.

3 Q So that you felt the lineup was a reliable one?

4 A Yes.

5 Q Now, I believe counsel asked you what her reactions
6 were upon the identification. You said she walked over
7 and signed the piece of paper. On direct examination
8 you also testified that as the blinds were opened
9 she stated something about him, is that correct?

10 A That is correct.

11 MR. RICHARDSON: Thank you.

12 (Adjourned for the day.)

13 JULIE LONG

14 Called as a witness, duly sworn, testified as follows:

15 DIRECT EXAMINATION BY MR. RICHARDSON

16 Q Would you state your name and occupation for the
17 Court, please.

18 A Julie Long. I am a forensic serologist at the Montana
19 State Crime Lab which is located in Missoula.

20 Q And your job title is forensic scientist?

21 A Yes.

22 Q What is your job description?

23 A I work in the forensic serology department of the
24 laboratory. Forensic serology is the types of
25 identification of....

1 MISS CAUGHLAN: Please the Court, we will stipulate to
2 Miss Long's qualifications.

3 MR. RICHARDSON: Thank you counsel, but we will not
4 stipulate.

5 You may continue.

6 A As I was saying, forensic serology is the types of
7 identification of the blood and other body fluids primarily
8 as evidence that is sent to the laboratory. Our job is
9 to analyze the evidence that is submitted by the law
10 enforcement agencies.

11 Q How long have you worked in that capacity?

12 A I have been fulltime serologist for approximately
13 two years. A year ahead of that time I worked parttime
14 in serology and parttime as a technician at the lab,
15 evidence technician.

16 Q Would you briefly describe for us your formal education.

17 A I have a Bachelor of Sciene Degree in Microbiology
18 from the University of Montana in Missoula.

19 Q Have you taken any additional job related courses?

20 A Yes, I have.

21 Q What are those?

22 A I have taken a course in basic blood analysis from the
23 FBI academy in Virginia. I have also taken a class
24 in biochemical methods which is enzymes typing of blood
25 stains from the FBI academy. Also, from a serological

1 researching unit in California. I have also taken a
2 course in hair and fiber examination from the FBI academy
3 and I have taken a forensic microscopy course from the
4 McCrone Research Institute in Chicago.

5 Q Julie, would you briefly relate for us your job
6 related experience?

7 A I have been currently at the laboratory for two
8 years in this capacity. Before I worked a year as
9 evidence technician and parttime in serology. Three
10 months prior to that while I was finishing school, I
11 did a three month internship at the laboratory.

12 Q Do you belong to any professional forensic organizations?

13 A Yes, I do.

14 Q What are they?

15 A I am a member of the Northwest Association of Forensic
16 Scientists.

17 Q Julie, have you previously testified in District Court
18 before as an expert?

19 A Yes, I have.

20 Q How many times?

21 A Approximately ten.

22 Q How many times as an expert in serology?

23 A I believe eight.

24 Q Julie, would you briefly review for us what your
25 typical function in a rape case would be.

A The evidence is submitted to the laboratory from

1 a law enforcement agency. They are either brought
2 by person or sent in the mail or by UPS. The evidence
3 arrives at the laboratory. The evidence technician
4 or someone acting as evidence technician signs the
5 evidence in, assigns it a log number for her evidence
6 log and then the evidence is put in locked storage
7 until the time for the scientist to analyze the evidence,
8 at which time the analyst goes to the person that
9 signed in the evidence. The evidence is signed over to
10 the analyst and the analyst opens the evidence, breaks
11 the seals and analyzes the evidence.

12 Q Could you briefly review for us what kind of evidence
13 you receive from law enforcement.

14 A Typically in rape cases, there is clothing from the
15 victim or suspect, bedding, any articles of clothing
16 or materials that were at the crime scene. There are
17 also samples that are taken from the victim at the hospital
18 that are taken by a physician or nurse. Samples are
19 also submitted to the laboratory so we can perform tests
20 to determine the differences between the individuals
21 involved. If there is any other previous sexual partners
22 within a certain period of time. We need to type
23 these samples of blood and saliva from these people
24 so we can differentiate between the people involved.

25 Q So, you also request that standards be taken from

1 other individuals?

2 A Yes.

3 Q Did you receive evidence in the case we are in
4 Court about today?

5 A Yes, I did.

6 Q How did you receive that evidence?

7 A There were three evidence submissions that were
8 brought over personally from the detectives from the
9 Butte-Silver Bow Sheriff's.

10 Q What was done with that evidence when it arrived at
11 the crime lab?

12 A The evidence, as I explained previously, was assigned
13 its evidence log and then put into the locked evidence
14 vault until the analyst could analyze the evidence
15 or if it was evidence that should be refrigerated
16 it was placed in refrigeration.

17 Q Did you deal personally with all the evidence in this
18 case?

19 A Yes, I did.

20 Q When you received it, was there any evidence that any
21 seals had been broken or anything such as that?

22 A No, everything was intact.

23 Q Did you do anything with this evidence other than
24 perform serology tests?

25 A Yes, I did.

1 Q What was that?

2 A Two of the particular items that were sent in, I
 3 took off the hair samples that were contained on those
 4 items. That basically involves laying out the items.
 5 In this case I believe it was a bed spread and a blanket.
 6 I laid the bed spread or blanket on the table and take
 7 a pair of tweezers and take the hairs off one at a time.
 8 Each one is put separately on a glass microscope slide,
 9 3" x 1". The hair is placed on microscope slides.
 10 There is a mounting that is put on here to hold it in
 11 place and a small, it is covered with a smaller piece
 12 of glass to hold it here on to the glass. Each slide
 13 is labeled as to the item and where it comes from and
 14 these mounts are prepared so that they can be examined,
 15 it is a permanent mount. After I finish mounting all
 16 the slides, the hair slides, then I assign them to Arnold
 17 Melnikoff to do the hair analysis.

18 Q Is that what you did in this case?

19 A Yes.

20 Q I am going to hand you now what has been marked
 21 for identification purposes as State's Exhibit 2.
 22 Could you briefly review that.

23 A It is a black plastic garbage bag. That is my label
 24 on the front there, Butte-Silver Bow, Item A. I did
 25 not put it back in the original bag because it was

1 a bed spread and I couldn't roll it up small enough to
2 get it in the plastic bag.

3 Q So that you placed it in that bag yourself?

4 A Yes, I did. This is my seal that is on here, my
5 lab number and signature. This appears to be the
6 bed spread that I took the hairs off.

7 Q Now, I would direct your attention to what has been
8 marked and admitted into evidence as State's Exhibit 4.
9 Could you testify as to what that is.

10 A This again is a white plastic garbage type bag.
11 It contains a multi-colored blanket. It has my seal and
12 signature on it and it appears to be the same blanket
13 I pulled the hairs off for examination.

14 Q And that is the bag which you returned the blanket
15 to when you were finished?

16 A Yes.

17 Q And placed your seal on it?

18 A Yes, I did.

19 Q That is also the same procedure you followed with
20 State's Exhibit 2, is that correct?

21 A Yes, that's right.

22 Q So, Julie, it is your testimony then that everything
23 you performed on these pieces of evidence was standard
24 operating procedure for the crime lab in Missoula?

25 A Yes.

1 Q Now, Julie, you previously testified that you received
2 from law enforcement agency standards. Could you testify
3 and inform us as to what they are?

4 A Yes, we received blood and saliva standards from
5 [REDACTED], from [REDACTED] and from Chester Bauer.

6 Q Could you tell us what those standards contained?

7 A As far as identification?

8 Q You have already testified to blood standards.

9 A Right.

10 Q OK, why do you request these?

11 A We need to differentiate the people that are in
12 involved in the alleged crime. In this particular
13 instance there were three individuals involved. The
14 first type of procedure we go through is the ABO.
15 You are all probably familiar with your ABO blood type,
16 typed by the Red Cross or gave blood some time in your
17 life, and that is one particular system that you can
18 be typed in. There are 4 ABO blood types, A, B, AB
19 and O. So, we first determine that of all the individuals.
20 Then we determine if they are secretors, which simply
21 means that if you are a secretor -- 80% of the population
22 will secrete your blood type substance, your semen,
23 fluids, wet saliva. It is very important in rape cases
24 to determine if the people are involved are secretors.
25 For example, if your blood type is "A" and you are a

1 secretor, if you are a secretor, you will have "A"
2 substance in your fluids, in your vaginal fluid,
3 and your semen, in your saliva; etc.

