

1 TRIAL PROCEEDINGS NOVEMBER 18, 1987

2 THE COURT: The record should reflect that the
3 jury is all present. You may call your next witness.

4 MR. HOEFER: Thank you, Your Honor. The State at
5 this time will call Arnold Melnikoff.

6 ARNOLD MELNIKOFF, being first duly sworn as a
7 witness on behalf of the plaintiff, upon direct examina-
8 tion by Mr. Hoefer, testified as follows:

9 Q. Will you please state your name for the
10 record.

11 A. Arnold Melnikoff.

12 Q. Where do you reside?

13 A. 701 Snow Bowl Road, Missoula, Montana.

14 Q. Where do you work?

15 A. At the Montana Criminalistics Laboratory,
16 commonly referred to as the State Crime Laboratory.

17 Q. And what is your job title there?

18 A. Laboratory Manager.

19 Q. For the record what are your duties in that
20 position?

21 A. Until just recently my duties were examination
22 of trace evidence and evidence in arson cases and lab
23 manager.

24 Q. And what is your position currently?

25 A. I have been relieved of my examination duties

1 and I am to be a full time lab manager.

2 Q. How long have you worked at the State Criminal
3 Lab?

4 A. Since July of 1970.

5 Q. Now you have referred to the fact that one of
6 your responsibilities was to handle trace evidence.
7 Will you tell the jury what that term means.

8 A. Trace evidence are small items of material
9 that can be found at a crime scene or on a victim or suspect's
10 clothing. They are items that usually you cannot speci-
11 fically identify unless you send it to a laboratory,
12 they include things like paint, glass, hair, things like
13 that.

14 Q. For the jury's information what is your
15 formal education?

16 A. I have a Bachelor's degree in biology from
17 Northern Illinois University, and a Master's degree in
18 organic chemistry from the University of Montana.

19 Q. Have you further taken additional job related
20 courses and if so what are those?

21 A. Yes, I have. I took a course in hair identi-
22 fication from the FBI Laboratory. A course in forensic
23 microscopy from the Macrom Institute which is located in
24 Chicago, Illinois. I took several courses from the
25 University of Montana Pharmacy School, one was on drug

1 microscopy, which is identification of plant materials
2 that contain drugs, and a course in toxicology, which is
3 identification of poisonous substances.

4 Q. In addition have you given any papers at the
5 Northwest Association of Forensic Scientist's meetings?

6 A. Yes, I have.

7 Q. And what were those regarding?

8 A. Several papers concerning gascrotopgraphy and
9 identification of fire accelerants in arson cases. One
10 paper on cocaine toxicity, another paper on using
11 diamond cell and infrared spectroscopy, paper on primate
12 hair, the characteristics of primate hair, and a paper
13 on using a marker in paint samples to identify the
14 paint.

15 Q. Have you previously testified in criminal
16 cases?

17 A. Yes.

18 Q. And how many have you testified in?

19 A. Over one hundred.

20 Q. Concerning the case of State of Montana
21 versus James Bromgard, did you receive evidence concerning
22 this case from the Billings Police Department?

23 A. Yes, I did.

24 Q. And do you recall approximately when you
25 received that evidence?

1 A. Most of the evidence arrived in April of this
2 year.

3 Q. And were you asked to examine or did you
4 examine evidence concerning this case?

5 A. Yes, I did.

6 Q. Specifically what evidence did you look at
7 and what were you looking for?

8 A. Primarily pillow cases, bed sheets and
9 blankets to look for hair primarily.

10 Q. Now in receiving evidence, what is your
11 procedure for receiving it and handling the evidence?

12 A. Well the evidence can be brought to the
13 laboratory by several methods, for example mail, UPS or
14 in person, and then it's assigned a lab identification
15 number and put in a log book and then placed in a locked
16 evidence storage room until it is specifically assigned
17 to a scientist who does the examination of the evidence.

18 Q. Is the evidence sealed when you receive it?

19 A. Right, it is not opened until the scientist
20 actually starts the examination.

21 Q. And after the examination does the scientist
22 re-seal it?

23 A. Yes, when the scientist is done with his or
24 her part of the examinations, they re-seal it and either
25 have it sent back or give it to another scientist in the

1 lab for other types of tests.

2 Q. Showing you what's been marked as State's
3 Exhibit No. 32, I believe you looked at that earlier
4 this afternoon in my office. Is that one of the items
5 that you received?

6 A. Yes, it is.

7 Q. And was that with other items taken from the
8 crime?

9 A. Yes, it was.

10 Q. And based on that information did you find
11 any hair samples that were useful in this particular
12 case.

13 MR. ADAMS: Object to that as calling for conclu-
14 sion as to whether they were useful or not.

15 MR. HOEFER: I will rephrase the question.

16 Q. (By Mr. Hoefer): Did you find hair samples
17 that you were able to utilize in analyzing evidence in
18 this case?

19 A. Yes, I did.

20 Q. Specifically what did you find?

21 A. May I look at my notes?

22 Q. Yes.

23 A. On that particular item of evidence I removed
24 and examined 46 slides containing mostly hair and a few
25 containing fibers.

1 Q. Did you receive further information from the
2 Billings Police Department which contained what I would
3 term control samples?

4 A. Yes, I at a later date received some additional
5 hair standards from the Billings Police Department.

6 Q. And who were those hair standards from?

7 A. They were additional hair standards of the
8 pubic hair of James Bromgard.

9 Q. Did you also receive samples of head hair
10 from James Bromgard?

11 A. Previously, yes.

12 Q. And did you receive any hair, head hair of
13 the victim?

14 A. Yes, I also in the original submission did
15 receive head hair from the victim.

16 Q. And that would be Linda Tokarski, is that
17 correct?

18 A. That is correct.

19 Q. Would you please tell the jurors how you
20 conduct a forensic hair examination?

21 A. Okay. Would I be able to use that chart
22 right up there?

23 MR. HOEFER: Yes. I believe there is a marker
24 right there.

25 (Witness going to chart at this time.)

