

1 Petraco/direct/People 2772


2 THE CLERK: The defendants, their attorneys,
3 the assistant district attorneys and all sworn
4 jurors are present.

5 THE COURT: Okay.

6 MR. CLEMENTS: The lawyers have agreed that if
7 called as a witness retired Detective Joan Tanzi
8 would testify that approximately 1 p.m. on April
9 21, 1989 she was present at Metropolitan Hospital
10 and observed Dr. Azar take head and pubic hair
11 samples from Patricia Meili which were vouchered
12 under voucher number D 605403 and delivered to the
13 New York City Police Department laboratory.

14 The People call Detective Nicholas Petraco.

15 COURT OFFICER: Raise your right hand.

16 N I C H O L A S P E T R A C O, called as a witness in
17  behalf of the People, having been duly sworn, testifies as
18 follows:

19 COURT OFFICER: Be seated. In a loud clear
20 voice state your full name, spelling your last
21 name?

22 THE WITNESS: First name is Nicholas. My last
23 name is Petraco, P as in Peter E T R A C O.

24 DIRECT EXAMINATION

25 BY MR. CLEMENTS:.

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Q Sir, how old are you?

A I'm 43 years old.

Q Are you married or single?

A I'm married.

Q Do you have any children?

A Yes, I do.

Q How are you employed in 1989?

A I was employed as detective working for the New
York City Police Department.

Q Do you still work for the police department?

A No, I do not.

Q Are you retired?

A Yes, I am.

Q How long were you with the New York City Police
Department?

A Just under 22 years.

Q And in 1989 what was your assignment?

A I was assigned to the police laboratory working as
a trace evidence examiner.

Q How long were you with the New York City Police
Department laboratory?

A Just under seventeen years.

Q What were your duties at the police department
laboratory?

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2 A Examination of various types of physical evidence
3 including trace evidence such as hairs, fibers, paint,
4 soils, minerals, materials like that.

5 Q Would you tell the member of the jury what your
6 educational background is, your training and experience in
7 the area of examining trace evidence?

8 A I have a B S degree in chemistry and a masters
9 degree in forensic science from John Jay College of Criminal
10 Justice. I've taken courses in the examination of various
11 types of physical evidence at places such as the F.B.I.
12 Academy.

13 I've also been involved in teaching forensic science.
14 I've taught forensic science at John Jay College of Criminal
15 Justice, at St. Johns University and other various places.
16 I've been a member of the American Academy of Forensic
17 Scientists for about eight years. I'm a fellow of that
18 organization.

19 -I'm also a fellow of the New York Microscopical Society.
20 I've done various research projects in forensic science and
21 have published numerous papers and contributed to several
22 books on various areas of foreign science.

23 Q Can you sit a little closer to the microphone,
24 please?

25 A Okay.

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Q Have you been qualified before in the courts of New York in the field of criminalistics and the examination of trace evidence?

A Yes, I have.

Q Approximately how many times?

A Over two hundred times.

Q I'd like to direct your attention to April 20, 1989 and the days following. Did you have occasion to examine any evidence vouchered in connection with this case?

A Yes, I did.

Q Just briefly what was the nature of that evidence?

A Various items of clothing and various items taken from the scene of the crime in which they asked me to look at for trace evidence.

Q In general, did you find any trace evidence on some of the articles that you examined?

A For the most part I found various hairs and some soil samples.

Q Can you describe for the members of the jury what kind of information a scientist can derive from the microscopic examination of hair?

A In case of hair you can usually say whether it's human or not, is it hair from a human origin or another animal, another mammal.

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You can also race the hair. If it's of human origin you can give it three basic categories, hair from a Caucasoid person, a Mongoloid person or a Negroid person. These are three racial backgrounds.

You can also give it body area, schematic origin such as beard hair, pubic hair, head hair, axillary hair.

And next thing you do is when you have a questioned hair is to compare it against a source of a known sample to render an opinion as to whether that questioned hair could have originated from a known source or not have originated from a known source. You can also look at things like force. If there was force used in a given incident, sometimes the hair will reflect the kind of force that was used.

Q You mentioned three different racial classification. From what countries of the world might you expect to find people of a Mongoloid origin from?

A Many of the Indian races like American Indians, Eskimo, people we continue to refer to as oriental people from China and Japan.

Q Can you determine the sex of a person based on their hair?

A No, I can not.

Q With respect to human hair, approximately how many

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physical characteristics can you examine or look for?

A We -- there are about 20 characteristics that we look at which reflect a range.

Q When you find hair on evidence at a crime scene or on a piece of clothing what steps, if any, can be taken to determine the source of that hair?

A In case -- first thing we do is identify the hair, in effect what it a person from a Caucasoid origin. We also give it a body hair if we can, say if it's a head hair. Then we'll ask for a set of standards from a suspect or from a victim or from a group of people to find out whether that questioned hair could in fact have originated from one of those sources of knowns.

Q In your field you designate unknown hairs in any particular fashion?

A I designate them as Q for questioned hair.

Q And do you designate hair samples that you've requested from a known source in any way?

A I designate it as K for known hair.

Q Can you make individualized determinations as to the source of hair say the way you can with a fingerprint?

A No, you can not.

Q Can you detect subtle variations in hair?

A Yes, you can.

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Q Can you tell the members of the jury by what standard you can compare a questioned hair with hair from a known sample?

A In case of comparison of hair, what you would have is a questioned hair or questioned series of hairs that you want to see if they could have originated from a given known sample. What you would do is take the questioned hair and put it on a comparison microscope and take the known hair sample and also put samples from that sample on the microscope, and in fact compare them side-by-side.

Comparison microscope is a device that allows you to look at two specimens simultaneously. What you would be doing is looking at the questioned hair and the known hair and comparing them exactly at the same time to see if there are -- to see if in fact the questioned hair fits into the range of the known source. And if it does, we can render an opinion that it could have originated from the known source or that it did not originate from the known source.

Q Do you know how much hair humans typically shed or lose on a daily basis?

A I've seen in literature that the average person in fact sheds approximately a hundred hairs a day.

Q Can hair be transferred from one person to another?

A Yes, it can.

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Q How can that occur?

A When there's contact between individuals you'll have transfer of trace materials. One of those types of trace materials that can transfer is in fact hair.

Q Did you bring any photographic slides with you today which illustrate some of the characteristics that you look at when you examine hair?

A Yes, I did.

Q Were any of those slides taken in connection with this case or in preparation for this case?

A No, they were not.

MR. CLEMENTS: With the court's permission I'd like to have the witness demonstrate some of the things that he observed on the slides.

THE COURT: Okay. The jury should understand, first of all, as has been indicated, these are for demonstrable purposes only. These are not hairs relating to this case in particular.

(Pause)

Q Detective, would you tell the members of the jury what they're looking at?

A In this particular case you're looking at typical human head hair. And it reflects the three anatomical regions of hair; the cuticle, which are the outside layer.

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That's the clear layer in this area here. The cortex, which is the central layer of hair in this area here. Surrounding -- there is a central canal going down the hair, which is known as the medulla. That's the central canal going down the hair.