4 So, that is why we request blood standards and saliva
5 standards to determine the secretor standards of the
6 individual.

7 Then we go on to another type of system which is called
8 the PGM system. It is simply another system that we
9 look at. PGM is enzymes which is found in all cells
10 of your body. It takes part in breaking down the
11 sugar. Each cell in your body breaks down sugar into
12 enzymes. A lot of research has been done and PGM enzymes
13 can be typed. Different distribution in the population
14 so that we can distinguish between the individuals
15 involved. That is what we needed to do in this case.
16 The individuals were typed as far as ABO blood type,
17 their secretor status and PGM type.

18 Q You performed all those tests on the standards
19 that were submitted to you?

20 A Yes, I did.

21 Q Could you briefly recap what your findings were
22 in that regard.

23 A Yes. May I refer to my notes?

24 Q With the Court's permission.

25 THE COURT: She may refresh her memory.

1 A [REDACTED] is ABO type O. She is a secretor which
2 means that she secretes "H" substance. "H" substance
3 is basically the same as blood type O. The person
4 who has ABO blood system should have named it ABH
5 in order to be correct. "H" substance is a basic
6 substance which is A substance and B substance are made
7 from. So, if you are blood type O, you don't have
8 A or B substance but you have H and that is what [REDACTED]
9 [REDACTED] is. So, she is a secretor, she is blood type O.
10 Her PGM type is, more specifically her PGM sub-type
11 is 2-1+. That is how it is denoted. This is how we
12 are going to denote this type. So, her PGM subtype
13 is 2-1+.

14 [REDACTED] is ABO type A. He is a non-secretor
15 which means that in his semen and other body fluids,
16 he will not secrete any ABH substances. This is
17 confirmed by the saliva samples. His PGM subtype is 1+1-
18 which is different from her, she was a 2-1+.

19 Chester Bauer is blood type O and he is a secretor
20 so he will secrete "H" substance in his body fluid,
21 semen and saliva. This was also confirmed by the
22 saliva standard. His PGM subtype is 1+1+. So, these
23 three individuals can be distinguished in the PGM
24 system that I was just explaining to you. [REDACTED] is 2-1+,
25 [REDACTED] is 1+1-, and Chester Bauer is 1+1+.

1 MR. RICHARDSON: Thank you, Julie. Now, I would like
 2 to direct your attention to the evidence which was
 3 submitted to you, specifically that evidence that was
 4 obtained at the hospital after the rape occurred. First,
 5 the first item I would like to direct your attention to
 6 were the vaginal samples that were submitted to your
 7 office. Did you perform tests on those also?
 8 A Yes, I did.
 9 Q What tests did you perform?
 10 A OK. When we receive the samples, the most common
 11 samples that are sent in are vaginal samples. We are
 12 asked to determine if there is semen on those vaginal
 13 samples and, if so, to try to determine the time of
 14 intercourse from our results. There are different
 15 constituents of semen that we look for, acid
 16 phosphatase is another enzyme. It's found in mens'
 17 semen, it is also found in vaginal fluids but it is
 18 found in thousands of times more concentrated semen
 19 than in vaginal fluids. That is very easy to tell that
 20 it is acid phosphatase level, quantity of level, a seminal
 21 level. We also look for Choline. Choline is another
 22 chemical found in semen. We also look for sperm.
 23 Sperm is the best test possible test you can have for
 24 semen. Sperm are only found in semen. Another thing
 25 we look for is P30. It is a protein that is consistently

1 found in humans and in no other body fluid or on any
2 other animal semen. That was recently developed
3 there are many cases where we can't find sperm because
4 the person involved may have had a vasectomy. So,
5 we look at four parameters to make the determination
6 if there is semen present on these vaginal samples
7 that are sent in.

8 In this particular case there was semen identified
9 in two of the vaginal samples that were submitted
10 from [REDACTED].

11 Q Were you able to make any determination as to how
12 recent sexual intercourse had taken place prior to the
13 time that the samples were taken?

14 A Yes. I determined that she had sexual intercourse within
15 24-48 hours of the examination. More specifically since
16 I found Choline present, that cuts down the time of
17 intercourse to within approximately 4 to 6 hours of
18 the examination. So Choline is a chemical that breaks
19 down very quickly in the vaginal cavity and it is not
20 found after a long period of time.

21 Q So that you can testify here today that based on
22 your results and your examinations, [REDACTED] had
23 sexual intercourse within 4 to 6 hours of the time that
24 that sample was taken from her at the hospital?

25 A Yes.

1 Q Secondly, I would like to refer to another piece of
2 evidence, the sanitary napkin that was sent to your lab.
3 Did you perform the same tests on that?

4 A Yes, I did.

5 Q And what were your results?

6 A Basically, I received the same results. I analyzed
7 for those same seminal constituents located
8 in the area on the pad that appeared to be some type
9 of drainage or a stained area. I did find presence
10 of semen on this sanitary napkin that was sent it.

11 The sample was also analyzed for ABH substances since
12 she is a secretor and Chester Bauer is also a secretor.

13 I did find the presence of "H" substance on the pad.

14 I attempted to do the PGM typing on the sample but I
15 did not get any result.

16 Q Now, Julie, you testified previously that both Chester
17 Bauer and [REDACTED] were secretors, is that true?

18 A Yes.

19 Q So, you cannot specifically testify here today that
20 the "H" factor you found in the semen was from one
21 individual or the other, is that correct?

22 A No.

23 Q But you did find the "H" factor in a sample which
24 you believe to be semen, is that correct?

25 A Yes.

1 Q OK, thirdly I would like to refer to the panties
2 you received. I would like to show you what has been
3 admitted into evidence and marked as State's Exhibit No. 1.
4 Could you identify that.

5 A This is a plastic evidence bag containing a pair of
6 pink panties. These are the same ones that I examined.
7 Two areas have been cut out. When we locate a stain
8 on a particular item, we cut it out so we can perform
9 the tests on the stain. It also had some paper in here
10 in which Arnold Melnikoff examined the item before I
11 did for hair and this is his seal. This came to me in
12 this way. It was in his sealed paper container and
13 it was assigned over to me.

14 Q After you performed the tests, did you again place
15 that in the sealed package?

16 A Yes, I did.

17 Q To the best of your examination, those are the
18 panties that you performed your tests on?

19 A Yes.

20 Q Now, Julie, again did you perform some tests on
21 those panties?

22 A Yes, I performed the same tests that I previously
23 described on the sanitary napkin and the vaginal
24 samples.

25 Q Where specifically did you find the stain on those

1 panties?

2 A It was on the back, right above the crotch on the
3 back, the rear part of the item.

4 Q Based on your experience in rape cases, is that
5 an uncommon place to find a stain?

6 A No, that is not uncommon.

7 Q Would you then proceed as to what tests you
8 performed and what results you received on those panties.

9 A I performed the same analysis on the previous
10 items with regard to the presence of semen. I did find
11 presence of semen on that item in that particular
12 stained area that I cut out. I also performed tests
13 for secretor substance and found the "H" factor
14 present. I also typed the stain as far as PGM
15 system and the PGM subtype, the result that I got
16 was 1+1+.

17 Q Based on your results there, Julie, could [REDACTED]
18 [REDACTED] have been the source of that semen?

19 A Not in regards to the PGM subtype, no.

20 Q Then in regards to the PGM subtype, were you able to
21 make a comparison with the standards?

22 A Yes, I was.

23 Q What results did you get there?

24 A The semen type that I found on that stain is the
25 same type as Chester Bauer.

1 Q Could you testify here today that Chester Bauer is the
2 only source of that semen?

3 A He is not the only one in the population that has that
4 subtype.

5 Q Now, Julie, I previously have asked you if you could
6 prepare an exhibit for demonstrative purposes only
7 that might aid the jury in your testimony. Have you done
8 that?

9 A Yes.

10 Q Now, I will show you what has been marked for
11 demonstration purposes as State's Exhibit 7. Is that the
12 demonstration that you have prepared?

13 A Yes, it is.

14 Q Would that aid you in your testimony?

15 A Yes, it will.

16 Q Would that aid the jury in understanding your
17 testimony?

18 A Yes, I believe it would.

19 Q Therefore, Julie, could you testify as to what
20 percent of male population could be the source
21 of the semen that you found in the panties of Dawne
22 Kindt?

