THE WITNESS: Thank you.

MR. THAGGARD: At this point, Your Honor, I'd like to call Arnold Melnikoff. If we may, Your Honor, if we could possibly take a ten-minute recess so that we could set up the screen.

THE COURT: We will take a ten-minute recess. There's a message, here, for Mr. Ainsberg. We'll take a ten or fifteen minute recess.

Once again, the same admonishment. I'll give you a different one when the trial's over.

(Whereupon, a brief recess was taken from approximately 10:50 a.m. to approximately 11:10 a.m.)

THE COURT: Will the parties stipulate that the jurors are all present?

MR. THAGGARD: So stipulated.

MR. MALTESE: So stipulated, Your Honor.

THE COURT: The record will so show. Call your next witness.

Whereupon,

ARNOLD MELNIKOFF,

called as a witness, having been first duly sworn, was examined and testified as follows?

DIRECT EXAMINATION

BY MR. THAGGARD:

Q Will you state your name for the Court, please?
A Arnold Melnikoff.
Q Where do you currently reside?
A I reside in Longview, Washington, at the address of 138 Inglewood Drive.
Q And do you have a job there?
A Yes, I do.
Q Where do you work?
A I work at the Kelso, Washington, State Patrol Crime Laboratory.
Q And what is your job there?
A I'm a forensic scientist at that laboratory.
Q And will you briefly describe the nature of your duties?
A At that laboratory at the present time my major function is the analysis of street drug samples.
Q How long have you held your current position?
A Since the 18th of September of 1989.
Q Where was your last job?
A Before that I worked at the Montana Crime Laboratory.
Q And how long did you work at the Montana Crime Laboratory?
A I started in July of 1970, so, and left in August, so it was over nineteen years.

Q And what was your position there?

A I was a lab manager and forensic scientist at the Laboratory.

Q What is your formal education in this area of forensic medicine?

A I have a Bachelor's Degree in biology from Northern Illinois University and a Master's Degree in chemistry from the University of Montana.

Q In writing a Master's Degree, did you prepare a thesis?

A Yes.

Q What was the subject of your thesis?

A Ah, it was isolation of natural products or naturally-occurring chemicals in sagebrush.

Q Have you taken other education or job training courses?

A Yes.

Q And would you please tell us what those are?

A I took a course in hair identification from the FBI Crime Laboratory in Washington, D.C.; a course in forensic microscopy from the MaCrone Institute which is located in Chicago, Illinois; a course in forensic geology, a short course, at the University of Montana; several courses from the Pharmacy School, University of Montana, one in identification of plant materials

containing drugs and another one in toxicology, which is the study of poisonous substances.

Q Are you a member of any professional forensic organizations?

A Yes.

Q What are those organizations?

A I'm a member of the Northwest Association of Forensic Scientists, and I was a member of the American Society of Crime Laboratory Directors, but I had resigned that membership since I transferred jobs.

Q Have you presented any paper topics on the subject of forensic medicine?

A Ah, forensic science not medicine.

Q Science, excuse me.

A Okay. Yes, I have.

Q And could you tell us what they are, please?

A Several papers concerning gastrometography to identify fire accelerants in arson cases, a case on a marker for paint samples, excuse me, a method for marker or paint samples, a method involving an attachment for the infra-red spectrometer we use in forensic cases, paper on the characteristics of primate hair.

Q Have you received any merit awards?

A Yes, I did receive one at one -- quite a few years ago from the Air Force for some work I did for them

in cases at Nelstrom Air Force Base.

Q Have you ever testified as an expert witness on hair and fiber examinations?

A Yes.

Q And where have you done that?

A Over sixty times in the state of Montana, including a previous case in Richland County.

Q Have you testified in Federal Court?

A Yes, several times.

Q While you were previously employed at the Crime Lab, did you have occasion to examine any of the evidence which will be presented here today?

A Yes, I did.

Q And what kind of evidence did you examine?

A I examined victim and suspect rape kits that contained hair standards and combings, clothing and bedding from the scene of this crime that we're hearing today, and vacuumings, also, from the location of the scene of the crime.

Q I'm handing you what is marked as State's Exhibit 4. Have you ever seen this before?

A Yes, I have.

Q What is it?

A It's the rape kit that was sent in from the victim involved in this case, Kristin Bergh, and I

removed hair samples from this rape kit. And when I finished it I put a seal on it that's still on the package.

Q And what did you do with those hair samples which you took?

A I made microscopic slides out of the hair that I removed from this rape kit.

Q And were any pictures taken of those slides?

A Yes, there were.

Q Okay. Now, what did you do when you were done with this kit and had taken the slides and pictures of those slides?

A All evidence is returned to Julie Long, another forensic scientists in the Montana Lab for further -- she does serological examinations, and then when she was done with it, she returned it to the Police Department in Sidney.

Q While this was in your possession, where did you keep it?

A Well, it's kept in a locked -- in a refrigerator in a laboratory seal, and then it was maintained by the evidence technician who never opens it. I was the one who opened it, resealed it, and it was put back into storage until Julie Long could examine it, and she broke the seal after that.

Q And did you seal it when you gave it to Julie?
A Yeah, it was sealed.
Q And when you first received it, was it sealed?
A Yes, I'm the one who opened it.
MR. THAGGARD: Your Honor, I move for conditional admission.
THE COURT: Any objection?
MR. MALTESE: Foundation.
THE COURT: Is Julie Long going to testify?
MR. THAGGARD: Yes, she'll be next up, Your Honor.
THE COURT: It's admitted for identification subject to further foundation.
Q I'm now handing you what is marked as State's Exhibit 5, and have you ever seen this before?
A Yes, I have.
Q And what is it?
A It's vacuumings from the bathroom of the victim's residence and, again, besides information on the package, I put a seal with my lab number, date and time I sealed it on the package, and it's still sealed as I sealed it.
Q And when did you receive this?
A Ah, I believe it was received on February 2nd, 1989, by certified mail.
Q Did you ever keep any records of when you

received these items?

A Yes.

Q And I'll use these records to refresh your recollection. Are you aware of the document which I'm handing you now?

A Yes, I am.

Q And what is it?

A Well, it's the actual chain of evidence recording the submission of the evidence to our laboratory.

Q And does it state, then, when you received ----

A Yes, I'm in error. It was actually received, well, it says here 2/10/89.

Q February 10th?

A Yeah, right. So I guess what I said was correct.

Q All right. And what did you do with this?

A Ah, I opened it up, removed hairs that were present in the vacuuming for microscopic examination by making microscope slides and resealed the container and the outside package.

Q And what was done with the hairs removed from here?

A They were placed on permanent microscope slides.

Q And were photographs taken of those slides?

A Yes.

Q And then what did you do when you were completed

with this?

A All the evidence in this case, including that package, was returned -- given to Julie Long, and then she did other examinations if required or if they weren't, but she then sent all the evidence back in the case to the Sidney Police Department.

Q Did you seal this?

A Yes.

MR. THAGGARD: I move for conditional admission of State's 5.

THE COURT: Any objection to 5?

MR. MALTESE: Foundation.

THE COURT: It'll be admitted for identification subject to further foundation.

Q I'm now handing you what is marked as State's Exhibit No. 11. Have you ever seen this item before?

A Yes, I have.

Q Okay. And what is it?

A I believe it contains the pillow case from the residence of the victim.

Q I would refer you to the labeling on it.

A Oh, I'm sorry. It's not the pillow case. It's the sheets from the residence of the victim.

Q And when did you receive this?

A They were all included in the same package on

February 10th, 1989.

Q And did you receive that?

A Yes.

Q And what did you do with it upon receipt?

A It was kept in storage in a locked evidence room until I received it from the evidence technician and actually opened the package myself, examined it for hairs and fibers, and then resealed it, and then it was given over -- or signed over to Julie Long.

Q Was it sealed with a police seal when you opened it?

A Yes, it was.

Q What did you do with the hairs you removed?

A Again, all the hairs I removed in this case were placed in a separate microscope box.

Q And were they photographed?

A Yes.

Q Did you seal this when you were done?

A Yes, I did, and that seal is still shown on the package.

MR. THAGGARD: Your Honor, I move for conditional admission of State's 11.

THE COURT: Any objection to 11?

MR. MALTESE: Foundation.

THE COURT: It's admitted for identification

subject to foundation. Now, is this whole box -- was that all handled the same way?

THE WITNESS: Yes, sir.

THE COURT: Why just can't you put the same foundation just on the chain ----

MR. THAGGARD: All right. I'll do that, Your Honor.

THE COURT: --- for the rest of the exhibits in that box, and then you make the same objection?

Q I'm now handing you State's Exhibit 1.

THE COURT: Well, one's a picture of a bedroom.

MR. THAGGARD: Oh, excuse me, Your Honor. It's State's Exhibit 17.

Q I'm handing you State's Exhibit 17. Can you identify that for us?

A Yes, this is the pillow case from the same bedroom.

Q Okay. I'm handing you State's Exhibit 16. What is that?

A Vacuumings from the bedroom.

Q And I'm handing you State's Exhibit 15. What is that?

A Another pillow case from the bedroom.

Q And did you ever receive those items?

A Yes, they were all in the same package with the

other items we discussed, and they were all received on February 10th, 1989.

Q And what did you do with them?

A All hair and fiber present was removed, and microscope slides made, and pictures taken of the hairs through the microscope.

Q Were those sealed when you received them?

A Yes.

Q What did you do when you were done removing the items?

A They were resealed. In this particular case I think some of the hair may have been removed by Julie Long separately.

Q What did you do after you resealed them?

A Well, everything was again given to Julie Long, and she's the one who kept the evidence until it was returned.

MR. THAGGARD: Your Honor, I move to admit State's 15, 16 and 17.

MR. MALTESE: May I examine those, Your Honor?

THE COURT: Certainly. Here, give them to him.

(Whereupon, Mr. Maltese examined State's Exhibits 15, 16 and 17.)

MR. MALTESE: I have an objection on the basis of foundation, Your Honor.

THE COURT: Fifteen, sixteen and seventeen will be admitted for identification subject to further foundation.

MR. THAGGARD: All right, Your Honor.

Q I'm now handing you what's marked as State's Exhibit 20. Can you identify that?

A Yes.

Q And what is it?

A Ah, one of the pillow cases involved in this case. Julie Long examined it before I did, so she'd removed the hair and fibers and placed it in an envelope, and sealed it, and gave it to me.

Q Okay. And what did you do with that?

A I removed what hairs and fibers I thought appropriate for examination and then resealed it, and the seal's still on the package, and then it was turned over to her for return to the Sidney Police Department.

Q And I'm handing you State's Exhibit 19. What is that?

A Hair from another pillow case where Julie Long examined the item before I did or removed whatever hair and fiber was present and placed it in the envelope. I then opened it, removed what items I needed for examination and resealed it and returned it to Julie Long, and the seal that I placed on the envelope is still

intact.

Q And what did you do with the hairs you removed from these items?

A I made microscope slides and took photographs of the slides when appropriate.

Q Did you seal these when you were done?

A Yes.

MR. THAGGARD: I move for conditional admission of State's No. 20.

THE COURT: Any objection?

MR. MALTESE: Foundation.

THE COURT: It'll be admitted for identification subject to further foundation by Julie Long.

Q I'm now handing you what is marked as State's Exhibit No. 7. Can you identify that for the Court?

A Yes.

Q What is it?

A These contain the microscope slides that I previously mentioned that were prepared from the evidence in this case.