These are the three anatomical regions. The cubicle -- these are -- this is a cuticle, which is the outer layer of the hair, the cortex, which has most of the pigment in various bodies of the hair contained within, and the central canal going down the center of the hair is known as the medulla. Sometime is there, sometime is not there.

This is typical hair you will see with no cuticle margin. Cuticle margin here is minimal. Just you do not see a margin at all. You see a flat cuticle. This is also hair without a medulla or center canal.

This is a hair that's been treated. You can see pigment. Doesn't look natural. And also you can see medulla. Has been infiltrated by some of the dye. Plus the cuticle has in fact been moved from the surface of the hair so you can in effect take the dye out, dye onto the cortex.

(Pause.)

MR. CLEMENTS: Can we break for lunch, your Honor?

THE COURT: All right. We'll recess. It will

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take awhile. Lunch, members of the jury. Don't
discuss the case. Don't come to any conclusions.
2:15 be back.

(Whereupon, the jury left the courtroom.)

(Whereupon, a lunch recess was taken.)

(Whereupon, People's Exhibits numbers 172 through 181 were marked for identification before the start of the afternoon session)

COURT OFFICER: Jury entering. Please remain seated.

(Whereupon, the jury enters the courtroom)

THE CLERK: The defendants, their attorneys, the assistant district attorneys and all sworn jurors are present.

Mr. Petraco, may I remind you you're still under oath.

Q Detective, before lunch you were talking about some slides that you had brought with you today.

A This would be human head hair that has no pigmentation. It's essentially colorless. Gray hair is colorless. It has no pigment. And you can see reflected along the cortex, there's no pigment granulars or no pigment granulars around the cortex.

These black light spots you see are called cortical fusci. All they are are air spaces. They're very common in gray hair. You see just hair space.

The reason why they appear black is because the light that goes through the hair for you to see it with the microscope is just reflected back because when it goes

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through hair it just reflects back because the difference, something called reflective index. This would be the way the hair of a person with red hair, the pigmentation tends to be towards the center of the hair and you can see the pigmentation distributing mostly towards the center and away from the peripheries of the hair. It's a red color pigment. It's natural.

This would be a hair that has a light color. Appears to you as a light brown color hair with your own eyes. With the microscope you can see pigment is very fine. It's even distribution. You can also see other features like in this particular case there's no medulla, no central canal. This is a very fine cuticle. And the hair thickness is about eighty micrometers thick.

This would be a hair, it is a little thicker. It has -- this pigmentation is medium brown. And you can see the actual differences in sizes of that last hair and the pigment in this hair. Also there's a central canal that is known as discontinuous. It's broken up as it goes along the center of the hair. And the pigmentation is a little, not as epp (phon.) as the other hair. These are things that we would look at to do comparisons.

This particular case is another hair. And you can see the cuticle margin is very thick and clear. There's no

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pigmentation in it. This happens to be a very heavily pigmented hair. And so pigment, it's almost opaque. I can't see through it. There is also a central canal going through here. Because of this lighting you can't see it. Heavy pigmentation of the hair.

This is a typical dyed hair. This is the root end of the dyed hair. This would be known as the distal end. You can see demarcation where the dye was applied and where the hair has grown out. This is a typical gray hair again with a lot of cortical fusci -- these air spaces in the shaft of the hair.

Typical Caucasian head hair has a Caucasoid cross-section. When you cross-section the hair you can see the pigment distribution, the central canal and the cuticle going around.

And typical Caucasian or Caucasoid hair is fairly even in distribution as far as pigment. It's not too heavily pigmented. And also its stiffness would vary between sixty and a hundred micrometers thick.

This is a typical hair from -- head hair from a Negroid person, a person of Negroid origin. The cross-section is oblique, flattened, heavy pigmentation. They usually have a fine cuticle.

And many times you'll see in the head hair a kink or a

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twist in the hair, and the pigmentation is not as even. It tends to be clumpy.

And they also tend to have brittle hair. The hair tends to be very brittle, and it just breaks. And that's the way it would look if it broke.

And this is typical head hair from a person of the Mongoloid race. It's circular cross-section and heavy pigmentation, real thick medulla or central canal. And real -- usually a fairly thick cuticle. And the actual cross-section, they would vary about -- be a hundred to a hundred and fifty micrometers thick as compared to the other hairs.

Q What magnification are we looking at?

A All these hairs were taken approximately a hundred power. This would be a longitudinal view of that hair, at a hundred power, very thick cuticle, very heavily pigmented. And pigment tends to be streaky matter, tends to look like streaks. When we look at other things such as distal end this would be the end of the head hair, which is typical. We see it in other hairs too, but typical appearance at the end of the head hair, which is usually groomed pretty -- every two or three weeks to a month.

This is the way a temporal hair would appear. Also a pubic hair tends to have tapered tips. They're not groomed

1 too often.

2 Q What do you mean by a temporal hair, detective?

3 A Hair from the temporal region of the head. This is
4 braid. Hair is brittle and it wears down with friction.
5 Hair that rubs against clothing like pubic hair or axillary
6 hair or chest hair sometimes have this braided end. This is
7 a rounded end.

8 Q When you speak of axillary hair, what do you mean?

9 A Most people call it underarm hair.

10 And this is typical pubic hair. We have buckling.
11 Tends to be thicker. And the pigmentation tends to appear
12 bleached. And the medulla tends to be much thicker in the
13 pubic hair. This buckling is really characteristic of pubic
14 hair.

15 This is just another way of seeing the thickness of the
16 hair.

17 And they also tend to be tapered. Pubic hair, the hair
18 tends to be an abrupt variation in thickness, not a
19 graduation variation in thickness.

20 This would be a pubic hair cross-section. Tends to be
21 flattened and a little oblong shaped.

22 Facial hairs like beard hairs tend to have a triangular
23 cross-section. And they usually appear coarser.

24 Q Why does that slide have a different color to it?

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A Because of the thickness of the hair. It's thicker on the bottom than it is on the top.

Q Was that --

A That's because it's cross-sectional. Cross section is triangular shape.

Q Was a special type of light used to examine that hair?

A Yes. This is known on a polarized lithography. Just a special type of microscopy. Instead of destroying by cross section we look at in effect the cross-section without having to do that.

Q Looking at that slide which slide is thicker and which slide is thinner?

A This slide is the thick part and that part would be the thin section.

This is the -- the distal end or -- the proximal end or the root end. A hair that's naturally sloughed off or shed by someone would be a telogen, T E L O G E N look. All that means is that this hair has finished its life cycle. The bulb dries up, the root follicle dries up, and it's sloughed off by the body. It's not connected to any living tissue.

This would be the end hair, the ending hairs, the active growing phase would look. This is an Annagen root. It's an

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2 actively growing root. This is the follicle of the hair.
3 If the hair is pulled out this is the way it would appear,
4 or if it's combed out with, it's tangled and combed out,
5 something along those lines.

6 These are hairs from the same individual. This is a
7 pubic hair. This is a head hair. They're all --

8 Q Sorry.

9 A Can you go back to the other one?

10 Q I'm trying.

11 A Okay. This is a broken hair. The hair would
12 appear as if force was used, if it was broken. And just
13 looks in fact broken.

14 This is the way a hair would look if it was cut sharply
15 with a razor or a knife. This is typical of hair cut with
16 knives or razors or windshield glass.