23 A Yes, I can. This will summarize the types of
24 individual that I was talking about. We start with
25 the ABO blood type system. The four types you are familiar

1 with, A, O, AB and B. He is in this percentile, 45%
2 of the population is blood type O, 40% is A, 10% is B,
3 5% is AB. He is type O, that is the fraction that we
4 are mainly concerned with here. 80% of the population
5 are secretors, 20% are non-secretors. He is in the 80
6 percentile of secretor. In regard to PGM subtypes,
7 39.6% of the population has his subtype, 1+1+
8 and down here as far as sex, you are assuming that half
9 the population is male and half is female. That is
10 where 50% comes from. In order to get the percent
11 of the population that is certain combined type
12 simply multiply, it would be $.45 \times .8 = .396$ $\times .5$
13 and that comes to be 7.15% of the population. That
14 is the percentile of male population that have the same
15 type as Chester Bauer.

16 Q Julie, I would like you for the purpose of my
17 next question assume the following facts are true.

- 18 1. That [REDACTED] was raped on January 26, 1983,
19 and that the rapist climaxed in her vaginal cavity.
- 20 2. That on that day she had put on a clean pair of
21 panties.
- 22 3. That after the rape she again put on those same
23 panites and semen from the man who raped her drained
24 from the vaginal cavity and became deposited on those
25 cavities.

1 Finally, that those panties were sent to you for ex-
2 amination and that you performed the tests on them
3 and received the results that you have testified to here
4 today. Did you form an opinion of the percent of the
5 male population the rapist would belong to?

6 A Yes.

7 Q How positive are you of your opinion?

8 A Very positive.

9 Q What is the degree of your certainty?

10 A I am real certain.

11 Q What is your opinion?

12 A That the source of semen would be 7.15% as is
13 Chester Bauer.

14 Q Based on your tests and results of Chester Bauer's
15 blood and saliva, you can conclude that he is part of
16 that 7.15% of the male population?

17 A Yes.

18 Q Thank you, I have no further questions.

19 CROSS EXAMINATION BY MISS CAUGHLAN

20 Q Miss Long, it is your testimony then that the
21 field of individuals inclusive of Mrs. Kindt can be
22 limited to a certain percentage of the population,
23 is that correct?

24 A The drainage from that, on that particular stain,
25 the stain on the panties.

1 Q All right. Referring then to that particular stain,
2 would that, the source of that stain be only the semen?

3 A It is possible there is vaginal fluid there.

4 Q And that vaginal fluid would be from Mrs. Kindt?

5 A Yes.

6 Q Could the "H" substance having been found on that stain
7 belong to Mrs. [REDACTED]?

8 A Yes, it could.

9 Q You cannot identify the individual from whom it came?

10 A Not the "H" substance, no.

11 Q Can you identify it as belonging to male or female?

12 A No.

13 Q So, actually would it then be your testimony that you
14 could still limit that percentage of the population
15 to 7.15?

16 A Yes if you take all the results that we get. If
17 all I had was just the "H" substance, say a stain had
18 deteriorated to the point where the only result I
19 would get would be an "H" factor, then no I could not
20 say that. But combine that with all the other results
21 I've got, that it was semen, that it was typed PGM
22 system, then I can make the determination of the percentage.

23 Q But you can't say whether the "H" substance came from
24 the male or not?

25 A Not the "H" substance, no.

1 Q So, that really the only identifiable substance
2 that could not be identified to Mrs. [REDACTED], other
3 than the presence of some kind of male semen, would have
4 been the PGM substance, is that correct?

5 A That's correct.

6 Q So, would that enlarge the field of population that
7 could have possibly had sexual intercourse with her
8 on that day?

9 A I don't understand, I am sorry.

10 Q Well, your testimony is that the PGM substance is
11 the distinctive marker.

12 A Correct, in combination with the rest, yeah.

13 Q But in combination with the rest, the "H" substance
14 could have come from Mrs. [REDACTED], is that correct?

15 A Oh, I understand, yes, correct.

16 Q Is it also correct that the individual
17 that had sexual intercourse with her could possibly
18 have been a nonsecretor, is that also correct?

19 A In just referring to the "H" substance, yes.

20 Q So, you cannot tell whether or not that "H" substance
21 was identifiable with anyone other than Mrs. [REDACTED]?

22 A No, not the "H" substance.

23 Q Wouldn't that expand the range of the possible sexual
24 partners of Mrs. [REDACTED] from typing that stain?

25 A If you disregard the "H", yes it would.

1 Q If you disregard the "H" substance?

2 A Yes.

3 Q So, what would that percentage of the population be?

4 A It would be .45 times .396 times .5. I don't have
5 a calculator.

6 Q Wouldn't it be...

7 A Excluding this is what you are doing, you would take
8 out this factor.

9 Q You would take out this factor of whether or not
10 the individual was a secretor?

11 A Right.

12 Q And you would multiply it by the PGM substance
13 subtype that was found 39.6 times 50% of the population,
14 is that correct?

15 A Right.

16 Q And that is the only distinctive marker other than
17 the obvious presence of sexual activity, is that correct?

18 A Yes.

19 Q And assuming that 39.6% of the population contained
20 that PGM substance and half the population is male,
21 that would be 19.8%?

22 A Yes.

23 Q If I were to tell you that the population of Silver
24 Bow County was approximately 38,000, that 19% of that
25 number would be approximately 7500. Would you agree

1 with me that that percentage of the population could
2 have been responsible for that PGM subtype in your
3 experiments.

4 A Yes, they could be responsible for the subtype.
5 They would have that subtype.

6 Q That is the distinctive marker that is found in
7 those substances that you tested?

8 A Right.

9 MISS CAUGHLAN: I have no further questions but I have a
10 motion I would like to make out of the presence of the
11 jury.

12 THE COURT: Let's take a short recess, ladies and
13 gentlemen. Step outside the hallway.

14 MOTION OUTSIDE THE PRESENCE OF THE JURY

15 MISS CAUGHLAN: I move that the testimony of Mrs. Long
16 be stricken and the jury instructed to disregard it
17 on the grounds that the testimony is more prejudicial
18 than probative in that she testified a rather large
19 population that could have been responsible for the
20 presence of that substance in the tests. Uh, 19.8%
21 of the population of Silver Bow County is approximately
22 7500 male individuals that would contain substance
23 in their body fluid and offering it as evidence against
24 the Defendant is more prejudicial than probative.
25 Using as my authority for making this motion is two

1 two cases from New York, People of New York vs. James
2 Robinson found at 27 New York 2nd 864, 1970.

3 People of New York vs. Carl Masadino 42 New York 2nd
4 944, 1977 case.

5 In those cases, your honor, the Judge found that the
6 evidence offering of an A type secretor's semen as evidence
7 in a criminal trial was prejudicial in that a large
8 percentage of the population in that 30-35% were type
9 A secretors and that the Judge found that these facts
10 were more prejudicial than probative and should not be
11 admitted and that is an analogy to this situation.
12 Apparently there are 19.8% of the individuals that
13 would have this genetic marker in their bodies and
14 75., excuse me, 7500 individuals would be a rather
15 large field to say that this individual could possibly
16 be part of tht field. I think it is more prejudicial
17 considering the weight the jury would give what is
18 purported to be scientific evidence.

19 MR. RICHARDSON: Your honor, maybe I missed something
20 in the calculation of these figures but I think we
21 broke down 19% of the population of Silver Bow to
22 7800 but I don't remember breaking that in half which
23 would be the male population. That would be 3800.
24 I am not concerned with numbers. I think it is
25 certainly probative, your honor. Mrs. Long has testified

1 she has found the subtype that corresponds only with
2 Mr. Bauer's of the three standards she tested. Further-
3 more, I think the remedy for this is not arguing to the
4 Court fo exclusion but for proper cross examination.

5 I think this is customary for the jury. It is part of
6 the fact finding process of the jury and an effective
7 remedy for this is cross examination to point out
8 the things she just pointed out to the Court.

9 THE COURT: I conclude it is a question of fact, let it
10 be upon the jury putting so much weight as they wish on
11 the credibility of her testimony. It is something
12 you can argue about to the jury. I am not going to strike
13 her testimony so your motion is denied.

14 MISS CAUGHLAN: Your honor, if I may make one correction,
15 I think that Mr. Richardson misunderstood me. I
16 believe...

17 THE COURT: I wasn't too certain if you were using 50%
18 figure or not.

19 MISS CAUGHLAN: I was using the 50% figure, your honor,
20 in the 19.8%. The PGM subtype that we are talking
21 about was 39.6% of the total population so that
22 would be 19.8 of the total population. Do you agree
23 with that?