Q And what was done with those?

A Ah, they were returned with the evidence by Julie Long to the Sidney Police Department.

Q Did you give them to Julie Long?

A Yes.

MR. THAGGARD: I move for conditional admission of State's 7.

THE COURT: Any objection?

MR. MALTESE: Foundation.

THE COURT: Seven's admitted for identification subject to further foundation.

Q I'm now handing you what's marked as State's Exhibit 24. Can you identify that?

A Yes.

Q What is it?

A It's a rape kit from Paul Kordonowy, Jr.

Q And when was that received?

A It was received in the laboratory on 1/30/89 by certified mail.

Q And then what was done with it?

A I removed the hair that was contained in the kit for my examination, and then sealed it and turned the kit over to Julie Long.

Q And did you photograph the hairs which you removed?

A I didn't photograph all of them, but I photographed a representative sample of them.

Q Did you seal those before you handed it over to Julie Long?

A Yes.

MR. THAGGARD: I move for conditional admission of State's 24, Your Honor.

THE COURT: Any objection?

MR. MALTESE: Foundation.

THE COURT: It'll be admitted for identification subject to further foundation.

MR. THAGGARD: I don't quite know if we should just go ahead and mark this carousel, or we can mark the bag in which these slides were brought, Your Honor.

THE COURT: What's the bag look like?

MR. THAGGARD: Do you have the bag? Oh, here it is.

THE COURT: Well, whose machine is it?

MR. THAGGARD: Well, it's the Sheriff's Department, which is why we're reluctant to ----

THE COURT: Why don't you mark the bag?

MR. THAGGARD: All right. Will you mark that as State's 26?

THE COURT: Is there any objection to that procedure?

MR. MALTESE: No objection, Your Honor.

(Whereupon, State's Exhibit No. 26 was marked.)

Q I'm handing you what's marked as State's Exhibit 26. Can you tell me what that is?

A Yes, that's the original holder of the slides that are now present in that carousel.

Q Okay. And who's holding the carousel?

A Excuse me?

Q Who's holding the carousel?

A You are.

Q Okay. And how many slides are in here?

A Twelve.

Q Okay. And are these slides or pictures of slices?

A They're 35 millimeter colored slides of microscopic examinations of the hair in this case.

Q And what do they depict?

A They show hair standards and hair comparisons involving the evidence in this case.

Q And is that the hair you previously discussed which you have taken?

A Yes.

Q And who took these pictures?

A I did.

Q And are these accurate depictions of the specimens which you took?

A Yes, they show exactly what I saw in the microscope.

Q Did you make any changes in these?

A No.

Q And have you had an opportunity to review these slides?

A Yes, I have.

Q And have any changes been made in those slides between the time you took them -- or these pictures, from the time you took them and the time you last reviewed them?

A None that I can tell.

Q And when did you last review them?

A This morning.

MR. THAGGARD: Your Honor, I move for full admission of State's 26.

THE COURT: Any objection?

MR. MALTESE: Foundation, Your Honor.

MR. THAGGARD: Foundation has been laid, Your Honor, for photographic evidence.

MR. MALTESE: Your Honor, ----

THE COURT: I -- excuse me. I don't think they have with respect to 19 and 20 where the witness testified that Julie Long took the hair. Am I in error in your testimony? Nineteen is a pillow case. I'm going to sustain the objection.

MR. THAGGARD: May I voir dire?

THE COURT: Yes.

Q What was done with the hair Julie Long took and gave to you?

A Made microscope slides, and all those slides were placed in that box that you showed me previously.

Q Are any of the slides of the pillow case hair contained in that carousel?

A Yes.

Q Okay. And have those been in your possession since they were taken?

A Let me refer to my notes. In the case of the pillow case hair it might not be. Let me check for sure.

(Whereupon, the witness examined a document.)

A No, in the case of the pillow case hair, there's no pictures in that carousel.

MR. THAGGARD: Then I move for admission, Your Honor.

THE COURT: Any objection?

MR. MALTESE: Your Honor, these are apparently photographs of things that were depicted and were received conditionally in other cases, and I don't think the proper time to admit the pictures would be until the admission of the other items of -- proposed items of evidence.

MR. THAGGARD: If I may respond, Your Honor. The other items have been conditionally admitted upon

laying the proper foundation, which is bringing in Julie Long who mailed out all these other items. These pictures have been with Mr. Melnikoff. They were not turned over to Julie Long.

THE COURT: I just view them as pictures, and I'm going to overrule your objection and admit Exhibit No. 26.

Your testimony was that you took the pictures and they've been in your possession ever since?

THE WITNESS: Well, they were put in the case file at the Montana Laboratory and kept there until requested for this case because I left Montana.

THE COURT: They're admitted.

Q Did you perform forensic hair examination of this, these items?

A Yes, I did.

Q And how was that done?

A Ah, the first thing you do is make microscopic slides of the hair or fiber that's present, and then you do a microscopic comparison. And the best way to illustrate what you look for is the use of a blackboard or chart to show.

Q Could you please do that for us?

(Whereupon, the witness walked over to the chalkboard.)

A Is it okay to erase that?

Q Yes.

A Okay. The first thing you do in a hair examination is verify it's human hair, which is very easy to do because animal hair . . .

(Whereupon, the witness drew a diagram on the chalkboard.)

A Hair is composed of three basic structures, and one of them is noticeably different in animal hair. The outside of the hair is called the cuticle, which actually is a thin, transparent covering that goes all the way around the hair, but you can see it on edge in a microscope.

(Whereupon, the witness continued to draw the diagram on the chalkboard.)

A And it contains scale cells that outline the hair. A lot of animals, the scales have a specific structure or shape. In human hair they do not. They're totally random.

In addition to that, the center part of the hair has a hollow area called the medullary. The animal hair has a very specific structure, and in some cases it covers the entire hair, like in the deer family. In human hair it's either absent or present. It's extremely narrow, narrower than any other animal hair. So based on the

fact of what the medullary looks like and what the outside scales look like, you can easily distinguish human hair from other animal hair. The only hair that's similar to human hair is primate hair. Obviously, that's not a major concern.

Q Are the hairs which you've taken pictures of and which have been admitted in this carousel, are those human or animal?

A They're human hairs. I did find a few dog or cat hairs, too, but they're not in the carousel.

Q And what did you do after you made this step?

A Okay. Then I had to compare the known standards within this case to see if I could distinguish the hair from the victim and the suspect.

Human hair has a range of microscopic characteristics which vary between individuals. And in most cases you can distinguish one person's hair from another under a microscope, but you always have to look at the standards to start with to make sure the two individuals that you're comparing hair is microscopically distinguishable.

Q Can you explain what the standards are, Mr. Melnikoff?

A In the rape kit from both the victim and suspect standard hairs are taken which include head and public

hair, which are known hairs that are pulled out and placed in an envelope at the time of a medical examination of the victim and at a later date of the suspect. And so their origin is known accurately because somebody testifies to the fact that they are the ones who, you know, withdrew the hair.

Q Forgive me for interrupting you. What was the next step then?

A Okay. The next step is to compare the hair, and when you compare human hair, there's certain things you have to look for.

Q And what do you look for?

A The first thing you do is you separate head hair from pubic hair and other body hair.

Q And then what do you do?

A And then you compare the hair for their actual microscopic characteristics to see if they're distinguishable or not.

Q And what characteristics would you be looking for, sir?

A Okay.

(Whereupon, the witness drew another diagram on the chalkboard.)

A This is what a human head hair looks approximately at 250 power, which means the hair under a

microscope, it's been magnified 250 times. Okay.

You see the outside edge of the hair, and that's the cuticle. Like I said, it's a clear layer that actually goes all the way around the hair similar to, like, a lead pencil, the paint around the pencil, and under the microscope you see it on edge. For people of the caucasian race, it's usually very thin. For people of other races it can be thicker. Occasionally, somebody from the caucasian/white race has a thick cuticle, so that's one characteristic you can look at. Okay.

The inside of the hair is called the cortex, and it contains pigment granules which determine the color of the hair and a medullary if present. In a lot of human hair it isn't present.

Now the medulla, if present, can vary a lot. It's actually a hollow area in the center of the hair, and it usually looks black under a microscope. And if it's not there, you just don't see anything. If it is there it can be very broken, like this, (indicated) or occasionally you'll see a continuous -- a continuous line through the center of the hair, which is real common in pubic hair but not very common in head hair. Okay.

And the most useful things you look at are the pigment granules, which determine the color of the hair. In addition to the color they're very variable and

they're the most individual characteristic in a person's hair. The size, shape and distribution of those granules are very individual characteristic, and you can see two people's hair that have the same color, and when you look under a microscope the pigment granules look totally different and you can easily distinguish them. So the pigment in the hair is by far the most useful characteristic and allows you to distinguish most people's hair.

And the other things you can use are what the medulla looks like, absent or present, and what the cuticle looks like are additional factors. And, of course, associated with the pigment is the actual color of the hair that you see -- that the pigment -- the little granules that determine the color of the hair.

Q What's the next step?

A Okay. Once you are satisfied that you can distinguish the known standards from the individuals involved in the case, you look at unknown hairs from that case and see if you can relate those same microscopic characteristics from the unknown hair to the known hair standards in the case.

Q In this case were you able to distinguish the Bergh standard sample from the Kordonowy standard sample?

A Yes, I was.

Q And did you compare any other hairs to those?

A I compared hair that was removed from the bedding and clothing of the victim and the vacuuming from the victim's house to compare standards from Mr. Kordonowy and Miss Bergh.

Q And is that what's depicted on these pictures?

A Yes.

Q Would it be helpful to show this to the jury?

A Yes, it would.

MR. THAGGARD: Your Honor, may we show these slides to the jury?

MR. MALTESE: May I approach the Bench, Your Honor?

THE COURT: Pardon me?

MR. MALTESE: May I approach the Bench?

THE COURT: Yes.

(Whereupon, counsel approached the Bench and the following discussion took place beyond the hearing of the jurors.)

MR. MALTESE: Your Honor, I'm going to reiterate my objection as to foundation because he's testifying about samples that haven't even been admitted into evidence at this point, and I don't think a proper foundation has been laid for that.

THE COURT: Well, he took pictures of the

samples, and I guess I view them just as pictures. But do you want to call Julie Long out of turn? You know, if you'd had an omnibus hearing ----

MR. MALTESE: This would be taken care of, I understand.

THE COURT: The chain of evidence is one of the stipulations. Now, I'm going to overrule your objection unless you're -- if you're uncomfortable about some type of appeal, if you want to call that gal out of turn, I don't care either. It would just -- if you're comfortable with me overruling it, I can give you the choice.

MR. MALTESE: Okay. I don't have anything else to say.

THE COURT: It's up to the prosecutor.

MR. THAGGARD: I'd be happy to call her out of turn.

THE COURT: Well, it's your roll of the dice. You do what you want.

MR. THAGGARD: I'll go ahead, then, Your Honor, with the slide show.

(The following proceedings were held within the hearing of the jurors.)

THE WITNESS: Are we to proceed with the slides?

MR. THAGGARD: Yes. Can we darken the room and draw the shades? Now, everyone, we want to make sure you can see this, so when we get up and shut off the lights let me know if you can see, okay?

(Whereupon, the shades were drawn and the lights turned off in the courtroom so that the witness could proceed with his slide show. All the jurors indicated that they could see the area where the slides were going to be shown.)

THE COURT: Now, will this pick up the witness's testimony (indicating the microphone)?