17 This would be a hair that appears crushed. And you can
18 see on both ends it's pretty narrow. And in the area where
19 it's crushed it's usually crushed with a blunt object --
20 would be a pipe, a hammer, something along those lines.

21 What we normally do when we compare hair, hair is --
22 the problem with hair is that the hair in my own head and
23 everyone else's -- on everyone else's person will vary.
24 The head on my own has various colors. It's gray, it's
25 lighter brown, darker brown. That's one variation.

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The pigmentation is also going to reflect that variation. All the other characteristics I showed you like the root, the tip, the medulla, the cortex, the pigment distribution, pigment granules, all of these characteristics, approximately twenty, that will affect in a given comparison.

When one does a comparison, one looks at all the range in a given standard, given known sample. You might have a hundred hairs from a person from their head. Look at the range of characteristics. And you take a questioned sample and see if they can fit into that range. If they can't fit into the range of physical characteristics, you can say it does not come from a given individual. If they fit into that range, you can render an opinion as to the hair could have come from the person who supplied the source or the source of the known head hair specimen or pubic hair specimen.

This is the kind of instrument we use. This basically a microscope, two microscopes bridged together with an optical bridge. It allows you to look at a questioned and known sample at the same time so you can view both samples. There is a prism in there that allows you to view both samples. You can actually viewed them side-by-side. You can detect subtle differences in the hair.

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2 This is a typical comparison micro hair. You go from
3 root to tip, along the shaft of the hair and compare it
4 side-by-side looking at all these features trying to find
5 the varying differences or any similarities in order to do
6 this comparison.

7 (Pause)

8 Q Detective, I'd like to direct your attention to
9 April 20, 1989. Did you work that day?

10 A Yes, I did.

11 Q Did you receive an assignment about midday?

12 A Yes, I did.

13 Q And did you go anywhere?

14 A I was asked to go to the Central Park Precinct.

15 Q At the Central Park Precinct did you receive any
16 property vouchered under D 480442 and D 480443 vouchered
17 under the name of Police Officer Darby?

18 A Yes, I did.

19 Q What did you do with it?

20 A I brought it back to the laboratory for
21 examination.

22 Q And did you examine the property under those two
23 vouchers?

24 A Yes, I did.

25 Q What was vouchered under D 480442?

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A There were first three items -- were blood samples or possible blood samples that were marked H-1, H-2 and H three. And I sent them to the serology section for examination.

The next item was a hair marked H four in which I examined, mounted on microscope slide and examined.

Next item was a pair of sneakers. They were marked H five and H six. And I examined those for possibility of trace evidence. And I found some soil on the sneakers.

Next item was a long sleeve shirt. And after drying the shirt I was -- the shirt was marked H 7. After drying the shirt I was able to examine it and I found a great deal of soil on the shirt.

The next item was a rock. It was marked -- blood, hair, fibers. And it was marked. It was designated H 8. And I examined the hair -- the -- the rock for hair. And trace materials were found, several fragments of hair, which I examined.

And there was bra, item number eight --

Q Continue.

A And it had a lot of soil on it. And I examined it for trace materials. And I removed soil and wound up finding a questioned hair, which I call Q 8.

MR. CLEMENTS: At this time I would ask if the

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witness could please be shown 109 for

identification, People's 109 for identification.

Q Do you recognize People's 109 for identification?

A Yes, I do.

Q And what do you recognize it to be?

A This is the envelope in which the hair that I designated as Q 1, which was received under voucher we just spoke about, under item four as hair sample.

Q That was H four?

A H four, yes.

Q When you received that envelope what condition was it in?

A It was in a sealed condition.

Q What was -- in what condition was all the property that you received under the voucher number we spoke of ending in 442?

A In a sealed condition.

MR. CLEMENTS: At this time I would ask if the witness could be handed this cardboard container.

Q Would you open that cardboard container, please, detective?

A You have a little knife? Thank you.

Q It's been opened before and there are two exhibits inside that have been previously marked, so you may not need

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to slit it.

(Pause)

Q Okay. Do you see something inside that cardboard container that's been marked People's 172 for identification with a red sticker?

A Yes, I do.

Q Do you recognize People's 172?

A This is the microscope slide and the hair I removed from that envelope that was marked H 4. And I designated the hair as Q 1.

Q Is that slide in substantially the same condition as when you mounted the hair?

A Yes. It's broken. But other than that it looks pretty much the same.

Q You mentioned that you removed some fibers from a rock, H 8. Did you mount those on a slide?

A Yes, I did.

Q Is there a second slide inside that cardboard container that's been marked People's 173 for identification?

A Yes, there is.

Q Is that slide in substantially the same condition as when you examined it on April 20 -- prepared it on April 20, 1989?

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A It's broken now. Other than that, it looks pretty much the same.

Q Thank you, detective. If you could just set those aside for a moment.

Did there come a time that you requested any hair samples from Patricia Meili in connection with this case?

A Yes, I did.

MR. CLEMENTS: At this time I would ask if the witness could please be shown People's 174 for identification.

Q Do you recognize People's 174 for identification?

A Yes, I do.

Q And what do you recognize People's 174 to be?

A These are -- this is the envelope in which I received the hair standards. These are in fact the hair standards that I received from Patricia Meili.

Q Is People's 174 in substantially the same condition as when you received it?

A Yes, it is.

Q What did you do with the hair standards that you received?

A Hair standards, one pubic hair standard and one head standard were contained in each of these containers. And I removed the hairs from the containers.

The head hair specimen I designated as K one, just meaning known number one. And the pubic hair specimen I designated as K two, again meaning known sample number two.

I mounted -- I examined them visually with a stereo microscope. Then I examined them by placing them on microscope slides and examining them with the various types of microscopy.

(Continued on the following page.)

T 2

Q. Okay.

Did you receive those hair standards under a particular voucher number?

A. Yes, I did.

Q. And what number was that?

A. That was D as in David 605403.

Q. Do you know the name of the vouchering officer?

A. I believe it was Detective Tanzi.

Q. And is People's 174 in substantially the same condition as when you received it, other than the fact that you mounted some of the hairs on slides?

A. Yes, sir.

Q. Did you examine H 4, People's 172 for identification, the hair from the crime scene that was in the envelope on a slide and examine it?

A. Yes, I did.

Q. Would you tell the members of the jury what you saw when you examined it?

A. I found it -- when I examined it I found it to be one fragment of caucasian head hair.

Q. Did you compare Q 1 with K 1, People's 174, the head hair standard from Patricia Meili?

A. Yes.

Q. What was -- what were the results of your comparison?

A. The questioned hair, Q 1, was similar in the physical characteristics from known head hair specimen K 1. In my opinion the questioned hair could have originated from the known source of head hair K 1.

MR. CLEMENTS: At this time I ask if the witness could be shown People's 110 in evidence.

(Given to witness.)

Q. Do you recognize the rock, People's 110?

A. Yes, I do.

Q. How do you recognize that particular rock?

A. From my initials and from the lab. number.

Q. Is that rock that you recovered, People's 173, the hair fragments you designated as Q 2 from?

A. Yes, sir.

Q. Would you show the members of the jury where on People's 110 you saw those fragments?

A. There's a high point on the rock here and it had
what appeared to be a reddish brown bloodstain. And in that
area is where I found three fragments of hair.