24 MRS. LONG: Yes.

25 THE COURT: Just so we clear the air there.

1 REDIRECT EXAMINATION BY MR. RICHARDSON

2 Q Just a few brief questions on redirect. You have
3 testified that you found that Chester Bauer is a secretor
4 and that secretes "H" substance, is that correct?

5 A Yes, that's correct.

6 Q You testified that the stain you found on the panties,
7 you found presence of semen?

8 A Yes.

9 Q You also found the presence of "H" substance?

10 A Yes.

11 Q You also found PGM subtype of Chester Bauer, is that
12 correct?

13 A That's correct.

14 Q Now then going back to my hypothetical question,
15 assuming that that was deposited by the rapist, and
16 I will assume that he was also an "H" secretor,
17 then what percentage of the male population would the
18 rapist be found in?

19 A 7.15.

20 MR. RICHARDSON: Thank you, I have nothing further.

21 THE COURT: You are excused, thank you.

22 ARNOLD MELNIKOFF

23 Called as a witness, duly sworn, testified as follows:

24 DIRECT EXAMINATION BY MR. FLEMING

25 Q State your name for the record, please.

1 A Arnold Melnikoff.
2 Q Would you spell your last name, please.
3 A M-E-L-N-I-K-O-F-F.
4 Q Where do you currently work?
5 A Montana Crime Laboratory.
6 Q Do you have a specific job title at the Montana Crime
7 Lab?
8 A Yes, I do.
9 Q What is that?
10 A Bureau Chief in Charge of the Laboratory.
11 Q Would you describe what your responsibilities are
12 as Bureau Chief in Charge of the Laboratory?
13 A I have certain administrative duties as far as the
14 laboratory is concerned, and I also spend a considerable
15 amount of my time doing examination of physical evidence.
16 Q How long have you worked in that capacity, Arnold?
17 A Since July, 1970.
18 Q 1970?
19 A Right..
20 Q Approximately 13 years?
21 A That is correct.
22 Q What is your formal education?
23 A I have a Master's Degree in Organic Chemistry from
24 the University of Montana and a Bachelor's Degree
25 in Biology from Northern Illinois University.

1 Q In addition to that educational background in the course
2 of your employment with the State Crime Lab, have you
3 taken additional courses that help you in your job
4 in your choice of jobs?

5 A Yes, I have.

6 Q Would you briefly describe to the jury what they are.

7 A I took several additional courses at the University
8 of Montana Pharmacy School, one on drug microscopy
9 which involves the identification of plants, another
10 course on Toxicology which is the identification of
11 poisonous substances in body fluids and I took a course
12 in hair identification from the FBI Laboratory in
13 Washington, D.C. I took a course in Forensic Microscopy
14 from LaCrone Institute.

15 Q All these courses were job related?

16 A Directly related to the work I do.

17 Q Now, do you belong to any professional organizations?

18 A Yes, I do.

19 Q What are those?

20 A Northwest Association of Forensic Scientists, the
21 American Adaemy of Crime Laboratory Directors.

22 Q Have you ever presented any papers or attended
23 meetings in any of these organizations?

24 A Yes, I have.

25 Q Would you detail what papers were presented.

1 A The two papers on identification of fire accelerants
2 using gas chromatography. One paper about use of Diamond
3 Call for Infrared Spectrometry. Another paper on
4 Cocaine Toxicity and a very recent paper just a couple
5 of months ago on the morphological characteristics
6 of primate hair which includes humans.

7 Q Is that generally the identification of primate hair
8 and subtypes or categories of hairs?

9 A Yes. When the hair is examined microscopally,
10 there is a morphological characteristic that distinguish
11 hair from different animals, different genera of animals
12 which includes primates and stuff. Genera of animals
13 which includes monkeys, apes, humans, they are considered
14 to be primate hair.

15 Q Have you ever testified in a District Court in the
16 State of Montana before?

17 A Yes, I have.

18 Q Do you know how many times?

19 A Many times.

20 Q Have you qualified as an expert in those District
21 Courts?

22 A Yes, I have.

23 Q Have you ever testified with respect to the morphological
24 characteristics of primate hair before?

25 A Yes, as to human hair primarily.

1 Q Do you recall how many times?

2 A I believe this is the 16th or 17th time.

3 Q In each of those other times, you qualified as an
4 expert in the District Court?

5 A Yes, I have.

6 Q In the present case, State of Montana versus Chester
7 Bauer, have you received any evidence at the Crime Lab
8 that you were responsible for with respect to this case?

9 A Yes, I did.

10 Q Do you recall what the evidence was?

11 A Yes. Different articles of bedding from the [REDACTED]
12 residence and standard hair samples of Chester Bauer,
13 [REDACTED] and [REDACTED].

14 Q Those were known standards from those individuals?

15 A Yes.

16 Q You were absolutely certain that they were their
17 samples?

18 A They were marked and sealed as such, yes.

19 Q You received those in a sealed condition?

20 A Yes, I did.

21 Q When you received those items, what do you do with those
22 items that are known standards?

23 A Well, in any hair examination the first thing you
24 have to be able to do is distinguish by morphological
25 characteristics that you can see under a microscope,

1 hair from different individuals that you cannot distinguish
2 their hair then there is no point in doing additional
3 identification you cannot tell one person from the other.

4 Q In this case did you also receive samples -- we
5 had Julie Long testify, she works with you at the Crime
6 Lab, is that correct?

7 A Yes.

8 Q We had her testify earlier that she took some hairs
9 from bedding that was submitted to you by Detective
10 Dave Gertz with respect to this?

11 A Yes. She examined the bedding before I got a chance
12 to do it so in the course of doing her examination she
13 removed whatever hair was present and marked them and
14 put them on separate microscope slides and then gave them
15 to me.

16 Q Did you perform any tests on the slides prepared
17 by Julie Long and then slides prepared of the known
18 samples of [REDACTED], [REDACTED], Chester Bauer?

19 A Yes, I did.

20 Q Could you describe what tests you performed?

21 A Basically, I looked at the general characteristics
22 of the hair that you can normally see with your eye
23 light, approximately what color hair you can see with
24 your naked eye and measured the length of their
25 individual hair standards and then I put those hairs

1 on separate slides and marked them and then examined them
2 microscopically. Under the microscope you see a lot
3 of detail that you obviously can't see with the naked
4 eye and that detail allows you to see what are called
5 morphological characteristics that are representative
6 of each one of those individual pubic and head hair.
7 After I familiarize myself with the range of
8 morphological characteristics of the head and pubic
9 hair of those three individuals, I then examined hair
10 that was removed from the bedding.

11 Q Now, in the course of your examination you used
12 the microscope. Did you also prepare 35 mm. slides
13 of the examinations that you performed on these head
14 hair and pubic hair?

15 A Yes, I did. The microscope we have is actually a
16 comparison microscope. It allows you to look at the
17 images from two microscopes simultaneously because there
18 is a bridge connecting the two, so you can see a known
19 hair and unknown hair side by side at the same time.
20 It also has a very good camera which automatically
21 sets time exposure and allows you to take pictures,
22 colored pictures, of what you actually see at the same
23 time you examine it. In the course of examining the
24 slides, I took representative pictures of what I was
25 looking at to document what I did.

1 Q Did you bring those representative slides with you?

2 A Yes.

3 Q Do you have them in your possession?

4 A Yes, I do.

5 Q May I have those for just a moment. I will mark
6 them as a group exhibit.

7 (Mr. Fleming had the slides marked as an exhibit.)

8 I am going to hand you two plastic containers of
9 slides and for convenience and ease in identification
10 I have just simply marked them as 8. Let the record
11 reflect that there are approximately 13 slides comprising
12 Exhibit No. 8. Now, are those the slides that you prepared
13 in the course of making the examination of these known
14 head hairs from the blankets or pubic hairs from the
15 blankets?

16 A They are.

17 Q Do those accurately depict the results you obtained
18 in the course of your examination?

19 A Yes, they show the exact same thing that you would
20 see with the microscope in the examination.

21 Q And those slides, have they been altered in any way?

22 A The only thing that has been done, I marked them
23 with a description describing what they show in my own
24 handwriting. The actual photograph in each slide has
25 not been altered.