1 A. To start off with, human hair is microscopi-
2 cally different than animal hair, so you can easily
3 distinguish human hair from other types of animal hair.
4 The only hair that is similar is primate hair like
5 monkeys and apes, and it is still different but in
6 routine practice you don't usually have orangutans
7 committing crimes so it is not much of a concern usually.
8 Under a microscope, approximately 300 power, which means
9 that a hair is being examined and blown up by the micro-
10 scope so it is 300 times larger than you would see it
11 with your naked eye, you see a lot of individual
12 characteristics that are associated with that hair that
13 allow you to compare one hair from one person to another.
14 Human hair can contain an area in the center of the hair
15 called the this is/medula. It's actually a hallow area in the
16 center of the hair. In human hair it can either be
17 absent or if it's present it's intermittent, it's not
18 always there, and it can either be dark or it can be
19 translucent, which means similar in color to the rest of
20 the hair. Most cases it's dark but it's a characteristic
21 that is not too useful because it varies a lot between
22 people and a lot of times it's not present, probably
23 the least useful hair characteristic to look at. The
24 outside of the hair contains a transparent coating that
25

1 actually goes around the hair called cuticle, and it
2 varies with different individuals, the thickness of it
3 and occasionally it can have what they call raised
4 scales, in other words instead of being totally flat you
5 see.....

6 THE COURT:do you have a question?

7 JUROR: I can hardly see or hear the witness.

8 MR. HOEFER: If we can get another marker and you
9 move it closer if you want to.

10 A. This is much better.

11 THE COURT: Why don't you move it up closer to
12 the jury box so they can see.

13 (Moving chart closer to jury box at this time.)

14 A. As I was talking about, the cuticles are
15 actually a thin coating, transparent coating and goes
16 all the way around your hair just like the paint on a
17 pencil. It is very thin and it is transparent, but when
18 you lay the hair flat on a microscope you can see the
19 edge and some people's hair is thick and some is thin.
20 It is more common to be thin and occasionally it's
21 composed of overlapping sells called scales, and
22 occasionally they will be raised, they don't lie flat,
23 you can see it on edge. This is kind of exaggerated.
24 The most useful characteristics are the pigment granules
25 that actually determine the color of the hair, and they

1 lie across the center of the hair every where except
2 where the medula is. And little granules, and they can
3 be various colors and shapes. The size, color and
4 distribution of the pigment granules are the most indivi-
5 dual characteristic of a person's hair and are most
6 useful distinguishing one person's hair from another.
7 In the caucasion hair, that's people of the white race,
8 their hair is most variable and there is major differences
9 between individuals. Even if their hair looks the same
10 color to the eye, you look at the pigmentation in most
11 cases it is different which is quite obvious which
12 allows you to distinguish one person's hair from another.

13 (At this time witness returns to witness chair.)

14 Q. Now in this case were you able to find human
15 hair on the blanket itself?

16 A. Yes.

17 Q. And what did you do with that hair when you
18 removed it from the blanket?

19 A. All the hair I examined including the standard
20 hairs were placed on separate slides. Okay, microscope
21 slides, and then they were examined under a comparison
22 microscope to see if they could be differentiated from
23 one another.

24 Q. Did you bring the 35 millimeter color slides
25 or did you take color slides of those hair samples?

1 A. Yes, the microscope we have allows you to
2 take pictures of whatever you see under the microscope,
3 which are exact representations of what you see, and you
4 can use that to document what you previously saw in your
5 examination, and I did take these color slide pictures
6 to document my examination.

7 Q. And do you have those slides with you today?

8 A. Yes.

9 Q. And in your opinion would it be useful to
10 show the jury those slides to help them understand how
11 you arrived at your conclusions?

12 A. Yes, I think it would be very helpful.

13 MR. HOEFER: With the court's permission we do
14 have the slides ready to show, and would proceed with
15 that.

16 MR. ADAMS: No objection.

17 THE COURT: You may proceed.

18 MR. HOEFER: If we could have the lights down,
19 off, please. For the record the projector is being run
20 by Kenneth Konzak.

21 Q. (By Mr. Hoefer): What is the first slide?

22 A. The first slide is the actual microscope that
23 I talked about. It's a comparison microscope so it's
24 actually composed of two separate microscopes with
25 optical range that allows you to see side-by-side,

1 comparison of the view on each microscope and it also
2 has an automatic camera which is this, allows you to
3 take a picture of whatever you see.

4 Q. Second slide please. If you would identify
5 what is being shown here.

6 A. Okay. These are two different microscope
7 slides, one on the left is a known standard of Mr. James
8 Bromgard's hair, and the one on the right is a known
9 standard of Linda Tokarski's hair. There is a major
10 difference between their hair that allows you to dis-
11 tinguish them. One is in general James Bromgard's hair
12 is considerably thicker than Linda's, the cuticle, which
13 is this edge, is thicker than Linda's hair and it's also
14 slightly raised. You can see rough spots here. The
15 other major differences is pigmentation granules. In
16 James Bromgard's hair the granules are evenly disbursed
17 and quite smooth, and Linda's hair the granules are more
18 clumped together and more situated towards the outside
19 of the hair with less pigment in the center.

20 Q. For the record, are these head hairs of both
21 individuals?

22 A. Yes, they are known head hairs standards from
23 both individuals.

24 Next slide. Again this is a known standard of
25 James Bromgard's hair and a standard of Linda Tokarski's

1 hair. They are slightly different colors. Most people's
2 hair even though it looks uniform from a distance has
3 range of shades and this depicts that. Linda's hair is
4 one of her lighter hairs but the major differences that
5 I talked about before are still there. Thickness,
6 pigment distribution, you can see again her pigment
7 granules are larger and more clumped and are located
8 more towards the edge of the hair. Mr. Bromgard's hair,
9 the granules are smaller and more evenly distributed.

10 Next slide, please. These are examples of their
11 darkest hair, with Linda's hair again on the right.
12 Again you see basically the same thing except for the
13 color of the hair being a little darker. The granules
14 are more clumped together and are located on the edge of
15 the hair, the cuticle, which is up here is a little
16 rougher or thicker, and it's generally, her hair is
17 thinner than Mr. Bromgard's hair. Mr. Bromgard's hair
18 again even though it is darker has very small pigment
19 granules pretty well evenly distributed, and his hair is
20 thicker, and this area in the center is actually the
21 medulla which was usually absent in most of his hair and
22 in this hair it was present, in this case it is translu-
23 cent, or you can see through it.

24 MR. ADAMS: If Your Honor please, may I ask one
25 question of Mr. Melnikoff?

1 THE COURT: Surely.

2 MR. ADAMS: You have been showing hairs. You
3 have shown three slides now. Are those three separate
4 hairs or are they actually the same hair?