MR. THAGGARD: Yes, it will, Your Honor. It will begin with this comparison that he has assembled.

(Whereupon, the first slide is shown.)

Q What do we see in this first picture?

A Okay. The first picture is a comparison of the known head standards of the suspect and victim in this case. What you are seeing are actually two microscopes, each with two different microscope slides of hair.

We have a comparison microscope that has an optical bridge that allows you to look side-by-side at two views from two separate microscopes. This line down the center (indicated) is the separation between the two views. So there's two slides of hair being shown, and they're both being magnified 250 times.

Q Can you the explain coloration of bulbs in the ----

A Okay. Since there are two microscopes they have two separate illuminating systems which are two separate high-intensity bulbs. The bulbs are difficult to get exactly the same color, so when you look at these you'll see the background color is slightly different, and that's due to the fact there's two different microscope bulbs.

You try to get them as close to the same intensity and shade when you examine them, but there's always a slight difference which you can see. And it affects the hair slightly too, the background color.

Q Whose hair do we see depicted here?

A Okay. The hair on the right is a known standard of Miss Bergh's hair.

Q Is that head hair or pubic hair?

A Head hair. And the one on the left is a known standard of Mr. Kordonowy's head hair.

Q All right.

A And in a hair examination you look at those things that I described. In both of these hairs there's no medullary present. The cuticle or edge of the hair is very thin. You can hardly see it, so they're the same. The major difference is the pigment grains themselves.

They're a different color. They're obviously much lighter than the victim's hair, and in the victim's hair the granules tend to be more distributed towards the edge of the hair with less in the center where in Mr. Kordonowy's hair there's thicker distribution of pigment. They're darker and they're very evenly distributed through the hair.

(Whereupon, the witness showed the second slide.)

A Okay. This is another comparison of two head hairs, two different head hairs from the victim and suspect, and again with the victim's hair on the right and Mr. Kordonowy's on the left. Again, you can see they're distinctly different. The victim's hair in most cases was thicker than the suspect's hair, but they did overlap a little bit. But the major difference is the color, which is associated with the pigment granules, and you again see this major thing, that in Miss Bergh's hair the pigment is lighter and more distributed to the outer side of the hair where Mr. Kordonowy's hair is heavier pigment. You can see his plumpy streaks here (indicated), and it's evenly distributed through the hair.

(Whereupon, the witness showed the next slide.)

A Okay. Here's another example of the same thing

with Mr. Kordonowy's hair on the left.

Q Is this head hair or pubic hair?

A These are all head hairs.

Q All right.

A And Miss Bergh's on the right. This hair shows the pigment distribution a little better. You can see in her hair that the pigment is definitely more associated with the outside of the hair, and his hair is evenly distributed with a different shade of color.

(Whereupon, the witness showed the next slide.)

A Okay. This is the last example of the head standards. Most of their hair did not have a medullary, as I mentioned. I found two hairs, twenty or ten from each individual, that had a medullary in a very small area of the hair, so I'm showing that.

Q What is a medullary?

A It's a hollow area in the center of the hair represented by these dark areas (indicated). In his hair it's very hard to see because other of the color of the hair.

Q And again for clarity sakes, whose hair is on the right?

A The victim's, again, on the right, and Mr. Kordonowy's on the left.

Q All right.

A And these are the only hairs in the entire case I examined, the head hair, that had a medullary, but I wanted to show that this was present but usually absent in all head hair.

Q Why did you put a medullary sample in there?

A Well, in case questions came up of how thorough the examination was, if I looked for medullary characteristics. I'd have to say there was some but it wasn't prominent enough to be too concerned about. But I did show that it did occur in some of the hair.

Q All right.

(Whereupon, the witness showed the next slide.)

A Okay. The next slide is a known standard from Mr. Kordonowy on the right and the hair that was removed from the top sheet, one of the proposed exhibits in this case.

Again, there's two separate hairs and the microscope division's right here (indicated). They're similar enough they almost look like one hair; the same diameter, same pigment distribution, basically the same color, matching the known characteristics of Mr. Kordonowy, distinctly different from the hair standards of the victim.

Q Are these the same widths?

A Yeah. I mean, they're slightly different. I

mean, you're talking about ten thousandth of an inch difference, so for all practical purposes they're the same width.

Q And how similar is the distribution of the pigments?

A It's basically the same. No hair is exactly the same. You see pigment distributed through the hair, and you can see the same types of pigment in here (indicated) repeating itself from one hair to the other, but no exact location on the hair would be exactly the same. It would just be very similar, and that's what you see in this case.

Q How similar is the coloration?

A Ah, it's very similar. You know, we have to take into consideration that the microscope background color is slightly different and it pretty much explains the slight difference in the color of the two hairs. I switched them when I actually examined them and saw that they were the same color under the same microscope.

Q Are you able to distinguish those two hairs from one another?

A Not just by looking at them. Is that what you mean?

Q Well, given your basis of your -- on the basis of your microscopic analysis.

A Well, I know they're two separate hairs, but it would be very difficult if just given to you to separate them and saying that they are. And they're all the same microscopic characteristics particularly when they came from one individual or another individual whose hair you cannot differentiate microscopically.

Q If they were both known standards of two individuals, could you distinguish them from one another for the purposes of a forensic's hair ----

A No, if this was from two separate individuals you'd have to say their hair is so similar that you couldn't microscopically distinguish them.

Q What is the likelihood that you couldn't distinguish two separate hairs like that?

A Well, with caucasians, based on my experience and probably other examiners, caucasians have the most variable head hair. It's less for other races, but for caucasians it's about one chance in a hundred.

If you randomly took two people and brought them into a room and examined their hair, there would be about one chance in a hundred you wouldn't be able to tell them apart. So ninety-nine out of one hundred people you'd be able to distinguish their hair by a microscopic examination.

Q And that's for head hair that you're talking

about here?

A Yes.

Q All right.

(Whereupon, the witness showed the next slide.)

A In the next slide is a known standard of Mr. Kordonowy's hair on the right and a standard head hair on the left that was removed from the vacuuming of the victim's bedroom. Again, we see basically the same characteristics. This hair is just slightly thicker, but not very much. And if you remember from the standards, there was some variation in the thickness of Mr. Kordonowy's head hair. And we see basically the same thing, the exact -- not exact but almost the same pigment distribution and almost the exact same color in the hair, and particularly the hair that came -- originated from possibly the same person.

Q And if these were both known standards, would you be able to microscopically distinguish them on the basis of their characteristics?

A No, they're similar enough that I would not be able to distinguish them as coming from two separate people.

(Whereupon, the witness showed another slide.)

A Okay. This last slide is a little bit different. Instead of the hairs going across they're lined up

parallel. I should say perpendicular to the screen. And here's the line between the hairs here (indicated), so they're looked at perpendicular, edge over edge of each view.

And you can see the color is slightly different. Again, I can explain it to some extent by the background color, but Mr. Kordonowy's head hair varied in color from a grayish brown to more of a reddish brown, so this is more on the reddish brown than the other hair.

The main thing I want to of this is not so much the color as the pigmentation. Except for the color difference, which is in the shaded variation of his hair, you can see that the pigmentation is basically the same. We have these streaks in the pigment running down parallel with his hair, and it's the same throughout the hair, so it shows that the pigmentation between these two hairs is basically the same, no obvious differences.

Q How do you rate this pigmentation?

A This is the most unique characteristic of any individual's hair.

Q Now, how well does the width of these hairs match up?

A Well, it's hard to say because you're looking at an overlap and we're not seeing both edges of the hair. So, I'd say from memory they were similar, but I can't

tell from this exact picture.

(Whereupon, the witness showed the next slide.)

A Okay. These next slides involve pubic hair standards. Now, pubic hair is quite a bit different from head hair. Head hair tends to be fairly straight even if you have what is called curly head hair. On a microscope you can barely see the curve because you're magnifying the hair so much.

With pigment hair it is very buckled or curvy and you tend to have an elongated tip, a fairly thick center, and then a buckle between there and the end of their hair. And so when you compare pubic hair you have to look at the same areas of the hair to make, you know, a relevant comparison.

So all the standards and all the other pictures I will show you are from the same area of the hair, the middle of the pubic hair.

Now, your head hair and pubic hair are actually inherited separately. You can have light head hair and dark pubic hair or vice versa. They don't necessarily have to be at all similar. You cannot tell an individual from looking at their pubic hair what their head hair will look like or vice versa. Sometimes it's very surprising, their hair is just totally different.

In this particular case both the victim and suspect

had head and pubic hair that was fairly similar, which is not very common, but it did occur in this case.

Q Were you able to distinguish the standards?

A Yes, I could. So, basically, their hair coloration and pigmentation between the head hair and the pubic hair in this case was similar between the known head hair of the victim, head and pubic hair versus the known head hair and pubic hair of the suspect.

Q Okay.

A So this slide, this is the known head hair -- pubic hair of the victim. The one on the left is the known pubic hair of the suspect, and the pigmentation is very similar to the head hair. The victim's pigment tends to be more associated with the edge of the hair. It's lighter, more finely divided.

The suspects pigment, again, is more evenly distributed and coarser. One thing we do know is that this medulla that runs down the center of the hair, medulla was common in all their pubic hair, which is more typical of pubic hair.

(Whereupon, the witness showed the next slide.)

A Okay. This is two additional pubic hair standards from the victim and the suspect. The victim's hair is on the right, the suspect on the left. Again, you see basically the same thing, a lighter color with

the pigment more distributed towards the edge of the hair in the victim, more evenly distributed in the suspect.

One thing that he does have which is a little less common that the victim's hair doesn't have is, this is medulla also (indicated). Occasionally you get medulla that's filled with fluid, and then it becomes transparent to the microscope, it's not black. And so you can see it here but -- as a tube running through the hair, but it's not dark. That's because there's fluid in it and that occasionally happens.

So in the case of the suspect, he had both types of medulla present in some of his hair where the victim just had the dark or non-liquid type of medulla.

(Whereupon, the witness showed the next slide.)

A Okay. This is the last comparison on the standards of the victim and suspect. Again, you see what I described previously. Her pigment's associated more with the outside of the hair. His hair is more evenly distributed with heavier pigment. He does have a medulla there, but it's hard to see running down the center of the hair which is what they call a translucent medulla.

And his hair was more twisted than hers. And you can that in this picture, see the diameter varies. That's what causes the hair to twist. Her hair tends to be more straight.

(Whereupon, the witness showed the next slide.)

A Okay. This is a known comparison of the suspect's pubic hair on the right versus a hair that was removed from the bedroom vacuuming on the left, pubic hair that matches the characteristics of the suspects known pubic hair, same type of pigmentation, similar type medullary. Here is a division in the hair (indicated).

Q How is the coloration?

A It's very similar. It's almost identical.

Q What about width?

A Basically the same, you know, across the hair. Both these hairs are slightly twisted, so it depends where you measured it.

Q Were you able to distinguish this known head hair -- or known pubic hair of the suspect and the hair found in the vacuum on the basis of microscopic characteristics?

A In the case of this particular hair, they had the same amount.

Q If these are known standards of two different individuals, two different pubic hairs, could you distinguish them from one another?

A No, I again would say that the microscopic characteristics are so similar that I wouldn't be able to distinguish the two individuals by the basis of the

microscopic comparison of the pubic hairs.

Q What's the likelihood that you could not distinguish one individual's pubic hair from another's?

A It's very similar to head hair. With caucasians it's about one chance out of a hundred. It's very similar.