Q. Okay.

Did you examine those hairs under microscopic slide People's 173?

A. Yes, I did.

Q. And what did you see?

A. My conclusions were they were three fragments of caucasian head hair, light in color.

Q. Did you compare them with the known hair sample.
K 1 from Patricia Meili, People's 1 hundred
{74|seventy-fourPeople's 174} in evidence -- I'm sorry, 174
for identification?

A. Yes, I did.

Q. What were the results of your comparison?

A. I concluded -- again, I compared them with a
comparison microscope. I concluded that those three
questioned fragments of caucasian head hair, that they were
in fact similar to the known sample in all physical
characteristics. In my opinion those three questioned
fragments could have originated from the known head hair K
1.

Q. Detective, are you able to state an opinion to a
reasonable degree of scientific certainty as to how those
three head hair fragments were deposited on the rock,
People's 110 in evidence?

A. It is my belief from the configuration of what I
saw when I examined it that the person was probably struck
on the side of the head with this rock.

Q. What is the basis --

MR. MOORE: Objection as not responsive.

THE COURT: It is responsive.

I'll let it stand.

Q. What is the basis for your opinion?

A. Having observed many hundreds and hundred of different kinds of items that we use as weapons in cases and looking at the configuration of the brown stain and also the high point and where I found the fibers on the rock. All those little bits of information makes me draw that conclusion.

Q. How did the hairs, three fragments that you mounted, look under the microscope to you?

A. They looked pretty crushed.

Q. Were you able to determine the source of those hairs, from what parts of the head they came?

A. I believe them to be temporal hairs. Meaning from the side of the head.

Q. Did you find hair on any other items vouchered under D 480442?

A. Yes, I did.

Q. And on which items?

A. I found hair on the bra.

Q. Okay.

And from where did you recover that hair?

A. I vacuumed the bra to remove the soil samples and then I pushed the soil samples to seive them through a seive. And once the soil went through the seive I found this one fragment of hair.

Q. Did there come a time that you examined any property vouchered under D 480443?

A. Yes, there did.

Q. And would you tell the members of the jury what was vouchered under that voucher number?

A. It was one pair of black pants marked H 9, in which I removed some soil sample. There was one sock marked H 10 with some vegetable matter. There was one sock marked H 11 in which I found some hair. There was one instep from a sneaker or shoe which was marked H 12. And there was one yellow metal earring which was marked H 13.

Q. Was any hair recovered from the property vouchered under that voucher number?

A. Yes. There was a hair recovered from the item marked H 11, a sock.

Q. Did you designate that in any way?

A. Yes, I did.

Q. How did you designate it?

A. As question number 4, Q 4.

Q. Did you recover any soil from any of the items
vouchered under D 480442 or D 4 480443?

A. Yes, I did.

Q. From which items did you recover soil?

A. I recovered soil from sneakers, from the long
sleeved shirt, from the bra, and from the black pants.

MS. LEDERER: At this time I would ask if the
witness could please be shown People's 175 for
identification.

(Given to witness.)

Q. Do you recognize People's 175?

A. Yes, I do.

Q. And what do you recognize that to be?

A. These are the samples of soil that I removed from
those items of clothing that I -- I gave them a number as a
soil sample number 2.

Q. Is People's 175 in substantially the same
condition as --

MR. CLEMENTS: Withdrawn.

Q. When you recovered the soil from the items that
you mentioned, what did you do with them?

A. I put it through a whole analytical procedure.
After I finished with my analytical procedure, I packaged
it in this particular envelope. Some of these are

microscope slides, some in containers, some in plastic backs.

Q. Is People's 175 for identification in substantially the same condition as when you prepared the slides and the container that you just mentioned?

A. Yes, sir.

Q. As part of your responsibilities in the Criminalistics Unit of the New York City Police Department Lab., did you conduct examinations of soil?

A. Yes, sir.

Q. What information can a scientist in your area obtain from the examination of soil?

A. What one can do is look at a soil sample, look at a questioned sample and a known sample and determine the type of mineral that makes up each sample, the size of the actual granuals making up the sample, the color, various physical characteristics of the soil. And basically it's very similar to hair. You do direct comparisons. You look at the percentage of minerals in the given sample question and the percentage of sample in the known sample, compare them directly. And the most you can do with a soil sample usually is say that the soil questioned sample is similar to a known source. They could have a common origin.

Q. Did there come a time that you requested soil

samples in connection with this case?

A. Yes, I did.

Q. And did you receive some property vouchered under D 480452?

A. Yes, I did.

MR. CLEMENTS: At this time I ask if the witness could be shown People's 121 for identification.

(Given to witness.)

Q. Do you recognize People's 121 for identification?

A. Yes, I do.

Q. And what is People's 121?

A. These are the soil samples I received under that voucher.

Q. Did the soil samples that you received have any H numbers associated with them?

A. Yes, they did.

Q. What were those numbers?

A. One sample was marked H 4. One sample was marked H 5. One sample was marked H 3. And one sample was marked H 7.

Q. After receiving those samples, did you prepare them in any way for analysis?

A. Yes, I did.

Q. And how did you do that?

A. I made an aggregate sample of the four different samples and I compared them against my questioned soil samples.

Q. Is People's 121 in substantially the same condition as when you prepared the specimens for analysis?

A. Yes, it is.

Q. Did there come a time that you went to --

MR. CLEMENTS: Withdrawn.

Q. Did there come a time when you went to Central Park and recovered some soil samples yourself?

A. Yes, there did.

Q. When was that?

A. In August 18, 1989.

Q. Did you go alone?

A. No, I did not.

Q. Who did you go with?

A. I met Detective Aroyo at the Central Park Precinct and he escorted me to the crime scene area.

Q. And where did you go? What part of the park?

A. The area around one hundred -- just past the 102nd Street roadway.

Q. Okay.

And did you collect some soil samples in that

area?

A. Yes, I did.

Q. From where did you collect those soil samples?

A. There's a spot that was pointed out to me that was about fifty feet away from a tree. The tree was marked H 2. And I collected soil from a dark area and soil from a light area. I was mainly interested in looking at the color variation of the area.

Q. When you say fifty feet away from a tree marked H 2, can you tell the members of the jury whether that was north or south of the tree, east or west?

A. When I looked up I was looking north. So I would be south of the tree.

Q. Were you uphill or downhill from the tree?

A. I was downhill.

Q. And the tree was north of you?

A. Yes, sir.

Q. And you were south of the tree?

A. Yes, sir.

MR. CLEMENTS: At this time I would ask if the witness could please be shown People's 176 for identification.

(Given to witness.)

Q. Do you recognize People's 176 for identification?

A. Yes, I do.

Q. And what do you recognize it to be?

A. These are the soil samples I collected when I went to the crime scene area.

Q. And did you prepare those soil samples and put them on slides for analysis?

A. Yes, I did.

Q. And in different types of containers?

A. Yes.

Q. Is People's 176 in substantially the same condition as when you prepared those samples?

A. Yes, it is.

Q. Detective, are you familiar with the soil in Central Park?

A. Yes, sir.

Q. And is all the soil in Central Park the same?

A. Well, in the uncultivated areas, areas that haven't had lawns put down or had flower beds put in, things like this, it tends to be very similar. In the cultivated areas, it tends to vary.