5 A. No, each slide is a different hair.

6 MR. ADAMS: Is that a different hair of Mr.
7 Bromgard?

8 A. Right.

9 MR. ADAMS: This is known controlled samples?

10 A. That's correct.

11 MR. ADAMS: It would be something that has been
12 sent to you then?

13 A. That's correct.

14 MR. ADAMS: Thank you.

15 A. All three slides on the left are different
16 hair standards of Mr. Bromgard, and all three slides on
17 the right are different known standards of Linda Tokarski's
18 hair showing the range of variation of the hair.

19 Next slide please. The next two slides are known
20 pubic hair standards of Mr. Bromgard, none were sent in
21 from Linda Tokarski because I was told that she didn't
22 have any because of her age. This big black thing is an
23 air bubble which unfortunately got next to the hair.
24 Pubic hair is inherited with separate characteristics
25 from head hair, so you cannot predict what pubic hair

1 will look like if you know what head hair is. Some
2 individuals who are blond headed have very dark pubic
3 hair or visa versa, or it can be the same. In the case
4 of Mr. Bromgard, his pubic hair was very similar to his
5 head hair. Another thing about pubic hair is it's not
6 uniform in thickness, it's pointed at one end and thick
7 in the center and thin in the end and tends to curl
8 around itself. So to compare hairs with pubic hair you
9 always have to look the same general location of the
10 hair. All of the pubic hair I am going to show you is
11 taken approximately the middle of the hair, so this just
12 shows you what Mr. Bromgard's pubic hair looks like.
13 This is a medula here which has fluid in it so it's what
14 they call translucent and just slightly darker than the
15 surrounding hair. Pigment granules you can see and in
16 his pubic hair the pigmentation is very similar to what
17 you see in his head hair.

18 Next slide, please. Another known standard of Mr.
19 Bromgard's head hair. Major differences is that medula
20 in this case does not have fluid in it so it appears
21 dark and this is the most common way you see a medula
22 human hair, usually dark. Again the pigment granules
23 are similar to his head hair and similar to the other
24 pubic hair, they are very fine and evenly disbursed
25 throughout his hair. And you can see the hair is slightly

1 twisted and that's a characteristic of pubic hair. It's
2 usually never very straight.

3 Next slide please. Okay, the one on the left is
4 hair I removed from the blanket. The one on the right
5 is a known standard of Mr. Bromgard's hair. As you can
6 see it matches very well, thickness, in color, and in
7 pigment distribution showing that fine pigment granules
8 fairly evenly distributed in his hair as I mentioned
9 before.

10 Next slide, please.

11 Q. (By Mr. Hoefer): Could we stop there just a
12 second. First of all was this pubic or head hair here?

13 A. I am sorry, this is head hair.

14 Q. And second, the line running down the middle
15 is simply the demarcation between the right and the left
16 side of the microscope, the two different slides under-
17 neath?

18 A. Yes, that is correct. You can see this line
19 and you can tell also two different slides to this air
20 bubble here, only appears on one slide, it doesn't go
21 across, so the one again on the left is a head hair that
22 was removed from the blanket, the one on the right is a
23 known standard head hair from James Bromgard.

24 Q. Thank you.

25 A. Next slide, please. Okay, one on the left

1 again is a pubic hair that was removed from the blanket,
2 the one on the right was pubic hair standard of James
3 Bromgard. You can see the line down the center here,
4 and between the two microscopes. Again you can see that
5 the hairs compare very well. Known standard pubic hair
6 matches very well. The hair from the blanket on the
7 left matches all the characteristics of the known pubic
8 hair from James Bromgard on the right, and they almost
9 look like one hair. That is all the slides I have.

10 (At this time the lights are turned back on in
11 the courtroom.)

12 THE COURT: Are you going to show any more slides?

13 A. No sir.

14 THE COURT: Would you remove that screen, please,
15 counsel.

16 (Screen is removed at this time.)

17 Q. (By Mr. Hoefer): Mr. Melnikoff, so that the
18 jury is completely clear on this, how did the standard
19 samples of Mr. Bromgard's hair, how were those obtained?

20 A. The were obtained by the Billings Police
21 Department and sent in what is known a rape examination
22 kit where hairs are specifically removed and packaged
23 and sent to the laboratory, and an additional set of
24 pubic hair standards were also sent at a later date but
25 they were all originally obtained by the Billings Police

1 Department.

2 Q. And would your records indicate that Doctor
3 Haniffy obtained the rape kit, is that correct?

4 A. Yes, well I can look, I am pretty sure that
5 is correct, but I have copies.

6 Q. I will show you. This has been marked as
7 State's Exhibit No. 35.

8 A. Okay.

9 Q. And does that indeed indicate that it was
10 from Doctor Haniffy?

11 A. Yes, and then he gave them to Detective Regan
12 of the Billings Police Department.

13 Q. The standards from Linda Tokarski, referring
14 to the same exhibit, were obtained by Detective Chuck
15 Regan, is that correct?

16 A. That is correct.

17 Q. And finally, the additional pubic samples
18 were also forwarded to you and these are of the defendant
19 Jimmy Bromgard by Detective Regan, is that correct?

20 A. That is correct.

21 Q. In addition was the evidence that you received,
22 including the blanket, forwarded to you by Detective
23 Regan?

24 A. Yes, they were sent by certified mail with
25 cover letters and information that was signed and

1 addressed by Detective Regan.

2 Q. Was the blanket marked and sealed when you
3 received it?

4 A. Yes, it was marked with an item number and
5 evidence tag.

6 Q. What did you do with the evidence when you
7 were finished examining it?

8 A. It was signed over to Ken Konzak who is one
9 of the serologists in our laboratory.

10 Q. And did you bring, you or Mr. Konzak, bring
11 the blanket down with you today?

12 A. Yes, Mr. Konzak kept it in his possession and
13 he brought it today.

14 Q. Did you prepare a report of your findings?

15 A. Yes, I did.

16 Q. I am showing you what's marked State's Exhibit
17 33, does this appear to be a true and correct copy of
18 your report?

19 A. Yes, it is.

20 Q. Who did you forward that report to, or mail it
21 to?

22 A. It was mailed to the attention of Detective
23 Chuck Regan at the Billings Police Department.

24 MR. HOEFER: Your Honor, I would move to offer
25 State's Exhibit 33, I have previously provided counsel

1 with a copy of it.