(Whereupon, the witness showed another slide.)

A Okay. This last slide is a known standard of the suspect's hair on the right and a hair that was removed from the victim's pubic combing on the left. And, again, they're very similar.

This is -- you see this translucent medullary is a lot harder to see here (indicated), and it has the same basic color. It's more of a reddish-brown color that's typical of some of his hair, and with the same type of heavy pigment distributed through the hair, and that's characteristic of Mr. Kordonowy's pubic hair

Q All right.

A And that's the end of the slides.

(Whereupon, the witness returned to the witness stand.)

Q How similar was Mr. Kordonowy's pubic hair to his head hair in terms of microscopic characteristics?

A Except for the shape of the hair and presence of medulla, the pigmentation was basically very similar.

There wasn't much difference between the color and pigmentation of his head hair and pubic hair.

Q How common is it for an individual to have such similar pubic and head hair?

A It's uncommon. I'd say with caucasians about ninety percent of the people their head hair and pubic is distinctly different when examined under a microscope as far as pigmentation and color goes.

Q From the suspect's hairs which were examined on the pictures from the vacuumings, how similar was the suspect's pubic hair to the suspect's head hair?

A Well, they had the same -- the unknown hairs that were found?

Q Yes, the unknown hairs.

A The unknown hairs, again, had the same range of microscopic characteristics which could be associated with Mr. Kordonowy and were distinctly different from the victim's known head and pubic hair.

Q Are you saying, then, that Mr. -- both Mr. Kordonowy and the unknown hairs, both Mr. Kordonowy's head hairs and pubic hairs and the unknown person's head hairs and pubic hairs were very similar?

A Yes, similar enough that I'd have to say they were either from the same person or a person whose head or pubic hair I could not microscopically distinguish

from Mr. Kordonowy's.

Q What is the probability that these unknown pubic and head hairs of the suspect are of the unknown person and the pubic hairs and head hairs of Mr. Kordonowy?

A Well, that's a ----

MR. MALTESE: Foundation, Your Honor. I'm going to object.

THE COURT: I'm not sure I understood the question.

MR. THAGGARD: Okay. I'll rephrase the question.

Q Were the pubic hair and head hair of the unknown hairs which were derived from the Bergh vacuumings, did they have the same characteristics?

A Ah, the ones that had the same -- the ones that had the same characteristics of Mr. Kordonowy did. They had the same range of microscopic characteristics.

Q And did Mr. Kordonowy's head hair and pubic, known head hair and pubic hair, have the same range of microscopic characteristics?

A Yes.

Q And was that the case with the unknown subject's pubic hair?

A The ones that matched those characteristics, yes.

Q And did the unknown suspect's head hair match the

microscopic characteristics of Mr. Kordonowy's?

A Yes.

Q Were you able to distinguish the unknown subject's hair samples from those of Mr. Kordonowy's hair samples?

A Not as far as what they look like under a microscope.

Q And you stated the probability of that is?

A From my experience and from talking to ----

MR. MALTESE: Your Honor, I'm going to object on the basis of foundation.

THE COURT: Overruled.

A Based on my personal experience of doing somewhere between five and seven hundred hair cases when I worked in Montana and from talking to other examiners who compare hair with caucasians, they all feel that one in a hundred is a good, conservative estimate of the probability of two people's hair matching, either head hair or pubic hair.

Q And what is the probability that two individuals would have head hair and pubic hair of the same characteristics which match?

A Well, a similar situation would be like rolling dice. If you want to get thirty-six on the dice or snake eyes, you know, there's only one possibility on each dice

to do it. So there's one chance out of six on one dice and one chance out of six on the other. If you want both possibilities together you multiply it together, and there's one chance in thirty-six of getting snake eyes or just single numbers to come up on a dice.

And this hair comparison is a similar situation. You have two separate areas of the body depositing hair whose characteristics are not the same as the other, and so for both to occur at the same time would be a multiplication of the individual probability. So it would be one chance out of a hundred for the head hair times one chance out of a hundred for a pubic hair, so if you multiply those two together you get approximately one chance in ten thousand.

Q Is there one chance in ten thousand, then, that some other individual would have both pubic hair and the head hair which match Mr. Kordonowy's?

A Yes, a good approximation is if you wanted to look for another individual you'd have to go through at least ten thousand people to find one person who would match all the characteristics of his known head hair and pubic hair.

Q Did you write a report on the basis of this examination?

A Yes, I did.

Q What did you conclude?

A I concluded a hair was present in this case that matched the known microscopic characteristics of Mr. Kordonowy's head and pubic hair, and the hair originated from Mr. Kordonowy or another individual whose head hair and pubic hair I could not distinguish from Mr. Kordonowy's.

MR. THAGGARD: No further questions, Your Honor.

THE COURT: I think at this time, ladies and gentlemen, we'll take the noon recess. Does getting back at one o'clock present any problems for anyone?

(Whereupon, no one indicated that that was a problem.)

THE COURT: And we'll adjourn until one o'clock with the admonition that you not discuss this case among yourselves or with any others, and that you not form an opinion until you've heard all of the evidence. Court will be in recess until one o'clock.

MR. THAGGARD: Thank you, Your Honor.

(Whereupon, Court was n recess from approximately 11:47 a.m. to approximately 1:01 p.m.)

THE COURT: Please be seated. Do the parties stipulate that the jurors are all present?

MR. THAGGARD: So stipulated.

MR. MALTESE: So stipulated, Your Honor.

THE COURT: The record will so show. Are you offering this witness for cross-examination?

MR. THAGGARD: Yes, Your Honor.

THE COURT: Go ahead, Mr. Maltese.

MR. MALTESE: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. MALTESE:

Q Mr. Melnikoff, as I recall your testimony you were formerly employed by the Montana State Criminal Lab?

A The official name is the Montana Criminalistics Laboratory, yes.

Q And it's part of the Department of Justice of the State of Montana?

A That's correct.

Q And you worked in that capacity for nineteen years before taking this job in the state of Washington?

A That's correct.

Q So at the time that you conducted your testing with respect to this case you were an employee of the, we'll call it the State Lab?

A That's correct.

Q And in that capacity you, of course, had many

occasions to testify in a forensic setting in trials like this?

A That's correct.

Q And, Mr. Melnikoff, I take it that usually in your employment you testified on behalf of the State of Montana?

A Usually, yes.

Q Were there ever occasions that you testified for a defendant?

A Yes, I've been subpoenaed three times as a defense witness.

Q That would be three times in the nineteen years that you worked for the State Lab?

A That's correct, and I did testify all three times.

Q Now, you are aware that different laboratory tests were conducted by the State Lab with respect to evidence specimens received in this case?

A Yes.

Q And, of course, the ones that you testified about primarily are those relating to hair samples?

A That's correct.

Q I understand that there were other tests that were taken, various fluid samples and things of that sort, blood samples, but you weren't involved in the

testing of those?

A Yeah, that's called serological testing, and Julie Long is the one that did that. I was not involved in those types of tests.

Q As a matter of clarification, there were, of course, several items of evidence that were marked for identification which consisted of various evidence gathered, clothing articles, hair samples, things of that sort, which were mailed by Law Enforcement authorities in Sidney, Montana, to the State Lab and that's located in Missoula, Montana?

A Yes, that is correct.

Q And, basically, you recall receiving those packages and they were sealed, is that correct?

A Except for the evidence which involved the standards from the defendant. All the other items came in one box which I personally signed for and placed into evidence, and no items were opened until examined by the specific person, either Julie Long or myself.

Q So, basically, as I understand it, then, this box of goods was received in the normal course of mail by your agency and then whoever received that at the agency delivered that to you?

A Well, in this particular case I was the one that happened to receive it, and I have a receipt showing

of that.

Q So it was actually personally delivered to you, and you signed a receipt for it?

A Right.

Q Then you conducted your testing and inspected these various samples and then resealed the various bags, things of that sort, and then returned them sealed to the Law Enforcement authorities here in Sidney, Montana?

A Well, with a slight clarification. All the items I examined I resealed, but some of those items were then reopened and resealed again by Julie Long. So there were two people that opened and sealed them not just one.

Q And that, of course, was in connection with her serological examinations that you testified to earlier?

A Correct.

Q Now, when you received these -- this box which contained all of these containers of evidence, did you initial something when you did that?

A Well, when we received it all I did was sign an evidence form, which is a copy here (indicated), and recorded it in a log book that shows all evidence received at the lab, and nothing was done with the other evidence until the box was opened at a later by myself. We don't open the container, even the actual package, until somebody who's going to analyze the evidence can

actually inventory it and verify what's there.

Q I see. So when you receive it you sign that log sheet that you just referred to, and then it's placed for safe-keeping at a place at your State Lab in Missoula, Montana?

A Yeah, we have four or five evidence rooms that are kept separate, and the only people who have access to them are either the evidence technician or myself because I was the laboratory manager.

Q So, then, between the time that you actually received it and the time that you conducted your testing they were in this ----

A Evidence room.

Q --- evidence room?

A Right.

Q Now, after you conducted your testing is it not correct you prepared your report of -- called a Physical Evidence Examination Report?

A Yes.

Q And in the Physical Evidence Examination Report there's usually a notation as to who has requested the testing and the case number your lab has assigned to it, and you have a description of the respective pieces of evidence that you received.

A Yes, that's the usual procedure.

Q And this report has various lab numbers that are assigned to the various items that you received from the requesting agency?

A That's correct.

Q And there is then, also, a description of what was done with the evidence in terms of your examination?

A Correct.

Q For example, if you conducted a microscopic examination you would note in your Physical Evidence Examination Report that a microscopic examination had occurred?

A That's correct.

Q And, also, in this Physical Evidence Examination Report there would be a brief report of what the examination may have established or shown?

A Well, it briefly describes the procedures and examination done and the conclusion of the examiner to what those procedures and examinations mean.

Q Now, once the report is completed, and I take it the Physical Evidence Examination Report is completed at the conclusion of your various testing, is that correct?

A Ah, most of the time the report's not written until it's completed. Occasionally, for various reasons, only part of the evidence is there and the report is needed before the final report and then we'll send our

stage, so you're always shedding dormant hairs all the time, that's continual.

Q And when you examine some hair you would be able to tell from looking at that hair -- there would be some sign that would show whether it was dormant or dead hair or whether it was living hair, say, plucked from your head?

A Actively growing.

Q Pardon?

A Yeah, the root would be distorted if it was actively growing because it would have to be pulled out of the follicle.

Q Now, by the analysis of the hair can you also not tell whether or not that same hair was taken from the scalp? Can you not tell whether or not the hair was cut with a scissors or razor cut?

A Well, you can tell that, but in comparing the origin of the hair it's usually not of much use because you could get standards from a person after they had a haircut, and the other hairs were, you know, several months before and, you know, saying if they had a hair cut or not doesn't prove anything. So ----

Q Well, of course, if you have cut hair it would show that the hair was cut?

A Right. But, I mean, the hair standards aren't

preliminary report, but it's on rare circumstances when that happens.

Q When that report is completed, you usually date and sign this report?

A Correct.

Q And then the original of that report is mailed to the requesting agency?

A That's correct.

Q And you retain a copy for your business records at the agency?

A Correct.

Q Now, in your slide pictures that you showed you basically described where certain hair samples may have come from. For example, they were found in the vacuuming in the bedroom, or they were found in the bedroom or something like that. That would be noted or marked. But you didn't specifically differentiate, did you, as far as the preparation of the slides which lab sample which item the hair came from?