1 Q Your honor, I at this time move for the admission
2 of State's Exhibit No. 8.

3 MISS DUNLAP: No objection.

4 THE COURT: Eight is admitted.

5 Q Arnold, would it help the jury in understanding
6 your testimony if you were to show those slides at this
7 time?

8 A Yes, it would be a lot easier to understand what
9 is involved in hair examination if you can see a visual
10 representation of the person examined.

11 Q And it would clarify their understanding?

12 A Right, it would give them something to look at,
13 the description I give of each slide.

14 Q Your honor, I would ask at this time that Mr. Melnikoff
15 be allowed to make his presentation with the slides.

16 THE COURT: Go ahead.

17 Q My last question was, would you show the slides
18 and present them. I think the format of what we will
19 do is I will ask you to go the screen and explain what
20 each slide depicts. When you wish me to change the
21 slide, just say "next slide".

22 A The first slide is a photograph of the actual
23 microscope that was used in this examination. It compares
24 microscopes and it is distinguished by the fact that it
25 has two microscopes. As you can see, there is a bridge

1 connecting the two. You look through this binocular
2 head and you can see side by side comparisons of
3 two images and two separate microscopes. This is
4 an automatic camera which allows you to take a picture
5 of the same thing you are seeing in the binocular
6 head of the microscope.

7 Q This is the instrument that was used to take these
8 slides and make the examination, is that correct?

9 A Yes, it is. The first slide I will show you are
10 actual standards of head hair prepared on Chester Bauer
11 and [REDACTED]. The microscopic examinations of hair,
12 there are three major things you can look at. Each one
13 of those can be broken down into a sub-description.
14 The picture covers the whole hair. It is a long section
15 put across the slide. You can only see it on half,
16 the rest of the time it is over the rest of the hair.
17 It's transparent so you can't see it too well. Human
18 beings, in caucasian hair it is usually thick to inter-
19 mediate thickness. Other races can be thicker.

20 The area between the edge of the hair and center here
21 is called cortex. That is the major area of the hair.
22 In that hair that is/^{where}the pigment granuals are located.
23 They determine color of the hair. In most individuals
24 there is a variance in the same individual. You have
25 lighter and darker hair. The main thing beside the

1 color is their distribution, shape and size. Independent
 2 of what the shape the hair is of that particular
 3 individual, from the same individual the pigment
 4 granules have the same distribution, shape and size
 5 in the cortex of the hair. Other areas of human hair
 6 are called medullary. Human hair is quite variable.
 7 In fact, it is one of the major characteristics
 8 separating human hair from other animals. Most
 9 other animals the center part is always present and
 10 thicker than human pubic hair. It is one of the
 11 easiest ways to tell pubic human hair from other animals.
 12 Some people had hair with very little medullation.
 13 Other people it is fairly constant and most people
 14 are in between where they have some.

15 This is a standard of Chester Bauer's hair. His
 16 hair has intermediate thickness, not as thick like
 17 here. [REDACTED]'s hair, that is a general characteristic
 18 of all the standards I examined for that type of cuticular
 19 thickness. This hair is medullation or presence of
 20 it is very rare. I only saw a couple of hairs in a
 21 very small area. Ninety-five (95%) of the hair I
 22 examined did not show any medullary. It has a pigment
 23 pattern which you can see here. The pigment area is
 24 very small and are very easily seen throughout his hair.
 25 [REDACTED]'s hair usually shows a presence of medullary.

- 1 That may be dark or it may be translucent. It is
2 present in most of her hair. Also, the pigmentation
3 is more clumpy. In some places there are larger amounts
4 of pigmentation and other places there is less.
5 Her hair varied in color from root to tip. Her hair
6 is rather long. Human hair will tend to bleach and
7 you can see that with people whose hair is fairly
8 long and dark to start with. The end of the hair will
9 be lighter than the root of the hair. This view, what
10 you are seeing is the same hair. This lighter hair is
11 toward the tip, the darker is closer to the root.
12 So, you have that to look at as well as medullary
13 characteristics.
- 14 Q Your testimony then is the left side of this picture
15 as broken down by the -- the left side is the known
16 head hair standard of Chester R. Bauer?
- 17 A That's correct.
- 18 Q The right is a known head hair standard of Dawne
19 Kindt?
- 20 A Correct.
- 21 Q From looking into the microscope, you can distinguish
22 these head hairs as shown on these pictures, that they
23 are different?
- 24 A Right. You see the exact same thing.
- 25 Q Now, the other thing I would ask you now, if you

1 were to take a look at head hair with the naked eye,
2 compared to the naked eye how many times do they magnify
3 it compared to the naked eye?

4 A That particular photograph is 150 times. The hair has
5 been magnified 150 times compared to what you see with the
6 naked eye.

7 Q That is done to make this comparison?

8 A Right so you can see details you cannot see with the
9 naked eye.

10 On the left is a standard head hair of Chester Bauer
11 compared to a standard hair of [REDACTED] and in this
12 slide [REDACTED], you see three locations of her hair.
13 Her hair was quite long and you can only see a small
14 part of it. So, I found an area where her hair overlapped
15 and it showed an area of hair that was very light and
16 bleached by the sun. Here it is light but it is not
17 as light as next to the tip of her hair, very close to the
18 root where it is darker. It shows the color of her hair
19 from the root to the tip. Again, you see basically the
20 same thing as I described independent of the color of
21 her hair. It can be dark or translucent. The pigment
22 distribution is kind of blotchy, it is heavy in places
23 and lighter in places. The slide on the left is a
24 standard of Mr. Bauer's hair. Again you see this edge
25 here which is the cuticle edge, which is clipped compared
to [REDACTED]'s hair and you don't see the medullary

1 in this view. Also, you can see the same type of
2 pigment distribution and that is just blotchy, as you can
3 see in her hair.

4 Q And the medullaries that you are discussing are the
5 lines down the middle to sort of make it look like a
6 highway?

7 A Yes, the medullaries are in the center part of her
8 hair.

9 Q Again, these are known standards on the left of
10 Chester Bauer and on the right they are known standards
11 of [REDACTED]?

12 A Correct.

13 This is a comparison of Chester Bauer's hair on the
14 left to Mr. [REDACTED]'s hair. His hair also varied
15 in color from the root to the tip but not as pronounced
16 as his wife's. This is closer to the root, a little
17 darker than the tip and not as large a difference of
18 color as his wife's hair. His hair is characterized
19 by cuticle. The medullary which is very broken,
20 it is definitely there but more broken than his wife's.
21 You can see it. The pigment pattern is not as blotchy
22 as his wife's. It is still somewhat blotchy, these
23 darker areas throughout the cortex. You don't see the
24 real distinguishing change you can see in Mr. Bauer's
25 hair. Chester Bauer's hair, the colors I am describing

1 what you see under the microscope are not necessarily
2 what you see with your naked eye. You are using
3 intense light so the color tends to be lighter to some
4 extent than you would assume they would be if you saw
5 the person with the naked eye. Under the microscope
6 Chester Bauer's hair is considered very light blond to
7 darker blond. [REDACTED]'s hair is light brown to
8 intermediate blond. This is again under the microscope.
9 If you saw them, their hair would be darker.

10 Q These are both known standards of those individuals.

11 A Mr. Bauer on the left and Mr. [REDACTED] on the right.

12 This is a picture under higher edification where you
13 can see some of the characteristics better. This
14 particular comparison slide, these are switched. Mr.
15 Bauer's hair is on the right and Mr. [REDACTED]'s hair is
16 on the left.

17 Q What magnification is that, Arnold?

18 A This is a 250 power. The cone compared to 150 on the
19 last series of slides, it is almost twice the magnification.

20 Q This is the comparison that you made of the known
21 standards of [REDACTED]'s hair and Chester Bauer's hair
22 under a higher magnification?

23 A Yes. This shows Mr. Bauer's hair. The main thing
24 I want to demonstrate here is that even with the
25 lighter hair, the pigment pattern is different. This

1 hair of Mr. Bauer's you can barely see the granules
2 sort of lined up. Mr. [REDACTED]'s is a more blotchy situation.
3 His hair here, under high magnification you can see a very
4 small area of hair, you are looking at a very small area.