Q. After receiving samples from the crime scene, did you have occasion to compare the soil sample from the clothing, the bra, the shoes, the pants and the shirt, People's 175 for identification with the two known samples,

People's 121 and People's 176?

A. Yes, I did.

Q. And what were the results of your comparison?

A. After comparing them, I concluded that the questioned samples removed from the clothing could have originated from the source of the known samples. My conclusion was they were similar in color, -- there's a little difference in color but similar in color. They had the same or similar consistent in mineral contents, common minerals like quartz, micas which is common in Central Park also like trace minerals, garnet, and other materials.

Q. Thank you.

Did there come a time that you examined a Vitullo kit under D 480441?

A. Yes, there did.

Q. And what did you examine in connection with the Vitullo Kit?

A. I examined the contents of two envelopes that were marked "pubic hair combings" and one was "debris". And two envelopes that were marked finger nail scrapings.

MR. CLEMENTS: At this time I would ask if the witness could be shown 41 E and F for identification.

(Given to witness.)

Q. Do you recognize those two envelopes?

A. Yes, I do.

Q. How do you recognize them?

A. These -- from my initials and from the markings.

Q. What are those envelopes?

A. These are envelopes which were marked "pubic hair combings" and "pubic hair".

Q. Did you remove hairs from those envelopes and mount them on slides?

A. Yes. This envelope I removed some pubic hairs, eight pubic hairs, in fact.

Q. Which one are you pointing to?

A. I designated this envelope as question number 7, Q 7.

Q. Is it 41 E or 41 F that you're speaking of?

A. It says 41 E.

Q. Okay.

And did you prepare slides from the hairs that you found in that envelope?

A. Yes, I did.

Q. Okay.

And did you compare those slides with K 2, the known pubic hair samples from Patricia Meili, People's 174 for identification?

A. Yes, I did.

Q. And what were the results of your comparison?

A. My conclusions were that the questioned hairs in that envelope were in fact pubic hairs of caucasian origin and that they could have originated, were similar to known sample K 2 and they could have originated from the source of the known sample K 2.

Q. That being Patricia Meili?

A. Yes, sir.

MR. CLEMENTS: At this time I would ask if the witness could please be shown 41 G and 41 H in evidence.

(Given to witness.)

Q. Do you recognize 41 G and 41 H?

A. Yes, I do.

Q. And what do you recognize those envelopes to be?

A. These were two envelopes marked "finger nail scrapings".

Q. Okay.

And did you examine the contents of those envelopes?

A. Yes, I did.

Q. And what, if anything, did you find?

A. I found some soily debris.

Q. Did you find any trace material in those envelopes that you could analyze?

A. No, I did not.

Q. Would you tell the members of the jury what your experience is with respect to the examination of finger nail scrapings?

A. My experience has been that most times you rarely find anything of value as far as trace evidence goes under the fingernails.

Q. Thank you, detective.

Detective, did there come a time that you examined clothing vouchered under D 565486, under the name of Kevin Richardson?

A. Yes, there did.

Q. And what was the condition of the clothing before you examined it?

A. It was in sealed bags.

Q. How many bags?

A. Two bags.

MR. CLEMENTS: At this time I would ask if the witness could please be shown People's 132 through 138 in evidence.

(Given to witness.)

Q. Detective, do you recognize those items, People's

132 through 138?

A. Yes, I do.

Q. What do you recognize them to be?

A. These are the items of clothing that I received at the laboratory as being removed from Kevin Richardson.

Q. Okay.

Did you examine those articles of clothing?

A. Yes, I did.

Q. And would you explain the process by which those articles of clothing were examined?

A. The first thing I do is, the area is made scrupulously clean and we cover it with paper.

The next thing we do is layout the clothing, usually one item at a time and examine it visually.

The next thing we do is examine it with a stereo microscope. A stereo microscope is a device that allows you to see things in three dimension at a low magnification. It helps you to see small objects such as small fibers and things.

The next thing we usually do, which I did in this case, which is tape the item with clear cellophane tape and look at the tape under a stereo microscope to see if there is anything I missed in my visual examination.

Finally I vacuum the item of clothing with a

vacuum that has a trap, take the material out of the trap and examine that under a microscope for trace materials.

Q. When you tape an item of clothing, what do you do with the cellophane tape?

A. We usually take long strands of tape and the tape is approximately an inch and a half to two inches thick. And we go over the surface of the clothing. If I were to go over this arm, we would go over the surface of the arm. We take from the different quadrants of the clothing and we mark where we take the item from and we examine the tapes to see if there is any evidence on those tapes.

Q. Was any hair recovered from Kevin Richardson's underpants, People's 134 in evidence?

A. Yes, there was.

Q. And did you designate that hair in any way and mount it on a slide?

A. Yes, I did.

Q. And how did you designate it?

A. I designated one of the hairs as Q 11.

Q. Okay.

Did you look at that slide under a microscope?

A. Yes, I did.

Q. And what did you see?

A. I concluded that was a fragment of a caucasian

head hair.

Q. And did you compare that fragment to the known hair standard that you received from Patricia Meili, People's 174 that you designated K 1?

A. Yes, I did.

Q. What were the results of your analysis?

A. The results of my conclusion were that the questioned hair was similar in all physical characteristics to the known sample K 1. And in my opinion that questioned hair fragment could have originated from the source of the known specimen K 1.

Q. Did you recover any other hair from Kevin Richardson's underpants, People's 134?

A. Yes, I did.

Q. And what was the nature of that hair?

A. There were five hairs that I concluded to be brown colored pubic hairs of negroid origin. And I compared them.

Q. Did you compare them with K 2 the known pubic hair sample of Patricia Meili People's 174 for identification?

A. Yes, I did.

Q. And what were the results of your analysis?

A. My conclusions were, they were in fact dissimilar and they did not originate from the source of the known K 2.

Q. Was any hair recovered from the blue T shirt,

Kevin Richardson's blue T shirt, People's 133 in evidence?

A. Yes, there was.

Q. And did you mount that hair on a slide and designate it with a Q number?

A. Yes. One hair I designated as Q 14. I mounted it on a microscope slide and examined it under the microscope.

Q. What did you see when you examined it?

A. I concluded it was a white colored pubic hair of caucasian origin.

Q. And did you compare that pubic hair with the known pubic hair sample that you received from Patricia Meili, People's 174 for identification?

A. Yes, I did.

Q. And what were the results of your comparison?

A. My conclusion was that that questioned pubic hair, Q 14, was similar in all microscopic characteristics, the physical characteristics and to the known sample K 2 and that questioned specimen could have originated from the source, the known K 2.

Q. Did you recover any other hair from the blue T Shirt?

A. Yes, I did.

Q. What kind of hair was that?

A. One brown colored hair.

Q. Did you compare that with K 1, the head hair sample that you received from Patricia Meili, People's 174?

A. Yes, I did.

Q. And what were the results of your comparison?

A. My conclusion is they were in fact dissimilar in physical characteristics and that questioned hair could not have originated from the known hair K 1.