A Well, the slides themselves have the lab identification number on each side.

Q That is on the slide, then, written on the slide?

A Yeah, those 35 millimeter slides, yeah.

Q But that wasn't viewed, though. You couldn't view that on the projector?

A No, they're just hand written on the margin of the slide.

Q Okay. Now then, the hair samples that you received, and I know you received several different types of hair samples, didn't you examine the hairs to determine how the hair may have been removed from the suspect or from whatever source they may have come from?

A I'm not sure what you mean by that question. You mean how physically they were removed?

Q Yes.

A The only thing you can tell with hair is if they've been pulled forcibly from a person or not, but you can't tell if they used a tweezers or a comb, if that's what you're referring to.

Q Well, it's true, is it not, that hair can sometimes be defined as so-called resting hair?

A Well, that's just a non-descript, non-technical term, and there's two types of hair; hair that's dormant or not actively growing and actively-growing hair, and to remove actively-growing hair you have to forcibly remove it and the root, then, becomes distended and you can tell when you examine it. The other hair is just sitting in the follicle and falls out when something bumps against it. Approximately eighty percent of your hair is actively growing, and twenty percent is in the dormant

necessarily taken at the same time that the incident occurred. And only if they were, then showing if one was cut or not would be useful. Most of the time they're not. So if the hair's not taken at the same date, you know, you can't make too much of the difference if one had a, you know, a fresh hair cut and the other one didn't.

Q Now, you were aware that several of the hairs involved in your examination were hairs that had been collected in 1987?

A Yes, they'd been collected previously, yes.

Q And you, of course, according to your testimony, didn't receive those hairs until sometime in 1989?

A Well, they were submitted in regards to another case and then sent back, and the actual slides were then returned for this, you know, comparison. There were two separate examinations involving the hair standards in this case.

Q With respect to the suspect or the defendant here.

A Right. That's correct.

Q But there were also hair samples that were gleaned from and collected at the scene of the incident which gave rise to this case, were there not?

A Well, I don't know the date of the case. I'm

referring to the evidence that was submitted in that one box on the 10th of February.

Q Okay. So you don't know when you examine it what the actual date is that those samples were collected?

A I have no idea. I wasn't involved in that.

Q And you would have no idea of what the age of the hair is, the hair sample?

A No, and there's no real accurate way of aging hair just by looking at the hair itself.

Q Are there ways of determining the age of hair?

A Well, how you do it is that known standards from a person collected at different dates and then compare those -- that hair back to those standards collected at different dates from that person, and that's the only possible way to do it because hair grows approximately a centimeter a month which is about a third of an inch. So that's the only thing you can compare it to. There's no way of having a separate hair you'd find and saying, "Oh, yeah, this hair fell off this guys head two years, three months ago." There's no way of doing that.

Q So, basically, simply by testing you're not going to be able to determine the age of the hair?

A If you mean by "age" the time it was removed from the person it originated from?

Q That's what I mean.

A No, there's no way you can do that.

Q Is there any way to determine the -- well, first of all, is there a possibility that hair characteristics change with the passage of time?

A They change on an individual when they go through puberty. The hair characteristics change to what they call mature head hairs anyways and, of course, pubic hair doesn't exist until you go through puberty. And then as you age your hair can lose pigmentation and your hair can turn what they call gray or white because you lose pigment. And, also, if you lose hair you still have the same hair follicles, but they become immature infantile hairs. You know, someone who's bald actually has hair on their head. They're just real small, fine hairs you don't see anymore because the hair's follicles have withered and they're producing these what they call valance or infantile hairs.

So to the mature life of an individual until they age, you know, and then where they turn gray or they lose their hair, the hair stays the same.

Q Now, when you're examining hair there are several identification factors that you look at, is that not correct, Mr. Melnikoff?

A Yes.

Q And do you know how many identification factors

exist as far as a human hair is concerned?

A Well, you see some books that say as many as thirty-two, but they're just splitting, I hate to say it, hairs, now but -- because they're describing sub-features as separate points of comparison. And like pigmentation, there are some people that have seventeen different characteristics of pigment, the shade, if it's round, oval, if it clung together in streaks. And instead of just making a statement that it looks like this or it doesn't look like that, they break it down into little segments but the end result's the same; it either compares or it doesn't.

Q Well, basically, though, you're stating that some experts, at least, believe that there are thirty-two different identification ----

A It's silly. You can do that if you want. It's not really very productive to do that. Either the basic characteristics compare or they don't. You know, to count the number of comparisons is kinda misleading. For an example, people with blond hair, fine blond hair, you can't even see the pigment in their hair under a microscope. Their hair is very fine, but you can determine color and you can determine a few other things, and because you can't see the pigment and then say that seventeen factors are missing, and the hair doesn't match

the other person, it's just playing on numbers, you know. If that person has fine blond hair, even though the pigment doesn't match it's still characteristic of that person compared to somebody else's, so it's just a number game that people play, and it's not very useful. It just misleads people when they do that.

Q When you conducted your examination of these hairs you used -- as a testing device you used primarily a microscopic examination of the hair, is that correct?

A That's basically all I did was a microscopic examination.

Q And with respect to the microscopic examination, that was to put the hairs under the dual microscope that you described and to make a comparison of the hairs that you saw?

A Correct.

Q And then you were comparing these various identification facts between the two hairs?

A Well, I was comparing what are commonly called lamorphylogical microscopic characteristics. They see the actual things, as you can see, under the microscope that differ from one hair to the other. That's what I did.

Q For example, did you look at such things as scale count?

A Yeah, scale count in humans is meaningless because humans have morphorous or non-specific scales. It only is useful in animals.

Q So just by making a determination, then, whether it's human hair and not animal hair you're basically looking at the scale count?

A That's right.

Q And the contour of the hair, was that a factor?

A Well, basically, Yeah. If the hair is straight or curvy that's a consideration. In this case the hairs were the same contour, so I didn't make a big point of that. And under a microscope, unless the hair is twisted, you can't see the degree of curvature anyway.

Q What about the breadth of the hair?

A The width? Diameter?

Q Yes.

A I showed that -- the slide shows that. It shows the width of the hair. The 33 millimeter slides show that.

Q From your experience from examining human hairs and looking at the width and the breadth of the hair, the width of hair can vary, can it not, on one person?

A Yeah, it did and I showed that. I showed hair standards particularly of Mr. Kordonowy where some of them were narrower and some were thicker. In fact, I

picked out standards that showed the complete variation of their width and color and the standards I showed you showing that's what the total range of their hair characteristics were. I just didn't pick out one hair and say it all looked like that.

Q I understand. Looking at the width characteristics of the hair, and if you just looked at the root characteristics alone, that certainly wouldn't tell you too much, would it?

A Only if you could exclude somebody. Obviously, all the known hair is a certain diameter, and this hair is thicker than all the known hair standards and, obviously, based on that you could exclude somebody, but that's all you could do with it.

Q So is it a fair statement to say that in the same strand of hair you can have different variations in width?

A All hair varies to some extent in width.

Q In different parts of the body you'd have various differences in width?

A Everybody's hair has some variation in diameter or width with pubic hair varying the most and head hair the least.

Q Also, with respect to the tapering and the twisting of the hairs, that would certainly vary to some

extent from follicles -- or hair piece to hair piece, would it not?

A Well, the degree of curl or twist has to do with the shape of the follicle. Can I show you on the blackboard?

Q Sure.

(Whereupon, the witness drew a diagram on the chalkboard.)

A Hair grows out of a follicle in your skin, which is a hole, and then it's got living cells, but once it raises above the surface there's no blood to supply the air cells, and so they die. And so all the hair above the surface is actually dead material.

And a follicle can be round, and if it's round then you get perfectly straight hair. If it's oval, like this (indicated), you get hair that's curly. And if it's like this (indicated), you get hair that's kinky and -- or like negro hair, very twisted.

Caucasians, primarily, have this type of hair. American Indians or -- excuse me, mongoloid or Native Americans have very straight hair. Generally their hair is almost a perfect circle. And people of the black race tend to have a twisted -- flat and oval, or kinky hair, and it has to do with the shape of their hair. And the reason is the hair is a cylinder, and if the pressure is

equal in both directions it won't twist, and that's what happens here (indicated). If it isn't equal, if it has more pressure on one, internal pressure from one direction or the other, it causes it to twist around itself. And the more distorted it is from the circle the more twisted it will get.

Q Which can vary from hair to hair to some extent?

A Slightly between people, but it's very rare to find a person with very curly hair having straight hair and curly hair on the same person. Usually their head hair is just slightly different. You know, it will be slightly wavy or defensively straight. You know, you're not going to find a person with totally straight hair and curly hair existing on the same -- naturally. I mean, artificially you can do it, but not naturally on the same person.

Q When looking at that, Mr. Melnikoff, is it possible to determine to some extent the race of the person from whom the hair originated?

A You can make general determinations but nothing that's absolutely -- well, you can to some extent be fairly specific. But when you get to people that have interracial background, then it becomes extremely difficult. So you can say generally it's characteristic of this race or not, but you can't absolutely say that

when they have some other mixed racial, you know, parentage.

Q So, in other words, if you're talking about someone with mixed Indian/caucasian blood, you'd have some difficulty with that?

A Yeah, their hair could look anywhere from almost totally caucasian to totally mongoloid, or somewhere in between, and you couldn't guess the actual percentage, you know.

Q Now, is it also accurate that in examining the hair you can determine the age or make a generalization as far as the age of the person?

A No, all you can do is very generally say it's pre-puberty hair, and then you're talking about really mostly infants, I mean, kids that are probably under eight years old who have hair that are totally infant looking. As they get older, even before puberty, their hair tends to look more mature and people who have, you know, have lost their hair or their hair has lost color, you know, the pigment's gone, and even that, that can vary. There's people that are twenty-five years old and their hair has naturally turned gray. It's rare. I mean, most people associate it with more older people, but it's not -- you just can't look at someone's gray hair and say they're fifty years old, they're sixty years

old, they're -- you know, they could be twenty years old. It's rare, but it's possible.

Q By examining the various hair characteristics can you -- is dying a factor that you can look at?

A Yeah, dying is very apparent in a microscope comparison. You can basically determine where the hair was dyed, as far as the length of the hair because as the hair grows the hair from the root up to the dye mark is the natural color, and you can see the demarcation and where it was last dyed. And the hair looks different because the color is not due to pigment granules, it's due to an artificial dye, so you see a color that's not associated with the pigment granules.

Q And then also if the hair is bleached, like in the sun, is that obvious from a microscopic examination?

A Ah, pretty much. It appears very similar to dying, but it's a little different. It's not as -- it's more gradual when you look at it. It isn't as -- at the point of -- like, when you dye your hair one point is one color and another bleached. It tends to be more of a gradual thing if it's due to the sun.

Q In your examination of the hairs here, did you see any evidence of bleaching?

A Ah, some of the victim's hair looks like it may have been somewhat sun bleached. You know, I can't

absolutely say, but it didn't look quite like it was due to artificial bleaching. Some of her hair towards the end was a lighter color, which was indicative that there may have been some sun bleaching involved there.

Q Now, if I understand you correctly as far as the bleaching end of it, it's apparent through a microscopic examination but not as apparent as the dying. Is that a correct statement?

A Yeah, because the ends of the hair are a lighter color than the root area, and it's a very gradual transition. It's not an immediate thing.

Q Was there also another characteristic relating to the refractive index of the hair?