5 This is a known standard of Mr. [REDACTED]'s hair.

6 THE COURT: You are going to have to speak louder.

7 It's very difficult to hear you.

8 A Mr. Bauer's hair is on the right and unknown hair on
9 the left which was obtained from the top sheet of
10 bedding that was brought in by Silver Bow law enforcement.
11 This particular slide on the left was prepared by Julie
12 Long. You can see this comparison of two hairs down
13 the center for demarkation between the two views, one
14 slide on the left and one on the right. You can see a
15 lighter thicker area along the edge which is the cuticle
16 of the hair which I mentioned before on Chester Bauer's
17 hair which had thicker cuticle. You can see this
18 represented on the other slide, the same thing. Throughout
19 the hair no medullary is present. You can see these pigment
20 granules tend to be in chains, lined up parallel
21 to each other. That is another characteristic of his
22 hair. The one on the left is the one Julie Long prepared
23 from hair she found on the top sheet that was brought in
24 by the Sheriff's Office and the one on the right is the
25 known standard of Mr. Bauer's hair.

1 Q I want to make that point with you. What you are
2 saying then is this hair on the left -- first of all,
3 there are two hairs, they are not one continuous hair?
4 A Right. This line down the center post is a de-
5 markation between the two views.
6 Q Now, the one on the left was removed from the blankets
7 as testified to by Julie Long and given to you and you had
8 no idea whose hair that was at that time, is that
9 correct?
10 A Right. Until I examined it, I had no idea.
11 Q And the one on the right is a known standard of
12 Chester Bauer's head hair?
13 A Correct.
14 Q And you have testified that there are similarities,
15 is that correct?
16 A Yes.
17 Q Are there any dissimilarities in those two?
18 A They show the same range of characteristics without
19 any obvious dissimilarity. Next slide.
20 This is a magnification of 250 power of the same two
21 hairs. This time it has been reversed. The standard
22 hair is on the right and the unknown hair is on the
23 left. This is an area near the root of the hair.
24 Some individuals near the root of the hair you can see
25 additional morphological characteristics which is small

1 oil in the hair. You can see them, they are little round
2 spots in the hair. They are additional characteristics
3 you can see that I saw in Chester Bauer's standard
4 head hair near the root his hair showed a large number
5 of them in addition to the other characteristics that I
6 previously described. The standard hair and the unknown
7 hair shows the same characteristics, they show these
8 little circles in the hair as well as thicker cuticles
9 that you can see on the edge here. The same type of
10 pigmentation pattern which is very faint little streaks
11 and the absence of medullary. All of those are
12 characteristics of Mr. Bauer's hair.

13 Q And then this slide, is that a known standard or is
14 that an unknown standard as far as your examination?

15 A That was a known standard.

16 Q And that definitely was Chester Bauer's head hair,
17 is that correct?

18 A That is correct.

19 Q And the one on the left when you began your examination,
20 you had no idea whose head hair that was?

21 A Julie had marked that it was from the top sheet and
22 that was all I knew.

23 Q She removed it from the top sheet that had been
24 provided her by the Butte Silver Bow law enforcement
25 agency?

1 A That is correct.

2 Q Now, in the course of reviewing these pictures, I have
3 noticed and I think this is probably a larger magnification
4 of 250 times indicates that there is a little bit of
5 disparity in the color.

6 A That is correct.

7 Q Is that inherent in these head hairs being different
8 colors or is there some explanation of why there is a
9 little disparity?

10 A The difference is in the color. You can see background
11 color here, extremely lighter, this is darker. That is
12 due to the microscope itself. Each one has a separate
13 bulb and the bulbs do not age with time the same. One
14 is darker and quicker than the other one. In fact,
15 a new bulb it is hard to get the same. The darker you
16 see is due to the fact that the background being dark
17 because one of the bulbs was darker than the other one was.

18 Q So, that is not in fact a dissimilarity that should
19 be noted by the jury, is that correct?

20 A That is correct.

21 The next series of slides are pubic hair showing
22 standards of pubic hair from Chester Bauer, [REDACTED]
23 and [REDACTED]. The one on the left is a known standard
24 of [REDACTED]'s pubic hair. The one on the right is
25 a known standard of Chester Bauer's pubic hair.

1 [REDACTED] s pubic hair, as her head hair does, she
2 has sort of a mosaic pattern, individual granules
3 unevenly dispersed throughout the cortex of her hair.
4 She has a fairly consistent medulla broken in small
5 places. Her hair generally is thicker in diameter
6 than Mr. Bauer's. Mr. Bauer's pubic hair is rather
7 thin, average range of caucasian this would be on the area
8 of thinner pubic hair. Cuticle in pubic hair, unlike
9 in head hair, is rather thin. So, it is a different
10 characteristic. Head hair is thicker and pubic hair
11 is very thin. Also unlike is head hair, the pubic hair
12 shows medullation as you can see it here. Medullation
13 is broken, in some places in the hair it is more
14 continuous in other places. In a few places it is
15 definitely present. Pigmentation is similar to his head
16 hair because of the fact that as far as color, the
17 pubic hair is generally lighter than head hair.
18 You can barely see the granules, extremely fine,
19 extremely small. You can see they go in straight lines.
20 Q Now, we are dealing with, we have now switched to
21 the pubic hair and these are known standards submitted
22 to you that you are certain was Chester Bauer's and
23 [REDACTED]'s because they were marked by law enforcement
24 officers?
25 A Yes and I marked the slide individually when I prepared

1 it and described what was on the slide.

2 Q And there is a distinction between [REDACTED]'s
3 and Chester Bauer's pubic hair, is that correct?

4 A Yes.

5 Q Now, we are referring to -- previously we were talking
6 about head hair. We are now referring to pubic hair.

7 Can you always discern whether or not a hair is a pubic
8 hair or a head hair?

9 A Yes. If you have a whole hair, it is easy to tell
10 pubic hair from head hair. Pubic hair tends to be
11 considerably more variable in diameter and in shape
12 than head hair does. (Witness drew a diagram.)

13 One thing is that pubic hair, most people don't cut their
14 pubic hair. You usually see the tips of the hair.

15 On human hair, pubic hair is always longated. You
16 always see a very longated area of the hair near the
17 tip which is considerably narrower in diameter than
18 the rest of the hair. The rest of the hair tends to

19 vary considerably in diameter and that causes the
20 hair to be very curly and kinky. Head hair, even when
21 people with relatively curly hair, varies considerably
22 less in diameter over the distance of the hair.

23 You don't see these gigantic changes in diameter. You
24 will see small variations in diameter and you don't see
25 an area of the hair where it is narrowed down or longated

1 as in pubic hair. If you examine someone's hair, you
2 can see the hair as it grew out of the head. You will
3 see a small change in diameter near the tip. It's
4 over a shorter distance and is not as narrow as compared
5 to the diameter of pubic hair.

6 Q In viewing these with the microscope and viewing
7 them with the naked eye generally, you are able to
8 determine pubic hair from head hair because of their
9 shape which you depicted there with the pubic hair
10 on the bottom and the head hair on the top?

11 A Yes, there are distinct differences as microscopic
12 differences. Microscopically, you see differences
13 that are associated with head and pubic hair so it
14 is usually very easy to distinguish.

15 Q Getting back to that, we were dealing with pubic hair
16 and I think the one on the left then would be [REDACTED]
17 [REDACTED]'s and the one on the right would be Chester
18 Bauer's, is that correct?

19 A That is correct. This slide compares a standard
20 of [REDACTED]'s pubic hair on the left and Chester
21 Bauer's on the right. Again the same things you saw in
22 the previous slide. [REDACTED]'s hair is thicker.
23 She doesn't have a very thick cuticle. She has pigment
24 granules which are blotchy. They are uneven in density,
25 distributed throughout the hair and she has a very

1 obvious granule present.

2 Q What magnification is this, Arnold?

3 A This is 150 power.

4 Q And the one on the left is [REDACTED]'s pubic
5 hair and the one on the right is Chester Bauer's?

6 A Right. Chester Bauer's is very thin cuticle.

7 Medullation is present though spotty, almost completely
8 absent. The granules are very fine and you can barely
9 see them. In generaly his pubic hair is very light in
10 color.

11 This is a known standard of [REDACTED]'s pubic
12 hair compared to Chester Bauer's on the right.

13 Mr. [REDACTED]'s hair is considerably twisted. I drew
14 this picture here. When you look in a microscope
15 you are looking at an area maybe that much (indicating).
16 You can't see the whole hair at one time. Mr. [REDACTED]'s
17 hair was extremely twisted, a lot more than depicted
18 by this diagram, varied in diameter and almost continually
19 along the hair. You can see the hair is twisted and
20 there is a sharp variation in diameter. The other
21 characteristic of the hair in addition to that he had
22 a thicker cuticle which you can see. It is dark,
23 relatively dark. Those pubic granules are not blotchy,
24 they tend to be smaller and more uniform so you get a
25 more even background even though the hair is darker.