2 MR. ADAMS: He has, Your Honor, provided us with
3 a copy of the report. I would object to the introduction
4 of the report itself on the grounds it violates the
5 right of cross examination and violates the right of
6 confrontation, it violates the constitutional rights of
7 this defendant to have evidence presented and it is
8 merely supplementary to the testimony I assume that this
9 man will offer regarding the report. He has at this
10 time laid no foundation to show....

11 THE COURT:the witness is here, why don't
12 you just ask him the questions that you need answered or
13 the evidence you need presented and the opinions that
14 you need offered?

15 MR. HOEFER: Very well, Your Honor.

16 MR. ADAMS: If the court please, I may at that
17 time then withdraw my objections and allow the report to
18 go forward.

19 THE COURT: Well I don't think that we need both,
20 we can either have the report or we can have the testimony.

21 MR. ADAMS: I would prefer the testimony.

22 THE COURT: Very well, let's go with the testimony
23 then.

24 Q. (By Mr. Hoefer): Mr. Melnikoff, in conclusion
25 is it your testimony that the head and pubic hair of the

1 same microscopic characteristics as Jimmy Bromgard's
2 were present on the blue blanket?

3 A. Yes, it is.

4 Q. How common is it for two individuals to have
5 head hair which is microscopically indistinguishable?

6 A. Well the best way that I know to answer that
7 question is to relate to my own case work experience,
8 and I have done over 700 cases involving head hair and
9 have only had five or six cases where I could not distin-
10 guish the head hair between two individuals.

11 Q. What is your experience in the same regard
12 with pubic hair?

13 A. Well I have probably examined less cases
14 because not all the cases involving hair involve pubic
15 hair, but I would guess it's probably close to 500
16 cases, most of the time it does, and I have had the
17 experience where only three times pubic hair standards
18 from two individuals submitted in the case could not be
19 distinguished.

20 Q. And in your opinion the hair here is micro-
21 scopically indistinguishable, is that correct?

22 A. It's almost indistinguishable, I would say it
23 has the same range of characteristics, so it's micro-
24 scopically similar to the point that it could have come
25 from that person.

1 Q. Let me give you this hypothetical question
2 then. Is it less likely that when head and pubic hair
3 are present with the same microscopic characteristics as
4 the suspect's, that they could have come from another
5 individual compared, well okay, first of all what would
6 you say is the possibility of this being a mistake as
7 identifying it as Jimmy Bromgard's head hair?

8 A. Well going back to what I previously stated
9 from my own case work experience, the odds are less than
10 one chance in a hundred that two people's hair cannot be
11 microscopically distinguished, either head or pubic
12 hair.

13 Q. So each one would be one in a hundred, what
14 would the two together be. In other words if the pubic
15 hair and head hair are both matching up, what are the
16 odds of that being a mistake?

17 A. Well there are actually two mutually exclusive
18 events because they come from different areas of the
19 body, and their characteristics are not necessarily the
20 same. So if you find both head and pubic hair there you
21 have one chance in a hundred for the head hair matching
22 a particular individual and one chance in a hundred for
23 the pubic hair. If you find both it's a multiplying
24 effect, it would be one chance in 10,000, it's the same
25 as two dice, if you throw one dice with a one, one

1 chance out of six; if you throw another dice with a one,
2 it's one chance out of six, you multiply the odds together.
3 You do the same in this case, so it's one times one
4 hundred, times one, times one hundred, and you get one
5 in 10,000.

6 Q. Consequently, so that I understand it correctly
7 and the jury understands it correctly, is it your opinion
8 that there is less than one in ten thousand chance that
9 this was not actually Jimmy Bromgard's hair?

10 A. Yes.

11 Q. On the slide the hair appeared to be brownish
12 in color, do slides change the coloration of hair?

13 A. They don't actually change it but under
14 microscope they tend to look a little lighter than they
15 would to the naked eye because lights can shine through
16 the hair so it usually doesn't change anything, it just
17 makes it look slightly lighter shade than the original
18 color would look if you just looked at the hair by
19 itself visually.

20 Q. Consequently having done as many cases as you
21 have with head hair, how would you describe the head
22 hair coloration of Mr. Bromgard?

23 A. Light to intermediate brown. His hair did
24 vary in color from shades of brown from a light to
25 intermediate shade, depending on which hair you looked at.

1 MR. HOEFER: For purposes of introduction I have
2 marked this plastic container for slides as State's
3 Exhibit No. 36, could we remove the slides from the
4 carousel and put these in here and then I would offer
5 the slides into evidence.

6 MR. ADAMS: If Your Honor please, I will have use
7 for the slides in cross examination and will ask that
8 they remain there with the stipulation that they may be
9 removed.

10 THE COURT: Since you are going to use them as
11 well I suspect you are not going to have any objection
12 to their being introduced as evidence?

13 MR. ADAMS: No, Your Honor.

14 THE COURT: So the slides will be ultimately
15 marked as Exhibit 36 and Exhibit 36 is received, and
16 Exhibit 33 is refused.

17 MR. HOEFER: That's all the questions I have at
18 the moment, Your Honor.

19 THE COURT: You may cross examine.

20 -----

21 CROSS EXAMINATION of Mr. Arnold Melnikoff by Mr.
22 Adams to-wit:

23 Q. There are certain things that I want to
24 understand and I am not sure that I do understand them.
25 You received a blanket as I understand it from the

1 Billings Police Department and you examined that blanket,
2 is that correct?

3 A. That's correct.

4 Q. From that blanket, how many hairs did you
5 find on the blanket itself?

6 A. I believe it was 45 or 46, I can look at my
7 notes.

8 Q. If you will, please.

9 A. 46.

10 Q. 46 hairs?

11 A. Right.

12 Q. And how many of those hairs were Linda's hair
13 that you could determine?

14 A. 28.

15 Q. And the other hairs belong to who?

16 A. One head hair that matched the characteristics
17 of James Bromgard, two pubic hairs that matched the
18 characteristics of James Bromgard, there were eight dog
19 or cat hairs and five slides of various types of fibers
20 and one slide of a human body hair, which is a hair
21 that's not head or pubic hair, either from the arms or
22 chest.