Q. Was any hair recovered from Kevin Richardson's bluejeans?

A. Yes, there was.

Q. Did you mount that hair on a slide and examine it and give it a Q number?

A. Yes, I did.

Q. What was the Q number that you gave it?

A. Q 16.

Q. Did you look at Q 16 under a microscope?

A. Yes, I did.

Q. And what did you see?

A. I examined it and concluded it to be one fragment of light colored caucasian head hair.

Q. Did you compare that light colored caucasian head hair with the known hair sample, K 1, People's 174 that you received from Patricia Meili?

A. Yes, I did.

Q. What were the results of your comparison?

A. My conclusion was that that questioned hair, Q 16, was similar in all physical characteristics to the known head hair sample, K 1, and that it could have originated from the source of that known sample.

Q. Did you recover any other hair from the bluejeans, People's 1 35 in evidence?

A. Yes, I did.

Q. And what was that?

A. It was a tuft of -- it looked like, I would call it dust ball, tufted fiber.

Q. Were any hairs contained in that tuft of dust?

A. Yes, there were.

Q. And were any of them similar to the known head pubic hair sample of Patricia Meili?

A. No, they were not.

MR. CLEMENTS: At this time I would ask if the witness could please be shown People's 177 for identification.

(Given to witness.)

Q. Do you recognize People's 177 for identification?

A. Yes, I do.

Q. And are those the hairs that you recovered from Kevin Richardson's clothing and mounted on slides?

A. Yes, they are.

Q. Are they in substantially the same condition as when you mounted them?

A. Yes, they are.

Q. Detective, did you recover any soil from Kevin Richardson's clothing?

A. Yes, I did.

Q. From what articles of clothing did you recover the soil?

A. I recovered it from two articles, from the sneakers and from his bluejeans.

Q. And what did you do with them?

A. I collected it and put it into containers and compared it against known samples of soil from the crime scene area.

MR. CLEMENTS: At this time I would ask if the witness could be shown People's 178 for identification.

(Given to witness.)

Q. What is People's 178 for identification?

A. These are in fact the soil samples that I removed from Kevin Richardson's clothing.

Q. And did you mount some of the soil on slides and put it in different types of containers for analysis?

A. Yes, I did.

Q. Is People's 176 -- I'm sorry People's 178 in substantially the same condition as when you prepared those samples?

A. Yes, it is.

Q. Did you compare People's 178, the soil recovered from Kevin Richardson's clothing with the soil samples recovered from the crime scene, People's 121 and People's 176?

A. Yes, I did.

Q. What were the results of your comparison?

A. My conclusions again were that they were similar in color, in mineral content and that they could have -- the questioned samples could have originated from the source of the known soil sample, which was the crime scene area.

Q. Thank you.

Did you also examine some fingernail scrapings vouchered under D 565488 under the name of Kevin Richardson?

A. Yes, I did.

Q. What were the results of your analysis?

A. There were no -- there was no trace evidence under the fingernails from the right hand side or the left hand of Kevin Richardson that was of any value.

Q. Thank you.

Did there come a time that you examined any property vouchered under D 611607 the clothing from Steven Lopez?

A. Yes, there did.

MR. CLEMENTS: At this time I would ask if the witness could be shown 139 through 141.

I'm sorry. I misspoke.

People's 139 through 46 A and B.

(Given to witness.)

Q. Detective, do you recognize People's 139 through 146 A and B?

A. Yes, I do.

Q. And how do you recognize those items?

A. From my markings and from the laboratory numbers.

Q. Is that clothing that you examined in connection with this case?

A. Yes, it is.

Q. Was hair recovered from any items of clothing in connection with People's 139 through 146 A and B?

A. Yes, there was.

Q. From which article of clothing was hair recovered?

A. There was hair recovered from many of the articles. One of the articles was a black shirt, from one of the sleeves.

The hair was recovered and mounted and examined.

Q. Okay.

Did you designate that hair in any way?

A. Yes, I did.

Q. And what did you call it?

A. I designated that hair as Q 19, question number 19.

Q. Did you look at it under a microscope?

A. Yes, I did.

Q. And what did you see?

A. I concluded it to be one light colored head hair of caucasian or or caucasoid origin.

Q. Did you compare that head hair with People's 174, K 1, the known head hair sample from Patricia Meili?

A. Yes, I did.

Q. What were the results of your comparison?

A. My conclusions were that that questioned hair, Q 19 was similar in all microscopic and physical characteristics to the known head hair specimen K 1. That questioned head hair could have originated from that known hair specimen.

Q. Were any other hairs recovered from that clothing?

A. Yes, sir.

Q. Okay.

And did you --

MR. CLEMENTS: Withdrawn.

Q. Did you mount those hairs on microscopic slides and examine them?

A. Yes, I did.

Q. Did you compare them with the known head and pubic hair samples of Patricia Meili?

A. Yes.

Q. What were the results?

A. They were all in fact dissimilar to the known specimens, K 1, and K 2, in that they did not originate from the source of those two knowns.

MR. CLEMENTS: At this time I would ask if the witness could be shown People's 179 for identification.

(Given for witness.)

Q. Do you recognize People's 179?

A. Yes, I do.

Q. And what do you recognize it to be?

A. These are the microscope slides in which the -- I mounted, the hairs from the clothing of Mr. Lopez.

Q. Is People's 179 in substantially the same condition as when you mounted those slides?

A. Yes, it is.

Q. Did you recover any soil from Steve Lopez'
clothing?

A. Yes, I did.

Q. From which articles of clothing?

A. A tiny amount of soil I recovered from his
sneakers and another tiny amount recovered from the cuffs of
his pants.

Q. Okay.

Were you able to compare that soil with the soil
from the crime scene, the two different samples recovered,
People's 121 and People's 176?

A. No, I was not.

Q. Why not?

A. The quantity was too small to make a comparison.

Q. Detective, did you also have occasion to examine
any property vouchered under D 565485, the clothing from
Antron McCray?

A. Yes, I did.

MR. CLEMENTS: At this time I would ask if
the witness could be shown People's 128 through
131 A and B.

(Given to witness.)

Q. Do you recognize those articles of clothing,
People's 128 through 131 A and B?

A. Yes, I do.

Q. How you do you recognize those articles of clothing?

A. From my initials, from the lab. numbers, my different markings.

Q. Was any hair recovered from that clothing, People's 128 through 131 A and B?

A. Yes, there was.

Q. Was a Q number assigned to that hair -- those hairs and were those hairs mounted on slides?

A. Yes.

Q. Were those hairs compared to K 1 and K 2, the known head and pubic hair samples from Patricia Meili, People's 174 for identification?

A. Yes they were.

Q. What were the results of that comparison.

A. My conclusions were that first I concluded they were brown colored hairs of negroid origin and they were dissimilar to the known head and pubic hair specimens of Patricia Meili.

Q. Did you recover any soil from the clothing of Patricia Meili?

I'm sorry. Did you recover any soil from the clothing of Antron McCray?