1 It is not blotchy. He has a medullation present in
2 his hair but in most cases it is not dark. It is
3 translucent to view but it is not dark.

4 Q This is on the left and it is a known standard of
5 [REDACTED]'s pubic hair and on the right it is a known
6 standard of Chester Bauer's pubic hair and there is
7 clearly a discernable difference in that?

8 A That's correct.

9 (A short recess was taken.)

10 MR. FLEMING: May the record reflect this is the same
11 Arnold Melnikoff who was on the stand when we took a
12 brief recess and these are the same exhibits we have
13 been explaining to the jury. Arnold, for purposes of
14 review, I am going to back up two slides. What are we
15 looking at there, would you explain that to get the jury
16 back to the context.

17 A Again, for review purposes this is a pubic hair
18 standard of [REDACTED] on the left and pubic hair
19 standard of Chester Bauer. [REDACTED]'s pubic
20 hair has a thick cuticle, well-pronounced medullary
21 in the center and pigment granules which are blotchy.
22 Mr. Bauer's hair has thin cuticle, has medullary very
23 broken up, whereas his head har pigments are very fine.
24 The one on the left is a standard of [REDACTED]'s hair.
25 His hair has the feature of being very twisted in places.

1 It is dark in color, the pigment granules are smaller
2 and more evenly dispersed compared to his wife. He
3 has a thicker edge of cuticle and the medullary present
4 in his hair in many locations is clear instead of dark.

5 Q You are saying that these known standards, you can
6 distinguish between Chester Bauer, [REDACTED] and
7 [REDACTED]'s pubic hair?

8 A Yes, all three of them have the range of characteristics
9 which are separate from each other.

10 Again, the known standard of Mr. [REDACTED]'s pubic hair
11 shows a pronounced twisted situation and in this case
12 medullation is dark and translucent and runs throughout
13 the hair. You can see also an edge here that is thicker,
14 which is characteristic of his hair. Pigmentation
15 is more evenly distributed throughout the hair.

16 The same characteristic and standard of Chester Bauer's
17 pubic hair that I described previously.

18 This is a match of pubic hair that was found on the
19 top sheet of Mr. Bauer to a standard of his hair, with
20 the pubic standard being on the right and the unknown
21 standard on the left. Again, you see a pronounced
22 difference in background color which affects the color
23 of the hair, the bulbs not being the same that wear
24 different with time. You see the same thickness. You
25 see the same type of edge on the hair. You see the same

1 distribution where the light changes and you can see
2 the same medullary characteristic which tends to be
3 broken in places, all characteristics of Mr. Bauer's
4 pubic hair.

5 Q What we are looking here then on the right is a known
6 standard of Chester Bauer's pubic hair, is that correct?

7 A Right.

8 Q And on the left is the pubic hair or a microscopic
9 examination of a pubic hair which was found on the
10 top sheet of the blankets submitted to you from Dawne
11 Kindt's residence by the Butte Silver Bow law enforcement
12 officers?

13 A That is correct.

14 Q Are there any characteristics that are not similar
15 on those two examinations?

16 A Except for the shade there which is mostly due to
17 the microscope both hairs show the same general
18 characteristics with no unique differences.

19 Q Thank you.

20 A Again, this is a 250 magnification of a known
21 standard of Chester Bauer's pubic hair on the right
22 and an unknown hair that came from the top sheet
23 prepared by Julie Long on the left. Again, you see
24 the same characteristics of Chester Bauer's pubic hair
25 that I described previously.

1 You see the thick cuticle. I see a definite chaining
2 of pigments, small and parallel, bleached, and you see
3 the broken medullary that is present in his hair.

4 The hair is obviously of the same diameter.

5 Q This essentially is the magnification of slide No. 3
6 which you previously presented, a more magnified view?

7 A That's correct. This is different pubic hair removed
8 from the top sheet compared to the previous slide which
9 was another unknown pubic hair removed by Julie Long.

10 Q And this is another pubic hair and not the same
11 comparison?

12 A That's correct. I believe that is the last slide.

13 Q With respect to pubic hair, I will back up until
14 I reach a head hair. Tell me to stop and I will do
15 that at that time. (Mr. Fleming went back through
16 some slides.)

17 A There.

18 Q This is the magnified head hair in comparison to
19 refresh the jury's memory, is that correct?

20 A Correct.

21 Q And on the one side is a known head hair of Chester
22 Bauer's and the other one is a...

23 MISS DUNLAP: Your honor, I am going to object as leading
24 and suggestive.

25 THE COURT: I'll sustain that.

1 Q Would you explain this slide then, please.

2 A Again in review, this is a known standard on the
3 right, unknown on the left, showing the same
4 characteristics as the standard of Chester Bauer's
5 head hair.

6 Q Where was the unknown derived from?

7 A The hair that was removed from the top sheet by
8 Julie Long, and she made the slide for my examination.

9 Q This is again head hair?

10 A Right.

11 Q Thank you. Your testimony indicates that you found
12 characteristics of the unknown standards that matched
13 characteristics of the known standards, is that correct?

14 A That is correct.

15 Q Is it possible that another person could have head
16 hair similar in characteristics that was indistinguishable,
17 say for example, from Chester Bauer's?

18 A It is possible that could happen, yes.

19 Q We are dealing simply with head hair. Is there a
20 possibility that there could be someone else with head
21 hair indistinguishable from Chester Bauer?

22 A It is possible.

23 Q What would you say in conservative terms the possibility
24 of that is?

25 A Well, if you have adequate standards to get the complete

1 range of individuals' morphological characteristics
2 which occurred in this case, based on my own experience
3 where I have done over 500 cases involving head hair,
4 I have only had three cases where two individuals
5 involved I could not distinguish their hair. So,
6 based on that experience, I would say that somewhere
7 better than one chance in 100 if you just picked two
8 people at random that you would be able to distinguish,
9 would not be able to distinguish their hair from each
10 other.

11 Q So, that is 1 in 100 for the head hair?

12 A That's correct.

13 Q Now, are head hair and pubic hair distinguishable
14 and are they different biologically?

15 A Yes. You can inherit the characteristics separately
16 from head hair and pubic hair and it is a very common
17 thing for someone that had straight light-colored
18 head hair could possibly have very dark pubic hair or
19 vice versa. So, your head hair characteristics are not
20 necessarily going to be the same as pubic hair because
21 you inherit those characteristics separately. So, they
22 are actually two mutually exclusive demonstrations of
23 somebody's heredity and are not necessarily going to
24 show the same morphological characteristics.

25 Q Then if I understand your testimony correctly,

1 what you are saying is if one person has "x" type
2 head hair and "y" type pubic hair and another person
3 has "x" type of head hair, that doesn't necessarily
4 mean that that person will have "y" type of pubic hair?

5 A No. The characteristics that you see in the head
6 hair do not have to be expressed at all. You get people
7 where their head hair and pubic hair are very similar.
8 In the minority most people, head hair and pubic hair
9 show obvious differences.

10 Q So, would your statement then be consistent 1 in 100
11 chance of seeing a person with the exact same type of
12 pubic hair as Chester Bauer?

13 A Well, yes, I would say that is a good approximation.
14 Again based on my experience, I looked at less cases
15 where pubic hair was involved mainly because situations
16 like burglary and other types of assault, not sexual
17 assault, pubic hair is usually not involved, so you see
18 a lot more head hair cases than pubic hair. I have done
19 approximately 150 cases where pubic hair was involved
20 and out of 150 cases, I have only had one case where
21 I could not distinguish the pubic hair characteristics
22 of one individual from the other. So, again we are
23 approximately in the same ballpark of 1 chance out of
24 100 based on my experience.

25 Q Now, that is a very conservative estimate, is it not?

1 A Yeah, I think it is a very conservative estimate.

2 Q Aren't there studies indicating a much higher...

3 A Yes. There was a paper published in Canada where
4 they came up with a considerably higher statistical
5 correlation than that.

6 Q And you are using a much more conservative figure,
7 is that correct?

8 A Yes, I am.

9 Q Now, since you have indicated the mutually exclusive
10 function, that being the pubic hair and the head hair,
11 1 in 100 and 1 in 100, what would the chances be of
12 having the exact same type of pubic hair in a person
13 and the exact same type of pubic hair, using Chester
14 Bauer for example. What would the chances of having
15 another individual in the population having the same
16 exact type of head hair as Chester Bauer and the exact
17 same type of pubic hair as Chester Bauer?