23 Q. You didn't know who that would be from?

24 A. No, there weren't any standards submitted.

25 Q. You say there was one head hair and two pubic

1 hairs?

2 A. That's correct.

3 Q. That apparently were comparable to Mr. Bromgard?

4 A. That is correct.

5 Q. They had certain characteristics, now not all
6 of the characteristics are ever existent on any hair,
7 are they?

8 A. Not all hair have the same characteristics
9 from the same individual.

10 Q. In respect to this particular hair in question
11 were all of the characteristics existent?

12 A. All the usual ones that you normally compare
13 were there, I mean part of the problem is some people's
14 hair has more individual characteristics than others, so
15 I am a little confused when you state all the characteris-
16 tics, all the known characteristics of James Bromgard's
17 hair that were in the standard hair were on that one
18 head hair.

19 Q. Well let us enumerate those characteristics
20 if we can. One would be color, is that correct?

21 A. Yes.

22 Q. What would the next be?

23 A. Thickness.

24 Q. What would be the next?

25 A. Shape. If the hair is straight or curled or

1 whatever.

2 Q. And the fourth?

3 A. The cuticle, if it's thick or thin and if
4 it's flat or raised. You have two different characteris-
5 tics associated with the cuticle.

6 Q. With respect to the cuticle, it would not
7 necessarily be the same, be just merely similar, is that
8 correct, on any two hairs?

9 A. Well no two hairs are the same, just by
10 definition they are separate hairs, I mean they have the
11 same characteristics.

12 Q. When you say the same characteristics, in
13 other words an educated guess would give you the
14 impression that they were about the same size then?

15 A. You can't distinguish any noticeable difference,
16 that's another way of looking at it.

17 Q. What else, what is the fifth characteristic?

18 A. The absence or presence of the medula.

19 Q. The absence or presence of medula, and in
20 this particular case did you find that there was in both
21 instances that existed?

22 A. His head hair, I don't believe that his
23 medula existed in all the hairs I examined. As I
24 mentioned, in human hair the medula in some people's
25 hair doesn't exist and the standard hairs of his head

1 hair and the hair that I found in the blanket there was
2 no medula.

3 Q. There is no medula on either one of those
4 hairs?

5 A. That's correct.

6 Q. What is the seventh characteristic?

7 A. Besides the absence or presence of medula
8 it's what it looks like, if it's thin, thick, dark or
9 translucent, so there is another factor, the medula,
10 what it looks like and if it's present or not.

11 Q. In respect to that you don't measure it, you
12 just take an educated guess, is that correct?

13 A. Well we measure it by, under microscope, it's
14 the same magnification, you compare the size, if you
15 have a real thick medula consistent in one person's hair
16 and have thin medula in another hair it is obviously
17 different, in this case there wasn't a medula in head
18 hair so there wasn't anything to compare.

19 Q. The eighth characteristic?

20 A. The rest concerned the pigment granules.

21 Q. Are they always the same?

22 A. They are within a range, certain size, color
23 and distribution. Three factors you look at, what color
24 they are, what shape they are, what size they are. I
25 guess there is four, and how they are distributed, are
they all to the edge of the hair, are

1 they evenly distributed or are they clumped together in
2 various locations. There is four factors of what the
3 pigment granules can be arranged in color, size, shape
4 and orientation.

5 Q. The use of a substance on the hair would not
6 affect this in any way then, such as an oil?

7 A. Depends on what kind of substance you are
8 talking about.

9 Q. I am talking about a hair oil, for example.

10 A. Most hair treatments do not affect the hair
11 except that if you bleach it first it will because it
12 destroys the color of the pigment granules, and it goes
13 all the way through the hair and discolors everything,
14 and you would not be able to be able to see the color of
15 the pigment granules and they become almost clear and
16 then you can almost never see them and then you can't
17 compare them to a normal existing hair, so everything
18 but bleaching the hair would usually not change it.

19 Q. What about medula?

20 A. It won't change that.

21 Q. That would be, the absence of it then would
22 not....

23 A. ...be affected by bleach, no.

24 Q. The oil itself, would it show on the hair?

25 A. You could see it if it was there, you could

1 see a residue on the outside of the hair.

2 Q. In this instance did you find any residue in
3 the hair that was sent to you from Mr. Bromgard?

4 A. I didn't notice any.

5 Q. Could there have been some? You say you
6 didn't notice some but could there have been some?

7 A. Might have been very thin film that I didn't
8 notice.

9 Q. Would that affect the thickness of the hair?

10 A. No, just an additional outside coating on the
11 hair.

12 Q. You said you attended a school I believe on
13 this in the east, is that correct?

14 A. Yes.

15 Q. At that school did they discuss with you the
16 fact that hair itself is not like fingerprints?

17 A. Yes.

18 Q. It's not like fingerprints, is it?

19 A. That's correct.

20 Q. Other people may have the same hair, the same
21 both pubic hair and hair of the head, is that correct?

22 A. It's possible.

23 Q. In this instance your figures say one in
24 10,000, is that correct?

25 A. Yes.

1 Q. Did they not tell you that in FBI school it
2 was probably one in 300?

3 A. No.

4 Q. What figure did they give you at that school?

5 A. They said that was a difficult thing to talk
6 about, and they thought the best approach would be to
7 relate it to your own case work, how often that occurred
8 in your case work.

9 Q. They didn't give an estimate then based on
10 national averages?

11 A. No one has ever done that. The only national
12 average that I have seen published as a Canadian study.
13 No one has done any on a U.S. head hair study that I am
14 aware of.

15 Q. What did the Canadian study show?

16 A. It was a lot more specific than I did. They
17 came out with one chance in 3,000.

18 Q. One chance in 3,000?

19 A. Head hair or pubic hair.

20 Q. In respect to this particular hair, there
21 were some characteristics on each of the hairs that were
22 not existent, is that correct?

23 A. The hairs did contain all the possible charac-
24 teristics that you can find in human head hair. There
25 is couple things that I didn't discuss that are very

1 rare that you occasionally see. I was talking about
2 what I saw in Mr. James Bromgard's hair.

3 Q. In regards to these slides that you have just
4 shown, am I correct in stating that the first four or
5 five of these slides related to your comparison of Mr.
6 Bromgard's hair to the hair of Ms. Tokarski?