A. Yes, I did.

Q. From which articles ever clothing did you recover soil?

A. From his sweatshirt, from his sneakers, from his bluejeans.

Q. And did you prepare any slides from that soil and put the soil in different containers for analysis?

A. Yes, I did.

MR. CLEMENTS: At this time I would ask that the witness be shown People's 180 for identification.

(Given to witness.)

Q. Do you recognize People's 180?

A. Yes, I do.

Q. And what do you recognize it to be?

A. These are the containers I placed the soil that I removed from Antron McCray's clothing into.

Q. Did you have occasion to compare that soil, People's 180 with the samples from the crime scene, People's 121 and People's 176?

A. Yes, I did.

Q. What were the results of that comparison?

A. Again my conclusions were that they were similar in mineral content, in color and that the questioned samples

could have originated from the source of the known soil specimens.

Q. Detective, did you also have occasion to examine property vouchered under D 565489, the clothing from Raymond Santana?

A. Yes, I did.

MR. CLEMENTS: At this time I would ask if the witness could please be shown People's 157 through 164.

(Given to witness.)

Q. Do you recognize People's 157 through 164?

A. Yes, I do.

Q. And how do you recognize those articles of clothing?

A. These are -- from my markings and from the lab. number, these are the items of clothing I received from Raymond Santana.

Q. Was any hair recovered from the clothing of Raymond Santana?

A. Yes, there was.

Q. And were those hairs mounted on slides and compared with K 1 and K 2, the known head and pubic hair samples from Patricia Meili, People's 174?

A. Yes, they were.

Q. Were any of the hairs recovered from Raymond Santana's clothing similar to the known pubic and head hair samples of Patricia Meili?

A. No, they were not.

Q. Did you recover any soil from his clothing?

A. Yes, I did.

Q. From what articles of clothing?

A. From his sneakers.

MR. CLEMENTS: At this time I would ask if the witness could be shown People's 181 for identification.

(Given to witness.)

Q. Do you recognize People's 181?

A. Yes, I do.

Q. What do you recognize it to be?

A. This is the containers and the soil I removed from the clothing and placed into the containers and microscope slides.

Q. Did you compare the soil that you recovered from Raymond Santana's sneakers with the soil that was sent to you from the crime scene, People's 121 and People's 176?

A. Yes, I did.

Q. And what were the results of your analysis?

A. Again my conclusions were that they were similar

in color, in mineral contents and that they could have -- the questioned samples could ever originated from the source of the known specimens.

Q. Did there come a time that you requested certain head and pubic hair samples?

A. Yes, sir.

Q. And did you receive head hair and pubic hair samples from Kevin Richardson, Kharey Wise, Raymond Santana, Antron McCray and Steve Lopez?

A. Yes, I did.

Q. And did you mount those hairs on slides and examine them?

A. Yes, I did.

Q. And did you compare them with Q 4 and Q 8, the questioned hairs from Patricia Meili's bra and sock?

A. Yes, I did.

Q. What were the results of your comparison?

A. My conclusions were that they were in fact dissimilar in physical characteristics and that those questioned hairs, Q 4 and Q 8, did not originate from anyone of those individuals.

MR. CLEMENTS: At this tiem the People offer

41 E, People's one hundred -- People's 109,

People's 121 and People's 172 through 181 into

evidence.

THE COURT: Would you come up here one
minute, please?

(At this time counsel approached the bench.)

(Continued on next page.)

(Whereupon, the following occurred at sidebar:)

MS. LEDERER: Judge, I think if there's even the possibility that it wasn't done, maybe it's easier to go back with this witness instead of having a sidebar. If there's some kind of a read back, then what do we do.

THE COURT: 173 we're talking about.

(Whereupon, the following occurred in open court:)

Q Detective, just so the record is clear, would you please look at what has previously been marked as People's 173 for identification and tell me if you recognize it?

A This is the microscope, except it wasn't broken, that I mounted those three hairs from the rock on that I designated as Q 2.

Q Other than the fact that the slide now appears to be broken, is that slide in substantially the same condition as when you prepared it?

A Yes, sir.

Q And did you compare those hairs with the known head hair sample from Patricia Meili, K one, People's 174?

A Yes, I did.

Q And what were the results of that comparison?

A My conclusions were they were similar in all

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physical and microscopic characteristics and those three questioned fragments of Caucasian head hair could have originated from the source of the known head hair specimen, K 1.

Q Thank you.

THE COURT: Okay. Now you're offering it?

MR. CLEMENTS: At this time, your Honor, the People are offering in evidence People's 41 E, People's 109, People's 121 and People's 172 through 181.

MR. DILLER: I want to see them.

THE COURT: You want to see them?

MR. DILLER: Please.

(Pause)

MR. DILLER: There is no objection.

THE COURT: No objection. Mr. Moore, any objection?

MR. MOORE: No.

THE COURT: All right. Mark them.

(Whereupon, People's Exhibits 41 E, 109, 121, and 172 through 181 were marked in evidence)

MR. CLEMENTS: I have no further questions.

(Pause.)

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BY MR. DILLER:.

Q Good afternoon, Mr. Petraco.

A Good afternoon.

Q I'm going to show you -- this is with respect to the soil sample.

THE COURT: One second. You want to take a break?

COURT OFFICER: They can't see.

(Pause)

Q I'm going to show you, with respect to the soil samples first, what has been marked as People's 137 A and B in evidence, Kevin Richardson's sneakers, and ask you to look at them and to show us where on the sneaker the soil sample was removed?

A Sample was removed from this area, this whole sole area.

Q The sole area. And you have marked it, is that correct?

A Yes, I have.

Q Now, I now show you what has been marked as 135 in evidence, Kevin's blue jeans that you said you had removed soil. And show us where the soil was removed from that?

A Areas down here, near the cuffs, bottom parts of the legs.

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Q And you so marked it?

A Yes, sir.

Q Now, am I correct, Mr. Petraco, that you also examined the blue leather jacket of Kevin Richardson, which is 138 in evidence? Would you please look at that?

A Yes.

Q And did you recover soil from that?

A No. When I examined it I saw that there was a smudge, it looked like it might be soil, but there was no way I could remove it from the area. It wasn't crusty. It was just ground into the leather or vinyl, whatever this is made out of.

Q So it was impossible, therefore, to remove it?

A Yeah. If I could remove it, I could do nothing as far as comparison would go anyway.

Q I'll take that coat.

Now, you testified that the soil you removed from the sneakers and the blue jeans, which is 135 and 132, matched the soil recovered in the crime scene area, is that correct?

A Yes. I said it was similar.

Q Similar. Now, the crime scene area is just a place where someone took you, is that correct?

A Yes.

Q Who is it, Detective Arroyo?

2 A Yes.

3 Q Now, did you also examine the soil area of other
4 parts of the park?

5 A This case, no, sir. But I have in the past
6 examined soil from the park.

7 Q And would I be correct in saying that the
8 uncultivated soil -- location where you characterized it
9 as the crime scene location -- is similar to other
10 uncultivated soil many different places in the park?

11 A Yes, sir.

12 Q And, as a matter of fact, you're familiar Central
13 Park, are you not?

14 A Yes, I am.

15 Q And there are great areas of uncultivated soil in
16 Central Park?

17 A There are areas of uncultivated soil.

18 Q There are areas of uncultivated soil in the
19 vicinity of say a Hundred Street to 106th Street near the
20 park wall? Are you familiar with that?