A Ah, that's a useless measurement because all human hair is the same refractive index, so it doesn't do -- you can measure it, but it doesn't accomplish anything.

Q Again, only in determining whether or not maybe it was from a human source or a non-human source?

A Well, all animal hair is the same refractive index as human hair. It's due to a protein in the hair called keratin and that's -- and all hair in -- hair is the outside covering of all mammals, including humans, and it's composed of the same type of tissue, and so the refractive index is the same in animal hair or human

hair.

Q How about amino acids in the hair?

A Same thing. I mean, . . .

Q Enzymes?

A Ah, you can distinguish some people by enzymes but you need live tissue, and the only place you get it is, you've got to have a pulled hair with the roots still attached, and you've got to do it within a couple hours after the hair is removed otherwise the cells die.

So, in forensic work, unless you got right there and pulled a hair out from a suspect, you wouldn't be able to do it. And if you got right there during the incident, what do you need to send it for a hair examination for if you were there to start with?

Q So what you're saying is that in that type of an analysis looking at the enzymes, unless you have a freshly-plucked hair, it isn't going to do you any good.

A Right, because it's got to be done with living cells, and the only living cells in hair are part of the root that's removed when you pull it out, and they die quite quickly.

Q Now, in examining the various hairs, is another identification factor diseases?

A They can affect the hair. They may be an identification factor.

Q Are there any other abnormalities of the hair that are observant through a microscopic examination?

A Yeah, there are certain rare deformities that you don't see mostly due to -- products of malnutrition due to disease that you can see in hair where the hair gets distorted and changed, but you don't see it in healthy people.

Q Now, as I understand it, if hair is -- falls out of your scalp naturally, the root is usually agitated, is that correct?

A Yeah, that's one way of doing it. If I can use the blackboard I could show you.

Q Sure.

(Whereupon, the witness drew a diagram on the blackboard.)

A A hair that's not totally attached to the follicle it's sitting in the follicle because what happens is it's attached down here (indicated). It separates and it stops growing, and it's just sitting in the follicle, and anything it rubs against will cause it to fall out, or if you take a shower or whatever. You're always shedding hair. Twenty percent of your hair is in the dormant phase, and it stays dormant for a year to a year-and-a-half depending on the person, and then it starts growing again. If it hasn't rubbed against

something in the year, year-and-a-half, another hair will start growing underneath it and eventually push it out.

(Whereupon, the witness drew another diagram on the chalkboard.)

A Okay. Hair that's actively growing is actually attached to -- this is attached to the follicle by small blood vessels and a few other things. And if you were to pull that hair out because it's still attached to this follicle, you get what they call a distended root. Instead of it looking like that (indicated) it stretches like a rubber band and it doesn't spring back. And then you see follicle material also adhering to it. So you can tell it was forcibly removed from a growing follicle. It wasn't dormant hair.

Q Now, with respect -- as I understand your explanation, then, if hair is removed from the head in a natural sort of a way that follicle will atrophy and it is evidence of the fact that it just fell out naturally?

A Yeah, it's called dormant or club hair because it's got a clubbed root.

Q And if you pluck that hair the follicle would be different, would it not?

A Yeah, it would be a stretched, distorted root with some of the follicle material still adhering to it.

Q And if the hair, again, was cut obviously you'd

have a different situation again, would you not?

A Well, you're not looking at the root end, you're looking at the tip end, and if it's freshly cut it will be a sharp line, and if it hasn't been cut for awhile it will be more of a point because hair wears down at the tip eventually.

Q So if the hair is cut, you don't even see the root so you're not going to be able to know ----

A Oh, you mean if it's -- oh, if it's removed by cutting the hair. Yeah, you wouldn't see the root.

Q Now, I'm going to hand you this copy of the Division of Forensic Science and ask you to please examine that document.

(Whereupon, the witness examined a document.)

Q Now, I think in the beginning you'll see a few blue lines on there, and I'm sure that wasn't on any original copy that was issued by your department.

A Yes, it's the same document except for the blue lines you placed on it, yeah.

Q And there is a facsimile of your signature at the bottom of page one, is that correct?

A That's correct.

Q I'm going to hand you another copy and ask you if this is the same as the copy you reviewed just a few seconds earlier without those blue lines.

(Whereupon, the witness examined a document.)

A Let's see, one page might be missing here. Sixty-seven, sixty-eight, seventy-six. You're missing one page.

Q What page are you missing?

A Well, CB77. I have a copy here too (indicated). You don't have to make any more.

Q CB77?

A A through C, yeah.

Q Yes, okay.

THE COURT: Well, the witness has got a complete copy.

MR. MALTESE: Okay.

THE COURT: You're not going to put it in evidence?

MR. MALTESE: Pardon?

THE COURT: I said you're not going to put it in evidence?

MR. MALTESE: Why aren't I?

THE COURT: Well, because I'm going to let him testify to it.

MR. MALTESE: Pardon?

THE COURT: Because I'm going to let him testify to it.

MR. MALTESE: Oh, okay.

Q I'm going to direct your attention, if you will, to the bottom of the first page of the Physical Evidence Examination Report. And in it you show a lab number CB66 D1-D3.

A Right.

Q And in it you describe a sealed envelope from rape kit 2001 containing the victim's pubic hair combing.

A Correct.

Q And, also, in it you state that you examined this with a microscope and that one hair that was involved here was a pubic hair with the same range of microscopic characteristics as the suspect's known pubic hair.

A Right.

Q Now, did you examine that hair to see whether or not it was atrophied, or whether it was cut, or ----

A The only -- I examine the hairs, and if they have a pulled root I note it and report it. If I don't see one, I don't say anything about it.

Q So in this case, then, you didn't see a pulled root?

A No.

Q You don't know whether it was natural atrophy or not?

A Well, it's either one or the other. If it doesn't have a pulled root, then it was a dormant hair

with a club or atrophied root.

Q Or unless it could be cut too?

A Well, if it was cut I would have said that the root wasn't present because I examine the hair from root to tip, and if there's a problem with that I'd say something about it.

Q Okay. So, in other words, no notation states that the root is there? If you make no notation about it the root is there?

A Yeah, I didn't notice anything unusual about the hair, like it was cut off above the root.

Q I direct your attention to page four of the Physical Evidence Examination Report. I direct your attention to lab number CB76, and there's mention made of two hair -- head hair with the same range of microscopic characteristics as the suspect's known head hair and another pubic hair with the same microscopic hair characteristics as the suspect's known pubic hair.

Again, no mention of a lack of a root tells you that there was a root present -- it tells the reader.

A Right, because it doesn't have a root I call it a hair fragment. That's what I normally do.

Q And the same would be true with the lab sample number CB76 which talks about a head hair with the same range of microscopic characteristics of the suspect's

known head hair.

A That's correct.

Q Now, is it a fair statement, Doctor, to say that no single -- let me back up. There are, of course, several other ways of analyzing hair, is there not, besides microscopic examination?

A It depends on the purpose you want to examine the hair for. I mean, ----

Q But there are other way of testing the hair?

A For forensic purposes determining if it may have come from a certain individual or not, is that what you're talking about?

Q Yes.

A Ah, the only common ways are -- the most common is what I did, microscopic. Occasionally they do enzymes, but it's rare because they don't get fresh enough hair samples. There's a new method now of doing DNA of a single hair, but it's experimental and to my knowledge no one's done it on actual case work, and that's -- and people have attempted other types of analysis, including elemental analysis and amino acid orientation, and none of those have been determined to be useful.

Q How about x-ray emition spectroscopic analysis?

A X-ray mission spectroscopy, is that what you're

trying to say?

Q Yes.

A Ah, that's an all-metal analysis, and it's determined not to be useful because the elements in your hair change with your diet. So you can take a person's hair and cut it, and if they drastically change their diet the elements will change in the same because your hair is growing over a long period of time. So it's very unuseful because you got to know exactly what the person ate for the period of time the hair grew, and nobody knows that so it's not very useful.

Q How about the photo luminescence technique?

A It doesn't give you anything of any value. It just, again, identifies the protein present just like the refractive index, and it's all the same in everybody's hair.

Q Neutron activation analysis?

A Another elemental analysis which doesn't give out any more information.

Q And so it's your belief that these aren't necessarily useful tools or reliable scientific means of examining the hair samples?

A They haven't been proven to be useful. If they were, people would routinely do them. They've tried them and found out they weren't, so they don't normally do it.

The only -- element analysis is only really useful for like arsenic poisoning. If someone fed someone arsenic you'd find it in their hair, and you could relate it to maybe a certain period of time in hair, you know, so you might be able to relate when they received the arsenic, just in real unusual situations like that. But it's not useful for individually characterizing the hair comparing one person to the other.

Q Well, there is no single existing technique for the analysis of hair which would prove to be sophisticated enough to deal conclusively that that hair came from a certain person, is there?

A No, and I never -- I said that all you can do is determine it came from someone with the same range of microscopic characteristics. You can't say it specifically came from that person and nobody else.

Q And when you say the same range of microscopic characteristics, you're looking at those identification factors that you testified to earlier?

A Yes.

Q And you're saying they're within the same range, within all of those variables you talked about?

A Correct.

Q Basically, to the lay person what you're doing is using the microscope to empower your eyes to look at the

hair sample better, and then you're making an analysis based on that.

A Well, of course. I mean, you can see things in a microscope you can't see with your naked eye, so you have to use a microscope. I mean, you can't see what I showed with your naked eye. If you could you wouldn't be here. You'd be working for the CIA or something.

Q Now, we talked briefly about the number of characteristics that you're looking at, and you said that there's some debate as to the number of characteristics that exist for identification purposes.

A Yeah, because they confused it with fingerprints. With fingerprints you're looking at a specific impression made by a specific finger and you know what those things should be because it's one finger you're looking at and you're not comparing a range of characteristics on more than one finger.

With hair comparison, you're not looking at a specific impression from a specific hair and saying that that hair made that impression. It's totally different. What you're looking at is a range of characteristics that is common with that person versus a range of characteristics that's common with another person, and to see those characteristics you have to look under a microscope, and that's what you're doing.

Q From your own standpoint of the terminology, how many identification factors were you looking at when you looked at this hair and you put a number to it?

A Well, I think it's silly because, as I said, it's the overall range of characteristics. I mean, I can assign seventeen points, like some people did, just to the pigment distributions and say all seventeen of those are the same, you know. So we got seventeen points of comparison and it doesn't make any difference to say there's seventeen points of comparison or if they have the same range of characteristics, you're saying the same thing.

Q Likewise, we're talking about a range of microscopic characteristics. I think you testified that in addition to there being differences of range in the width of the hair there's also differences as far as pigmentation as well?

A I just said that, yeah.

Q From hair to hair, from part of the body to part of the body?

A The pigmentation pattern is basically the same with the same type of hair and the same individual. The head hair pigmentation pattern's the same. It might vary slightly in color, but the size, shape and distribution of pigment's the same with the same person. But it's

only for head hair. You can't say because the head hair looks like that the pubic hair's going to look like that. Each type of hair on the body has a different range of pigmentation or pigmentation characteristics. So there's body hair, pubic hair, and head hair. Those are the three major types of hairs on the human body.

Q Now, when you took the pictures, the slide pictures that you took of the various hairs, I take it you used the same exposure, camera exposure, is that correct?

A Well, it's got an automatic camera. Unfortunately, I didn't take it. Usually, if I was in Montana, I would have brought it with me, but I wasn't. I would have brought you a slide showing what the microscope looks like.