18 A Well, it's a similar situation for an analogy if you
19 want to throw "snake eyes" on a dice that one chance out
20 of six on both dice. If you want to get both of them
21 to come up just one dice, you have one chance out of
22 six on one dice and one chance out of six on the other
23 and the actual probability, multiplication of the two
24 numbers which is 6×6 or 36, one chance out of 36.
25 Here since you have two mutually exclusive events,

1 head hair is not like pubic hair because the characteristics
 2 are different. You have based on my experience,
 3 1 chance in 100 that the head hair will match another
 4 person and 1 chance out of 100 the pubic hair will
 5 match another person. To have them both match, it
 6 would be the multiplication of both factors so as an
 7 approximately using that 1 out of 100, you come out
 8 with a number like 1 chance in 10,000. Multiply
 9 100 x 100. It becomes a very highly improbable situation
 10 that both events would occur, that you could not
 11 distinguish the head hair and the pubic hair from two
 12 individuals.

13 Q So a very conservative estimate would be 1 chance
 14 in 10,000.

15 A Right, based on my experience.

16 Q Now, in your examination did you examine every type
 17 of hair that you could find on this evidence, top
 18 sheets, blankets, etc.?

19 A Yeah, I examined all the hair that was prepared
 20 by Julie Long on the top sheet.

21 Q In that examination did you find any pubic or head
 22 hair belonging to humans that did not belong to [REDACTED]
 23 [REDACTED], Chester Bauer or [REDACTED]?

24 A I did not find any hair that I could not relate
 25 to the three of them. I didn't find hair from of

1 characteristics from a person that was different from
2 those three individuals.

3 Q You did find?

4 A I did not. I did not find hair from an unrelated
5 person. I did not find hair from a person whose hair
6 characteristics were different than those three individuals.

7 Q Did you find more than one pubic hair in your examination
8 that was similar to Chester Bauer's characteristics?

9 A Yes.

10 Q How many did you find?

11 A I found six pubic hairs.

12 Q Each and every one of those pubic hairs was
13 consistent with Chester Bauer's pubic hair?

14 A Yes, it was.

15 Q How many head hairs did you find?

16 A I found one.

17 Q Was that consistent?

18 A Yes, it was.

19 Q And you didn't find any head hair that you could not
20 account for or pubic hair that you could not account
21 for as being characteristic of [REDACTED], [REDACTED]
22 [REDACTED], or Chester Bauer?

23 A Right. All of the head hair or human hair I found
24 present was characteristic of those three people.

25 MR. FLEMING: No further questions.

CROSS EXAMINATION BY MISS DUNLAP

1
2 Q Mr. Melnikoff, where were you trained for hair
3 analysis?

4 A The FBI Training Center in Virginia, which is
5 commonly called the FBI Academy.

6 Q How long was that training?

7 A It was a six-day course.

8 Q Six days?

9 A Yes.

10 Q You received training for this in six days?

11 A From eight to ten hours a day for six days.

12 Q Is it true that your testimony so far has been that
13 you found one head hair that was characteristic of
14 that of Chester Bauer's and six pubic hairs?

15 A That is correct.

16 Q Is it possible to definitely state that a hair
17 actually belongs to a given individual?

18 A No. Based on what I said...

19 Q OK, just answer my questions, please. You will
20 have a chance to redirect.

21 A No, you cannot make an absolute statement that a
22 hair belongs to a certain individual.

23 THE COURT: We can't hear you.

24 A My answer was, you cannot make an absolute statement
25 that a specific hair belongs to a specific individual.

1 Q Can it be conclusively determined whether or not hair
2 came from a male or a female?

3 A Not on hair that has been removed from the head more
4 than a couple of hours.

5 Q Was that test done in this particular case?

6 A No. All the hair I received was obviously removed
7 from the individuals more than two hours as I received
8 it.

9 Q So, it is a correct assumption that you cannot
10 definitely state whether this hair that you analyzed
11 was male or female?

12 A I cannot make that determination on hair.

13 Q You couldn't do it in this case?

14 A No.

15 Q Can the age of an individual be accurately determined
16 by hair analysis of this sort?

17 A No.

18 Q Is hair identification as specific an identification
19 as a finger print procedure?

20 A No.

21 Q Is there more accurate tests available today for hair
22 analysis determination than this test that you conducted?

23 A No.

24 Q Are you familiar with the neutron activation analysis?

25 A Yes.

1 Q Is that more accurate than this?

2 A No.

3 Q Does neutron activation analysis determine anything
4 more than just visual characteristics that you have shown
5 us today on the screen?

6 A It determines elemental composition of the hair.

7 Q Such as? Would you give us an example?

8 A Well, it shows what trace elements are present like
9 arsenic, lead, about 60 different elements could be
10 detected by neutron activation analysis.

11 Q Those 60 different elements that can be detected
12 by that particular test, are they individual to different
13 people? For instance, would mine be different from
14 yours?

15 A They found there is more individual variation in the
16 hair from the same person than there is between
17 individuals. That is why it is less accurate.

18 Q Your statement is then that is a less accurate test?

19 A Yes.

20 Q Then what you are visually showing us on the screen?

21 A Yes, that is my statement.

22 Q The reports that you have spoken of here today
23 in your statistics, aren't they more or less a plea,
24 this survey is more or less a plea for further investigation
25 into the theory proposed by that report, the plea for

1 further investigation?

2 A Well, it made a comment both papers said more people
3 should be examined and that they should follow up
4 on what he started to do because he only looked at 100
5 people, not a large population.

6 Q Mr. Melnikoff, this type of analysis that you learned
7 in six days in the FBI school, is it an exact science?

8 A If you define "exact science", I will answer the
9 question.

10 Q By "exact science", I mean can you determine whether
11 or not a hair came from a specific individual accurately
12 without fault?

13 A As I said before, you cannot make an absolute statement
14 that a single hair came from a specific individual.

15 Q Then it is not an exact science.

16 A If that is what you mean by exact.

17 Q That is what I mean.

18 A Yes.

19 Q Yes, it is or no it isn't an exact science.

20 A Well, it is science. Very few things...

21 Q But I have told you what I mean by exact science,
22 if that is an exact science.

23 A You are using exact science to describe a hair.

24 Hair is not a science, individual hair.

25 Q This is not an exact science?

1 A I can't answer your question.

2 MISS DUNLAP: I have no further questions.

3 REDIRECT EXAMINATION BY MR. FLEMING

4 Q Is the analysis that you presented to the jury
5 showing the characteristics utilized nationwide and
6 internationally?

7 A Yes. This is accepted procedure for hair examination.

8 Q Is it used by the FBI?

9 A Yes.

10 Q Has the FBI published papers on it?

11 A Yes.

12 Q Is it used by the Royal Canadian Mounted Police?

13 A Yes.

14 Q And it is used by local agencies, including Montana?

15 A That's correct.

16 Q Now, Miss Dunlap referred to a study, Canadian study,
17 she indicated that there were pleas. What figures
18 did they use as far as their care as to the probability
19 of head hair, first of all, and then pubic hair?

20 A Based on examination of 100 people, this is by
21 memory and I might be slightly off, and then looking
22 at a large number of hairs of those people and trying
23 to find 7 or 8 hairs that show a wider variation
24 and using those as standards. A blind comparison of
25 those 7 or 8 hairs to the 100 individuals, they came

1 out with a physical probability of two hairs being un-
2 distinguishable of those individuals and I believe 1
3 chance in 4200 in head hair and 1 chance in 700 on pubic
4 hair.

5 Q You didn't use those figures today?

6 A No.

7 Q You used figures that you felt were more accurate,
8 1 to 100.

9 A Yes which was based on my personal experience
10 and not on a study that I did not do that somebody else
11 did.

12 Q You used much more conservative figures?

13 A That's correct.

14 Q Again, you did not find any other hairs that were not
15 characteristic of head and pubic hair of either [REDACTED]
16 [REDACTED], [REDACTED] or Chester Bauer?

17 A That is correct.

18 MR. FLEMING: No further questions. The State of Montana
19 will rest.

20 MISS CAUGHLAN: Prior to calling our first witness,
21 I will move to dismiss the case for failure to prove
22 their prima facie case.

23 THE COURT: Your motion is denied.
24
25