7 A. Yes, they were examples to show the range of
8 variation of both of their hair.

9 Q. But when it came to the actual analysis of
10 Mr. Bromgard's hair to the specimen that you found on
11 the blanket, the alleged pubic hair, there is only one
12 slide there regarding that pubic hair, is that correct?

13 A. Only one picture taken of the comparison, is
14 that what you are talking about?

15 Q. That's what I am saying, that's on the one
16 slide, the second to the last slide.

17 A. Well it's semantics, I have duplicates of
18 that slide but I only took the same picture about four
19 times, but it was the same comparison.

20 Q. On these slides that are shown here there is
21 only one that shows that comparison, is that correct?

22 A. That's correct.

23 Q. In respect to the hair that was taken from the
24 blanket and compared to Mr. Bromgard's hair, there is
25 only one of these slides that are actually applicable to that

1 hair, is that correct?

2 A. I only show one slide to show the comparison,
3 that is correct.

4 Q. And that would be the last slide then?

5 A. Well two comparison slides, one of head hair
6 and one of pubic hair.

7 Q. Now in regards to - you had a number of Mr.
8 Bromgard's hairs, did you not?

9 A. Yes.

10 Q. That you had received from him, that is the
11 control specimens as you refer to them?

12 A. Right.

13 Q. In regards to that, did you compare each of
14 those control specimens to the hair that was on the
15 blanket?

16 A. No, I didn't individually compare every control,
17 no.

18 Q. Yet you indicated to us that there could be a
19 difference as I understood it between those hairs?

20 A. Yes, I did.

21 Q. Why did you not then compare all of them?

22 A. As I stated before, it's not an exact compari-
23 son. What you are doing is you see a range of characteristics
24 which I showed in the first three or four slides of the
25 head hair and what you do is you show that even though

1 there is a range of characteristics they don't interlap,
2 that the two sets of hair are different even though they
3 both vary and then you find a hair that matches the
4 known hair of that individual. Okay, and that's what I
5 did after that, and that's what I showed with those
6 pictures.

7 Q. Then some of these hairs did not match the
8 known characteristics, is that correct?

9 A. I didn't say that.

10 Q. Well I understood you said you found a hair
11 that matched the characteristics?

12 A. I said there was a range of characteristics.
13 In other words the hairs aren't exactly the same but
14 they have a range of characteristics and each range is
15 separate between the two individuals. It matched a
16 known range of characteristics of that person.

17 Q. Well you compared four of Miss Tokarski's
18 hair, Linda Tokarski's hair to the defendant's hair, is
19 that correct?

20 A. In the pictures I showed, yes.

21 Q. But you only looked at one and compared one
22 of Miss Tokarski's hair to the known specimen that you
23 have from the blanket?

24 A. In reality that's not what I did. In reality
25 I looked at the standards, got a picture in my own mind

1 how they differed, and when I found the hair that might
2 match I went through several standards to see if it was
3 in the range of hair, and then I took a picture of the
4 one that I thought showed the comparison the best.
5 That's what I did. I didn't take pictures of everything
6 I did.

7 Q. What about the pubic hair, was the same true,
8 the two pubic hairs?

9 A. I looked at about over thirty standards of
10 Mr. Bromgard's pubic hair and then I went through and
11 was satisfied that it was in the range of standards that
12 are shown by his hair characteristics and then I took a
13 picture of one comparing that hair to his pubic hair.

14 Q. Now you have stated that there were, in
15 certain instances that there were six or seven cases out
16 of about I believe you said 700 that you had examined?

17 A. That's correct.

18 Q. That you couldn't make comparisons on, is
19 that correct?

20 A. That's correct.

21 Q. Do you mean by that that they were different?

22 A. No. What I mean is they were at least two
23 individuals, well two individuals whose hair was submitted
24 in that case that I could not distinguish their hair
25 microscopically. Their microscopic characteristics were

1 so similar that I couldn't tell them apart.

2 Q. And those were hairs that were sent in the
3 same cases?

4 A. Yes.

5 Q. And cases where you were going outside the
6 case itself to look at hair, for example, I don't mean
7 to be offensive to you, but did you examine your hair
8 in regards to this particular hair.

9 A. Well I always, I have standards in the lab of
10 my hair because there is always a possibility of my
11 contaminating a specimen with it, so I look at it quite
12 frequently and I can easily spot my own hair.

13 Q. But in certain cases that you had, about 700
14 cases, you have cases where they have sent you hair of
15 two different people and they were comparable to each
16 other?

17 A. At least two different people. I have had
18 cases as many as nine different people.

19 Q. That matched?

20 A. No. I have had cases where hair standards are
21 sent from nine people, as many as that and down to two
22 like in this case. And there were 700 cases altogether
23 which varied from nine to two, and in that situation I
24 have had five cases where between all those individuals
25 that was submitted on that one particular case I could

1 not distinguish their hair.

2 Q. In other words they were similar?

3 A. Yes, microscopically similar to the point you
4 can't distinguish.

5 Q. What you are saying is in the event there had
6 been other hairs submitted from other persons allegedly
7 involved in this proceedings, it is possible that those
8 hairs compared microscopically with the hair that you
9 had found on the blanket, could have been similar, is
10 that correct?

11 A. It's always possible that you could find
12 similar hair from another individual.

13 Q. And that probability you have indicated would
14 probably be one you think in 10,000 here because of the
15 two different specimens?

16 A. Right, that both the head and pubic hair
17 could not be distinguished from that individual, both.

18 q. But you don't actually have figures in regards
19 to it?

20 A. I don't know what you want for figures.

21 Q. Well studies have not been made.

22 A. Yes, they have. The Canadian study has.

23 Q. And the Canadian study was about one in
24 3,000?

25 A. One in 3,000.

1 Q. You have had 700 cases, some of which have
2 had duplicate hairs submitted?

3 A. That's correct.

4 Q. And some of those cases you weren't able to
5 make a distinction between the characteristics, is that
6 correct?

7 A. That is correct.

8 Q. So it's possible that it would be greater
than one in 3,000?

9 A. I am not saying I agree with one in 3,000,
10 that's what the Canadian study said. I am basing it on
11 my own experience of the 700 cases that I have looked
12 at. I never said that I thought it was one in 3,000.

13 Q. No, you said one I believe in 300 or....

14 A.one in a hundred.

15 Q. One in a hundred. Where did you find these
16 hairs on this blanket, do you recall?

17 A. They were located randomly on the blanket. I
18 don't remember that they were all in one place, you
19 know. If they were I would have noted it in my notebook
20 if they all came from one location.