The microscope has a separate -- has a camera that sits on top of the microscope right next to the binocular viewing tubes. There's two tubes that get it by binocuvision, and it goes down a tube, and it automatically sets the exposure depending on the light that's there, and it sees the same view that you see when you look in through the two viewing tubes, and the camera decides what exposure to do not me. It does it automatically.

Q Now, the -- so the exposure is set by the camera.

You don't handle that manually.

A No, all I do is set the speed like you do with your own camera. You know, it's ASA film speed 200 or 100. I just set the speed and then the camera does all the rest automatically.

Q And as far as the light itself, is that set automatically as well?

A In the microscope or ----

Q No, the light for purposes of the illumination of things of that sort.

A Well, that has to be adjusted manually on each microscope.

Q And you try to make them, as you said, as close to each other as you possibly can.

A That's correct.

Q Now, were there in your examination any cross sections taken of hairs?

A No.

Q Would that have been useful in identifying ----

A No.

Q --- the characteristics?

A No.

Q You don't think so?

A It's a lot of work to do what you can obviously see. All a cross section does is it cuts across the hair

and you can measure the width of the hair and if it's circular or not, and you can tell that if you're a trained person just by looking at the microscopic hair. You know, you can tell that information, so it's silly to go make a whole bunch of cross sections of hair for something that's obviously apparent.

Q Now, you have basically stated that this hair, or at least as to some of these hair samples, they're indistinguishable from other hairs that you compared them to, is that correct?

A The microscopic characteristics are indistinguishable. I mean, you can look at one hair and see it slightly different, remember that slight difference and say, "Yeah, this hair is different than the rest," but we're not looking at one slight difference. We're looking at a range of characteristics that are generally present in those hairs, and that's what is indistinguishable.

Q And it would be possible, of course, to go among any random population group and find another person's hair that would be in the same range of possibilities?

A Yes, I said that is possible.

Q And you stated earlier you can't state with any degree of certainty that that hair originated from any one person,

A No, I can't.

Q And, Dr. Melnikoff, you testified about your expertise in the areas of chemistry and the forensic courses that you had taken, your degrees. Do you have a degree in math?

A I have a minor in math. I took more than enough math in college to get a minor in it.

Q And when you're normally talking about statistical happenings or statistical possibilities, aren't you normally talking about random selection?

A You're confusing the terminology. Random selection's a term that Darwin used to talk about evolution, you know, it's not directly applicable to statistics.

Q Well, you basically came across with a figure of ninety-nine out of a hundred. I basically think you said that it would be indistinguishable from another of the hairs would be a ninety-nine in one hundred chance. Wasn't that your testimony?

A Yeah, and I based it on -- I'd done, like, over seven hundred cases, approximately, in Montana, and I had seven or eight cases where by chance I came across individuals in the same case I couldn't tell their hair apart. And several cases included as many as seven or eight people, so . . .

Q So you're basing that on your own personal experience then?

A Right, and then I discuss it with other examiners who do a lot of hair cases, and they came up -- in fact, we hired a person from Georgia who had a lot of hair experience, and he uses the same figure I do. I asked him how he arrived at that, and he said just from the averages he saw in his laboratory, and he uses one out of a hundred too, so I think, ah, -- most hair examiners, and this is involving caucasians. It's a lot less with other races. I feel comfortable in saying that, you know.

Q When you define "caucasian", what are you referring to?

A People that came from Europe that are normally known as white people or caucasians.

Q What about Mexican Americans?

A They're a mixture of mongoloid and caucasians. Not all. There are some Mexicans that are pure bred mongoloid Indians, and there are some Mexicans that are pure bred Europeans. So the average person that you associate as a Mexican American is a mixture of Indian and European blood.

Q But certainly, when you say those figures and you're talking about someone of Mexican heritage that had

perhaps Indian blood in him, could be secured of him, is that correct?

A Well, you're confusing something. If his hair is apparently enough that you can show that it's mongoloid, no, it shows enough because mongoloid hair characteristics are enough different that you can say it falls in that classification. Then you'd use the mongoloid, you know, numbers. If his hair looks more caucasian, then you'd have to use the caucasian characteristics or numbers, I mean.

In my experience, if you're mongoloid, and this is done a lot less cases but again some results from other people, it's about one chance in thirty you can -- two people's hair would be the same. Excuse me, I'm wrong. But it's very low. One chance in ten. With black people it's about one chance in thirty. And with caucasians it's about one chance in a hundred.

Q And again, you're basing that on your own experience?

A And other people have found similar results. I mean, your own experience will tell you if you look at American Indians their hair looks very similar between individuals. They don't have as much individual variation in their hair as caucasians do.

MR. MALTESE: I have no further questions.

THE COURT: Redirect?

MR. THAGGARD: Briefly, Your Honor.

REDIRECT EXAMINATION

BY MR. THAGGARD:

Q Can a person's hair vary from hair to hair on the body of an individual person?

A Well, there's normally variation in the same hair, and normally it's thinnest at the tip because it wears and slightly thinner at the root because it's pinched by the cuticle when it grows out. And, basically, that's the major variation in diameter of the hair -- head hair. Pubic hair, on the other hand, is very variable with the thickest part usually being in about the center part of the hair and the tip and the root being considerably narrower.

Q Now, we just heard you state that in one chance out of a hundred that another caucasian randomly chosen would provide a head hair sample which you could not provide -- or which you could not distinguish from the suspect's. What are the probabilities that another person could provide both pubic hairs and head hairs which could not be distinguished from the pubic hairs and head hairs of the subject?

A I described that before. You have two separate locations in the body where you inherit the

characteristics separately. As I mentioned, most people's head hair and pubic hair do not look at all alike, so the characteristics are separate. And there's a separate degree of probability for each type of hair, so it's one chance out of a hundred for each, and to get both factors present, since they're independent events, would be the multiplication of the two levels of probability. So it would be one out of a hundred times one out of a hundred, which comes out to one in ten thousand.

Q So then are you telling us that one out of every ten thousand people would be able to match their hair to both the suspect -- or both their head and pubic hair to the suspect's to the extent that it would be indistinguishable?

A That's correct.

Q Thank you.

MR. THAGGARD: I have no further questions, Your Honor.

THE COURT: Recross?

RECROSS-EXAMINATION

BY MR. MALTESE:

Q Have you, Mr. Melnikoff, reviewed any studies that put a specific number to the odds of this hair being duplicated in the general population?

A Yes, I have.

Q Pardon?

A I have.

Q And do they basically share your view that it's one in a hundred.

A They came up with higher numbers.

Q And were there some that came up with lower numbers?

A None that I saw published. The only two papers that I know that have been published have been published by a hair examiner that works for the RCMP in Edmonton, Alberta. His last name is Gaudett. I think his first name is Paul. And he wrote several articles where he looked at hair from a hundred people and then looked at the various variations in their hair and then compared individual hairs to see the probability of matching two hairs from two different people. It's a very complicated process, but he came out one chance in three thousand for head hair and about one chance in a thousand for pubic hair, and I think he's over blowing it. I think that's better than you can really do. So I just base it on my own experience, and I told you what that was.

Q Again, though, it's possible to go in any population and find head hair that's within the range of microscopic characteristics?

IN THE DISTRICT COURT OF THE SEVENTH JUDICIAL DISTRICT
OF THE STATE OF MONTANA
IN AND FOR THE COUNTY OF RICHLAND

STATE OF MONTANA,
Plaintiff,
-vs-
PAUL DEMETRI KORDONOWY,
Defendant.

No. DC-89-013

TRANSCRIPT OF PROCEEDINGS

COURTROOM
RICHLAND COUNTY COURTHOUSE
SIDNEY, MONTANA
JANUARY 16, 17, 18,1990

VOLUME III

THE HONORABLE KENNETH R. WILSON DISTRICT JUDGE, PRESIDING

Corrine S. Herdt
Official Court Reporter
Richland County Courthouse
Sidney, Montana 59270

EXHIBIT
55

A Julie Long.

Q What is your occupation?

A I'm employed as a forensic scientist particularly in the area of forensic serology at the Montana State Crime Lab which is located in Missoula.

Q And could you please tell us what serology is?

A Forensic serology is the typing and identification of blood and other body fluids mainly as they exist in stained form, and they are submitted to the Crime Laboratory by a law enforcement personnel from the state.

Q How long have you been involved in this occupation?

A I've been employed there from July of 1980 through July of 1986, and then since February of 1988 to the present time. So a total of approximately eight years.

Q And what is your formal education in this field?

A I have a Bachelor of Science degree in microbiology from the University of Montana. I also have a diploma as a certified laboratory assistant from District 1 Technical Institute in O'Clare, Wisconsin. I have taken specialty classes, two classes from the FBI Academy in Quantico, Virginia, in blood stain analysis, a course also in blood stain analysis from the Serological

you to identify them for us.

Did you have occasion to receive from Arnold Melnikoff in 1989 any of the evidence taken from Bergh, Kris Bergh?

A Yes, I did.

Q Okay. And what evidence was given to you by Mr. Melnikoff?

A The sexual assault kit that was done at the hospital and clothing and bedding that was submitted.

Q And when was that given to you?

A On the 15th of February, 1989.

Q And in the things you received on the 15th of February of 1989, I'm now handing you State's Exhibit 4. Can you identify that?

A State's Exhibit 4 is a sexual assault kit. It's kit number is 2001. It's labeled with our case number assigned by the laboratory, which is 89-234, and it has my laboratory number and seal on it and signature.

Q And I'm handing you State's Exhibit No. 11, and can you identify that for us?

A State's Exhibit 11 is a sealed, partially sealed paper sack which, again, has my seal and signature on it, and it's labeled as being sheets.

Q I'm now handing you State's Exhibit 8. Can you identify that for us?

seal and signature, and it is the pillow case from the bed.

Q I'm now handing you State's Exhibit 5. Can you identify that?

A Number 5, again, is a sealed paper sack labeled as vacuum, bathroom.

Q I'm now handing you State's Exhibit 7. Can you identify that?

A State's Exhibit 7 is a slide box containing microscope slides prepared by Mr. Melnikoff labeled as Richland County Sheriff's Office Case 89-234.

Q I'm now handing you what's marked as State's Exhibit 18. Can you identify that?

A Exhibit 18 is a sealed letter envelope which has my writing on it, 89-234, panties, number 10.

Q I'm now handing you State's Exhibit 19. Can you identify that?

A Number 19, again, is a white letter envelope with my writing on it, hair from pillow case, number 6.

Q And I'm now handing you State's Exhibit 20. Can you identify that?

A Number 20 is a white letter envelope again with my writing on it, 89-234, hair from pillow case, number 7.

Q Were these received on the same date?

Q And were those subsequently returned to you?
A Yes.
Q And when were they returned to you?
A On July 26th of 1989.
Q And were they sealed at that time?
A Yes, they were.
Q And what did you do with them then?
A I assigned them to -- I assigned the sealed evidence over to Laurie Moffit, the evidence technician, and she returned them to the Sidney Police Department via UPS.
Q And were those received?
A Yes, they were.
Q And are your seals on all of these items?
A Except for the vacuumings, yes, they are.
Q And those seals on the vacuumings belong to?
A Mr. Melnikoff.
Q Okay. And have any of these seals been broken, your seals?
A No.
MR. THAGGARD: Your Honor, I move to fully admit all of these items. I'll read them off for the record.
THE COURT: Is there any objection?
MR. MALTESE: Foundation.