21 Q. Because the blanket had been folded and sent
22 to you it would be impossible to really say where they
23 originated or whether they possibly had been shaken
24 down.

25 A. In the process of moving the blanket they

1 could easily be transferred from one part of the blanket
2 to the other.

3 Q. In this particular instance the man was not
4 supposed to have removed his clothing. I believe Ms.
5 Tokarski, the prosecutrix here, informed the court that
6 he did not remove his clothing. The pubic hairs would
7 then have come from where, the two?

8 A. Well I don't have a crystal ball but I can
9 tell you where it might have come from.

10 Q. Go right ahead.

11 A. Well normally pubic hairs are always in one
12 location on your body, and it could be transferred to
13 another object either directly or from an object that's
14 already in contact with that area of your body, so you
15 can either get it from inside your pants, you can get
16 it from your underwear, areas of your clothing that are
17 in contact with pubic hairs and then that's transferred
18 again to another object such as a blanket if you don't
19 take your clothes off.

20 Q. Only one head hair was found yet the subject
21 was supposed to have been over her and on the bed.

22 A. Well I can't tell you why that is, I am just
23 telling you what I found.

24 Q. You would say then that - did you make some
25 comparison to any of the hairs of any other person

1 other than Mr. Bromgard?

2 A. The only hair comparisons I made were to Linda
3 Tokarski's head hair standards and the known standards
4 of James Bromgard's head hair and pubic hair.

5 Q. You don't know whether any specimens were
6 taken from the father or any other person who may have
7 used the bed?

8 A. They were not submitted to our laboratory,
9 that's all I know.

10 Q. You did however find some, did you say twenty
11 some hairs of Miss Tokarski's on the bed?

12 A. I found 28 head hairs which matched known
13 characteristics of Linda Tokarski's head hair.

14 Q. And how many were others that were not
15 comparable to her head hair or to Mr. Bromgard's?

16 A. There was only one hair that I couldn't
17 distinguish it matching the known characteristics of Mr. Brom-
18 gard's or Linda Tokarski's and that was a body hair and
19 I had no body hair standard.

20 Q. I understood you to say you found 40 some
21 hairs there.

22 A. Yes, but there were dog and cat hair there
23 too.

24 Q. Pardon?

25 A. There were 46 slides made of hair and fiber

1 found on the blanket.

2 Q. How many were of hair?

3 A. All but six, so there were 43 hair slides.

4 Q. 43?

5 A. Excuse me, 40.

6 Q. 40 hairs were found in that blanket?

7 A. Right.

8 Q. Twenty were those that you compared to Miss
9 Tokarski's and believed them to be hers.

10 A. 28.

11 Q. 28, that would leave 12, is that correct?

12 A. That's correct.

13 Q. And two additional were compared to Mr.
14 Bromgard's and you believed them to be his, is that
15 correct?

16 A. Three were, two pubic hair and one head hair.

17 Q. That would still leave, if I am not mistaken,
18 nine, is that correct?

19 A. That's correct.

20 Q. Whose were the nine?

21 A. Eight were from a dog or cat and one was body
22 hair which I mentioned before.

23 Q. And that you mentioned already?

24 A. Yes.

25 Q. I see. No other hair was found then?

1 A. That's correct.

2 Q. Based on your experience you can't be positive
3 regarding this hair because it's not like fingerprints,
4 is that correct?

5 A. I don't know what you mean by positive. I
6 can make a statement that it matches a known characteris-
7 tic of Mr. Bromgard's hair and I can be positive about
8 that.

9 Q. Well that's - but on all particulars, all
10 characteristics?

11 A. Yes.

12 Q. If we took one hair, one, two, three, four,
13 five, six, seven, eight, nine, they would still match in
14 every particular?

15 A. They did, you saw the pictures yourself, they
16 matched.

17 Q. Isn't actually hair more valuable to exclude
18 rather than include?

19 A. It's more specific because if the hair doesn't
20 match then you can specifically say it wasn't that
21 person; if it does match it could be that person within
22 the one in a hundred probability because it's not an
23 absolute identification like a fingerprint.

24 Q. That's what I am getting at, it isn't an
25 absolute, is it?

1 A. No, it isn't.

2 Q. And you learned that also at the FBI school,
3 did you not?

4 A. I knew that before I got there.

5 Q. You used the word "usually" several times in
6 your narrative?

7 A. Yes.

8 Q. That's what you are actually saying regarding
9 hair comparison, it usually is the same but it could be
10 different, from a different person?

11 A. Well again it's the semantics, playing on
12 words. I said my conclusion that the hair matched known
13 characteristics of Mr. Bromgard.

14 Q. We have heard that several times, I am asking
15 you, you say it is not positive though.

16 A. I said it's not absolute, I didn't say it wasn't
17 positive.

18 MR. ADAMS: Thank you very much.

19 THE COURT: Redirect examination.

20 MR. HOEFER: Just a few questions, Your Honor.

21 -----

22 REDIRECT EXAMINATION of Mr. Arnold Melnikoff by
23 Mr. Hoefer:

24 Q. First of all, Mr. Adams referred to the
25 Canadian study and you indicated that rather than one

1 in a hundred theirs is one in 3,000, is that correct?

2 A. Yes.

3 Q. So the two combined with that, if my math was
4 right, it would be one in nine million, is that correct?

5 A. It would be nine times ten to the sixth which
6 would be one in nine million.

7 Q. Now you have indicated that in six cases you
8 couldn't make comparisons out of six hundred and that
9 accounts for the roughly one in one hundred, is that
10 right?

11 A. Six in seven hundred.

12 Q. Okay. Now first of all in matching hair
13 types do people that are white have more variable hair
14 than people that are of a black or dark-skinned variety?

15 A. There are three basic human racial types and
16 caucasian or white hair is the most variable with Negroid
17 or people of the black race being the second most, and
18 people of Mongoloid or Oriental background having the
19 least variable hair between individuals.

20 Q. Consequently, since Mr. Bromgard is white his
21 would be more reliable than someone that would be of a
22 non-white persuasion, is that correct?

23 A. Yes, you see more individual characteristics
24 with caucasian hair than you see with other races.

25 Q. Now out of the six you have indicated that

1 you weren't able to make comparisons on, how many of
2 those six involved whites?