A Yes, it was.

Q And what did you do with it?

A Ah, that evidence -- the kit was opened and I analyzed the evidence that was pertinent to serology.

Q And then what did you do?

A The kit was signed to Mr. Melnikoff for hair and fiber comparison.

Q And then what was done with the kit?

A He signed it back to myself.

Q On what date?

A On April 11th, 1989.

Q And what did you do with it?

A I returned it to the Sidney Police Department on June 30th, 1989.

Q And did you seal it before you returned it?

A Mr. Melnikoff sealed it after he -- I sealed it when I gave it to Mr. Melnikoff, and then he sealed it when he was finished with the hair comparison.

Q Did he then hand it back to you?

A Yes.

Q And was his seal on it at that time?

A Yes, it was.

Q Is his seal on it now?

A Yes, it is.

MR. THAGGARD: Your Honor, I move to admit

Laurie Moffit, and she returned it.

Q And is your seal present on this now?

A Yes, it is.

MR. THAGGARD: Your Honor, I move for admission of State's Exhibit 25.

THE COURT: Any objection?

MR. MALTESE: Foundation.

THE COURT: Did Mr. Baker do anything with it?

THE WITNESS: No, he did not.

THE COURT: It'll be admitted.

Q I'm now handing you what is marked as State's Exhibit No. 9. Can you identify that for us?

A State's Exhibit No. 9 is a sealed envelope, step number 7, which is a saliva sample, labeled as coming from Krisin Bergh, and it contains my initials and seal and the case number 89-234.

Q When was this received by the Crime Lab?

A On the 17th of March, 1989.

Q And who received it?

A Mr. Jim Hutchison.

Q And did he do any work on it?

A No, he did not.

Q And then what was done with it?

A It was signed to myself.

Q And was it sealed at that point?

1989.

Q And who was it received by?

A Mr. Jim Hutchison.

Q Did he perform any work on it?

A No, he did not.

Q Then what was done with it?

A It was signed to me, and I did the blood typing on it, and sealed it, and returned it to Laurie Moffit to return to the Police Department.

Q Is it now sealed with your seal?

A Yes, it is.

MR. THAGGARD: Your Honor, I move for admission of State's Exhibit 10.

THE COURT: Any objection?

MR. MALTESE: Foundation.

THE COURT: It'll be admitted.

Q Did you have occasion to analyze the vaginal samples of Kristin Bergh?

A Yes, I did.

Q And what did that analysis entail?

A In an alleged sexual assault case we receive the sexual assault kit from the investigating agency and then we attempt to determine if there is seminal fluid present in the samples that are submitted. In this case there were vaginal samples, oral samples and rectal samples.

Q And what is her blood type?

A Her blood type is ABO type O.

Q And what did you type the defendant's blood?

A He is also ABO type O.

Q Okay. And what is an H secretor?

A In a case involving sexual assault where you're going to have body fluids present and not necessarily blood, it's important that we determine the secretor status of the individuals involved. That means approximately eighty percent of the population secrete their blood type substances in their body fluids.

For example, if your ABO type is A and you are a secretor then, if you're female, in your vaginal fluid, in your saliva, in your sweat, you are secreting A Substance. You also secrete H Substance. H Substance is just the basic sugar that the A and the B blood types are made from in your body.

If you are an ABO type O, then you secrete the H Substance. If you are type B, then you secrete the B Substance. And so if you are a male, then in your seminal fluid, and in your saliva, and in your sweat, you are secreting your corresponding ABO type. So that is why it is important in an alleged sexual assault case to determine if the people are secretors.

Q Is Kristin Bergh a secretor?

A No, he couldn't.

Q Did you type Lynn Lohse's blood type?

A Yes, I did.

Q And is Mr. Lohse a secretor?

A Yes, he is.

Q And what does he secrete?

A He's an A secretor, so he secretes A Substance and H in his seminal fluid, and saliva, and sweat.

Q Mr. Lohse had had sexual intercourse with Miss Bergh on July 23rd, 1987, two days prior to the taking of these vaginal samples on the morning of July 25th. Could Mr. Lohse be responsible for the presence of the A secretion?

A Yes, he could.

Q Is there anything else that could be responsible for the presence of the A secretion?

A Yes, in this case there was a large amount of bacteria, which I noted, and it has been reported that a large amount of bacteria can give you an A Substance reading in your analysis because your ABO substances are sugars, and bacteria also produce sugars.

Q Based on your analysis of Bergh's blood, based on your analysis of Mr. Kordonowy's blood, based on your analysis of Lynn Lohse's blood, and based on your analysis of the vaginal sample, can Mr. Kordonowy be

A Yes, he could be.

Q Could Kris Bergh be responsible for the H Substance?

A Yes.

Q Did you examine the blue panties found in the kitchen, which would be item number nine?

A Yes, I did.

Q And what did that examination reveal?

A That item was examined in a similar fashion, and a semen stain was also found in panty number nine.

THE COURT: Now, you should, to make a record now, that's Exhibit 14, is it not?

MR. THAGGARD: Yes, Your Honor.

THE COURT: And then your prior testimony referred to Exhibit 8, I believe. Is that correct?

MR. THAGGARD: That's correct, Your Honor.

THE WITNESS: Okay.

THE COURT: Go ahead.

Q What did the analysis of Exhibit 14, the panties found in the kitchen, reveal?

A That there was a semen stain present.

Q And were there any secretions present in that semen stain?

A Yes, there were; A and H Substances were present.

Q Could Lynn Lohse have been responsible for the A

Q And how many times have you testified?

A Oh, approximately forty.

Q How many times have you testified for the State of Montana?

A It's all been for the State of Montana.

Q Now, as I understand it, you also -- you prepared a Physical Evidence Examination Report in connection with the analysis of the items of evidence that you examined?

A Yes.

Q And, as I understand your testimony, Lynn Lohse is ABO type A and a secretor?

A Yes, that's correct.

Q Now, ABO type refers to blood?

A Yes.

Q And secretor talks about certain type of characteristics of that -- character of blood?

A It refers to what you expect in the body fluids.

Q If you are an ABO Type A and a secretor, as Mr. Lohse is, and if you examine these evidence slides and whatnot that you examine, you could expect to see an A Substance and an H Substance in the evidence samples, isn't that correct?

A Yes.

Q And if Miss Bergh were ABO Type O and a secretor, you could expect to see an A Substance ----

Substance, for example, you can say with some source of precision that Mr. Kordonowy's seminal fluid probably could not be found on that piece of evidence, is that accurate?

A If there was just the A and no H?

Q Just an A alone.

A Yes.

Q If there was an A and an H Substance, you can't rule out the possibility that Mr. Kordonowy may have contributed the H Substance?

A That's correct.

Q On the other hand, you can also not rule out the H Substance may have come from Miss Bergh herself, Mr. Kordonowy, or Mr. Lohse. Each of those people could have had an H Substance or contributed an H Substance to the evidence sent, is that accurate?

A Yes, that's correct.

Q Now, the A Substance, as I understand it, could have also been present because of the action of bacteria on the sample.

A That's a possibility, yes.

Q And were you aware of when these samples were taken?

A I was when I did the examination, yes.

Q If I refreshed your memory and said that it was

A Yes, that's correct.

Q And then, as I understand it, after you made the determination that there was seminal fluid, and I guess to clarify it, seminal fluid would be an emission from the male sex organ?

A That's correct, yes.

Q One of the components of seminal fluids would be sperm?

A Yes, that's correct.

Q And so then you would have looked at all these various items of clothing, bedsheets and whatever else, and seen if you could have detected sperm?

A Yes.

Q And, in fact, I see that you prepared a Physical Evidence Report, and you have prepared a little chart, and you described in the chart the various types of tests and things that you analyzed, and then in one column you put a description of whether or not any sperm was present.

A That's correct.

Q And, as I understand it, basically there was only one piece of clothing in which a few head of sperm were present.

A That's correct.

Q And I believe you also testified the sperm has a

that article of clothing?

A No, there isn't.

Q Now, I believe, then, your testimony with respect to three days related, perhaps, to the taking of swabs at the hospital, is that accurate?

A Yes, I believe I said that seminal fluid, ah, the outside range for seminal fluid generally is -- it can remain up to three days in the vaginal cavity depending on the physical activity of the person, the amount of seminal fluid that's there to begin with. There are many factors that affect what you would find three days later.

Q So, in other words, to the extent that there was seminal fluid located on any of these specimens or articles of clothing, if the victim had had sexual relations at any time within that three-day period of time, it could have come from that source.

A Yes, that's correct.

Q Now, my understanding is that you examined two vaginal swabs, a vaginal aspirate, an oral swab, a rectal swab and two different panties, is that correct?

A Yes, that's correct.

Q And with respect to all of these items, it was only in the panties that a few heads of sperm were identified.

A That's correct, yes.

A, but you don't show the presence of H?

A Yes, that's correct.

Q So with respect to those three samples, then, we can rule out Mr. Kordonowy?

A For those particular samples, yes.

Q Yes. Then, with respect to the vaginal swab which shows the A and the H Substance, we cannot rule out Mr. Kordonowy because of the presence of the H Substance.

A That's correct, yes.

Q But we can also -- cannot rule out that the originator of that H Substance was Miss Bergh herself as an ABO Type O?

A That's correct, yes.

Q Or Mr. Lohse as an ABO Type A?

A That's correct.

Q And, likewise, in the examination of the two pairs of panties which show the substance of A and H, again, we cannot rule out Mr. Kordonowy but the H Substance could have been contributed by either Mr. Lohse or Miss Bergh herself?

A That's correct, yes.

Q Is it a fair statement, Miss Long, to conclude that the examinations and testing do not conclusively show that any semen detected from the samples can be traced to Mr. Kordonowy?

A Yes, he could.

Q Could Lynn Lohse?

A He could contribute the H. A person who is an A secretor can contribute A or H. A person who is a B secretor can contribute B or H. And an O secretor secretes H.

Q Did any of the vaginal samples, or vaginal swabs, contain H sample?

A Yes, they did.

Q Okay. And did State's Exhibit 8, the panties from the bedroom, contain H sample?

A Yes, it did.

Q And did State's Exhibit 14, the panties from the kitchen, contain the H Substance?

A Yes, it did.

Q And can Mr. Kordonowy be excluded as the doner of the H substance in any of those exhibits?

A No, he can't.

MR. THAGGARD: Thank you, Your Honor. I have no further questions.

THE COURT: Recross?

MR. MALTESE: Just one question.

RECROSS-EXAMINATION

BY MR. MALTESE:

Q I believe you stated that twenty-nine percent of

THE COURT: Is this witness released from her subpoena?

MR. THAGGARD: Yes, Your Honor.

THE COURT: You're free to go.

THE WITNESS: Thank you.

MR. THAGGARD: Thank you, Mrs. Long.

THE COURT: You may leave or stay.

THE WITNESS: I'll leave, thank you.

THE COURT: Okay.

MR. THAGGARD: Your Honor, at this point the State rests.

THE COURT: Mr. Maltese?

MR. MALTESE: Thank you, Your Honor.

OPENING STATEMENT

BY MR. MALTESE:

Ladies and gentlemen of the jury, the State has had it's opportunity to present it's case, and I hope that all of you remember that the case isn't concluded until everyone has had an opportunity to present evidence to this Court.

In our procedure I have an opportunity, here, to give you an overview of the type of evidence that we have an opportunity to present at this time.

Now, my client, Mr. Kordonowy, is going to avail