3 A. Three.

4 Q. And the other three were?

5 A. The other three were Oriental or Mongoloid
6 racial origin.

7 Q. And in Montana it's pretty obvious that it's
8 largely a white population, isn't that a fair assumption?

9 A. Yes, predominantly white population.

10 Q. So the fact that three of those were non-whites
11 would be relatively high percentage, is that correct?

12 A. That's correct.

13 Q. Mr. Adams asked you some questions and there
14 was a little confusion in my mind about comparison to
15 the other known samples. Did you find any samples that
16 you felt were inconsistent with Mr. Bromgard's hair from
17 the standards?

18 A. The first time one of the pubic hairs matched
19 his characteristics except for one variation, it was a
20 little bit more twisted, remember I mentioned that pubic
21 hair tends to twist. The known standards that he had
22 and everything else matched, the color, pigmentation,
23 the medulary, because of that I asked for additional
24 standards that were sent and an additional standard it
25 showed several other hairs that were the same degree of

1 twists so then I concluded that the second pubic hair
2 was also in the range of standards on Mr. Bromgard's
3 hair so the end conclusion was that I did not find any
4 hair that was not consistent with the known standards of
5 Mr. Bromgard's hair, and the three hairs that I found
6 that did not match Linda Tokarski's head hair.

7 Q. Now when you refer to the twist of the hair
8 do individuals have different twist in say the same
9 pubic area?

10 A. Yes, they can. Can I use the chart?

11 MR. HOEFER: Surely.

12 (Witness going to chart at this time.)

13 A. To start off with there are two things that
14 determine twist or curliness, whatever you want to call
15 it. One is the cross section of the hair. If you cut
16 across it, you know, and the hair is circular, in other
17 words it's even all the way around, it will be perfectly
18 straight. Your hair if it's curly or straight is deter-
19 mined by the follicle that grows out of your head,
20 because it has an opening, the shape of that follicle
21 the hair fills it when it grows determines if it's round
22 and oval or a flat and oval. This hair is straight.
23 This is curly. And this is kind of what you'd call
24 kinky or exceptionally curly. Okay, that you inherit.
25 The other factor for pubic hair is a shape of the hair

1 itself independent of what follicle it grows out of.
2 Pubic hair tends to look like that, it's pointed at one
3 end, varying thickness in the center, then thinner at
4 the end or root end. Okay. That shape itself varies a
5 lot with individuals, so between the two that determines
6 the amount of curl. Now because pubic hair tends to be
7 shaped that way even if the person tends to have straighter
8 hair the pubic hair will tend to be curly even if his
9 head hair is straight.

10 Q. And consequently another point, when you are
11 comparing that hair to the known sample then you have to
12 compare it roughly to the same location?

13 A. Yes, I mentioned that pubic hair we are
14 looking at was in the middle would be right here, so I
15 was looking at the relative straightness or curliness of
16 the hair at that particular point.

17 Q. So getting back to my initial question, would
18 it be unusual to have hair that has different twists to
19 it out of the same individual?

20 A. Well there would be variation but you won't
21 find somebody that has hair that is curly or twisted and
22 straight at the same time. There just be variation but
23 some a little bit more twisted than others, some a little
24 straighter than others, but you won't find someone with
25 hair totally the opposite, whether it's relatively

1 straight or extremely curly, you won't find that in the
2 same individual.

3 Q. So with regard to the defendant in this case,
4 was his consistent to your satisfaction?

5 A. Yes, after I saw the additional standards it
6 was.

7 Q. Now Mr. Adams had said it would be possible
8 for another individual to have the same hair as Mr.
9 Bromgard, but in your estimation the probability would
10 only be one in 10,000, is that correct?

11 A. Both head and pubic hair, together.

12 MR. HOEFER: Thank you.

13 THE COURT: Recross.

14 MR. ADAMS: I will make it brief.

15 -----

16 RE CROSS EXAMINATION of Mr. Arnold Melnikoff by
17 Mr. Adams:

18 Q. Regarding the 3,000 figure that Canada gave
19 to you, do you recall whether or not in that article it
20 didn't cover both areas that you have now made 10,000?

21 A. There were two separate articles written by
22 the same person who is hair examiner for the RCMP Lab at
23 Edmonton, Alberta, and one was on pubic hair and one on
24 head hair and came out with approximately the same
25 conclusion.

1 Q. But you don't know whether they combined both
2 of them to reach that conclusion?

3 A. I don't specifically remember if he made a
4 final conclusion by multiplying the two together or not
5 in those two articles, I don't remember, he may have.

6 Q. So the figure of 3,000 could cover both, is
7 that correct?

8 A. No, they were two separate articles. One was
9 on comparison of the probability of finding head hair
10 from an individual and matching another person that
11 couldn't be distinguished, and another article on pubic
12 hair. They were both published in the journal of forensic
13 science.

14 Q. In regards to this, however, you made a slide
15 only on one of the pubic hairs, is that correct?

16 A. I only compared one hair at one time to a
17 known standard, so there is two hairs in one picture,
18 that's all I took the picture of, those two hairs.

19 Q. One was from the standard and the other from
20 the blanket?

21 A. Right.

22 Q. What about the second hair that was from the
23 blanket, you called pubic hair?

24 A. Same thing.

25 Q. You didn't present that slide though today?

1 A. Yes, I did. I showed one head hair that
2 matched a known standard of James Bromgard from the
3 blanket and another one which was a pubic hair.

4 Q. But what about the second pubic hair?

5 A. I did not take a second picture of that. I
6 only showed the one.

7 Q. That's what I said, you did not bring us
8 comparison on it though, did you?

9 A. I did not.

10 Q. In other words you brought the best, but the
11 one that did not compare you did not bring?

12 A. I didn't say it didn't compare. These are
13 just representative examples. I don't take pictures of
14 everything I do, I would have ten million slides.

15 MR. ADAMS: No further questions.

16 -----

17 REDIRECT EXAMINATION of Mr. Arnold Melnikoff by
18 Mr. Hoefer:

19 Q. Did you in fact compare the other one also?

20 A. Yes, I did.

21 Q. And did you reach the same conclusion as you
22 did with the first one?

23 A. Yes, I did.

24 MR. HOEFER: I have no further questions.

25 MR. ADAMS: Thank you, no further questions.