21 A I would speculate that there are but I haven't
22 examined that area.

23 Q You haven't examined any other area?

24 A Well, again I've looked at various areas around the
25 park over the course of my last seventeen years, but --

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Q What I'm only asking is that what you had

identified as the soil on the sneakers and the jeans could
have come from many other places in the park that aren't
cultivated?

A Oh, yes.

Q Now, you also testified this afternoon with respect
to hairs. Would I be correct that if you took your hat and
coat and placed it in this chair and I took my hat and coat
and placed it contiguous to your hat and coat, that if you
had a fragment of a hair on your hat and coat, it could pass
to my hat and coat?

A It's very possible.

Q Now, one of the first questions that you were asked
by Mr. Clements was where you work. By the way, where do
you work now? Are you retired?

A Right now I'm unemployed.

Q And -- for the last year and a half?

A Yes, sir.

Q But one of the questions asked you, how old you
were and also asked you if you were married?

A Yes.

Q And being married, you ever experience any hair
that your wife had found on a coat?

MR. CLEMENTS: Objection.

THE COURT: I'll let him answer. His coat or
her coat?

Q Your coat?

A My own hair.

Q Someone else's hair?

A Not particularly, no.

Q But you know about it?

A Yes. I've heard things like that.

Q As a matter of fact, hair is airborne, isn't it?

A Well, it could be, yes.

Q And certainly it's easy to pass from one garment to
the next, isn't that so?

A Yes, sir.

Q Are you familiar with where these clothes in the
first instance were assembled?

A No, I'm not.

Q Do you know how it was assembled?

A No, I don't.

Q Do you know by whom it was assembled?

A Just from the vouchering officers. That would be
it.

Q So you were not familiar with the conditions under
which these clothes were assembled?

A No, I'm not.

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Q Also you were not familiar with the clothes that Kevin was wearing, which is now in evidence, if those clothes came in contact with anyone else's clothes?

A No, I'm not.

Q All you could tell us is that which you received, I think in this case at the precinct, is that correct?

A Yes. In the case of the clothing I received that in the laboratory. They were delivered to the laboratory.

Q At the laboratory. Where is your laboratory, by the way?

A It's on 20th Street and Second Avenue in the police academy.

Q Is that across from the 13th Precinct?

A Same building.

Q Yeah. Now, do I understand further that those clothes you had identified with respect to hair was in one bag?

A One jacket was in one bag and the remaining items were in another bag.

Q So the T-shirt and the underpants, they were all contiguous, in fact pushed into a bag?

A Yes, sir.

Q And would I be correct in saying that under those circumstances there's -- if there's a hair fragment on one

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garment, there's a potential or certainly possibility of it transferring to the -- another garment?

A Yes, sir.

Q Which you don't know obviously if it happened in this case?

A No, I do not.

Q You take great pains in the physical laboratory examination by putting fresh paper on a table of some sort, is that correct?

A Yes, sir.

Q And carefully analyzing each item of clothes, is that correct?

A Yes, sir.

Q But, as a matter of fact, you're an expolice officer -- am I correct in saying that that same pain and care wasn't taken in the assembling of the clothes?

MR. CLEMENTS: Objection.

THE COURT: I'll allow him to answer.

A I'm not familiar with what in fact did happen when the clothing were collected.

Q All you know they were pushed in one bag, is that correct?

A That's the way I received them. Yes, sir.

Q Now, you also testified a good deal about the

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similarity, you talked about some scientific determination, that it were possibly similar. You could exclude, am I correct, certain hair samples, for example Caucasian from Negroid, is that correct?

A Yes.

Q With no trouble. And you could also clearly determine the origin of the hair, that is to say, if it's axillary hair, pubic hair, head hair and so forth?

A Most times, yes.

Q You have no notion if it's the sex, male or female?

A No, I do not.

Q Would it be fair to say that in the City of New York, in the metropolitan area, there maybe as many as millions of people with the same characteristics, the 20 characteristics that you have determined here?

A No, sir.

Q How many would there be?

A No way to give you the number, sir.

Q Well, you say it wouldn't be in the millions. Would it be in the thousands?

A Again I really can't give you a number because there hasn't been any research along those lines.

Q Would it be fair to say that the best you could say is that it is similar?

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A Yes, sir.

Q And you can not say with a scientific degree of certainty the numbers of people -- in other words, the ratio or percentage that it would be, is that correct?

A That would have that same range of physical characteristics?

Q Yes, sir.

A No, sir, I can not.

Q Am I correct, that it was possible that the samplings came from Patricia Meili?

A Yes.

MR. CLEMENTS: Objection.

Q And it was also possible that it came from some unknown person?

A Well, that person would have to have the same range of physical characteristics as Patricia Meili. Yes, sir.

Q And that certainly is a possibility, is it not?

A In a sense it is. But I've looked at thousands of hair standards over the course of my work and I haven't seen any that have the same range of physical characteristics yet. But I really haven't looked at them in the sense of exclude one from the other. But I have in fact looked at thousands of standards and haven't seen two that matched exactly.

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Q But it's certainly possible, is it not?

A Yes.

Q So it's possible that it comes from another source than Patricia Meili, is that correct?

MR. CLEMENTS: Objection as to possible.

THE COURT: Well, I'll let him answer.

A Again, yes. If that person had the same range of physical characteristics, yes, sir.

Q And it's also possible that the hair -- these are very, very small samplings, is that correct, that you found?

MR. CLEMENTS: Objection as to which samplings.

Q The hair found, for example, on the T-shirt --

A Yeah. They were fragments of hairs.

Q You couldn't observe it with the naked eye, is that correct?

A If it was against a color contrast you could. But in these cases I found them on tapes.

Q Only on tapes. And looking at them with the naked eye you can not locate these hair samplings?

A No, sir.

Q So we can not say here, is that correct, that this was not transported by coming in contact with other clothes?

MR. CLEMENTS: Objection.

THE COURT: I'll let him answer.

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Petraco/recross/Mr. Moore

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A No, I can not.

MR. DILLER: May I have just one moment?

(Pause)

Q Am I also correct that the individualization here is not like a fingerprint? I mean, there's not that degree of certainty like a fingerprint would be?

A Yes, you're right.

MR. DILLER: I have no further questions.

THE COURT: Mr. Moore.

CROSS EXAMINATION

BY MR. MOORE:.

Q Mr. Petraco, good afternoon.

A Good afternoon, sir.

Q You had indicated that you found the hair sample on the sleeve of Mr. Lopez, am I correct?

A Yes, sir. It was found on the sleeve, black shirt.

Q Did you ever compare that hair sample to the hair sample from Mr. Lopez's head?

A Well, inadvertently it was grossly different, so just looking at the head standard and the questioned hair, I in fact did but not on a comparison microscope, no, sir.

Q So basically what you obtained was a hair sample that you say approximated the color and the physical characteristics or characteristic of a Caucasoid person, am

2 I correct?

3 MR. CLEMENTS: Objection. Which hair.

4 Q The hair from the sleeve of the shirt of Mr. Lopez?

5 A The questioned hair identified as a head hair from
6 a person of Caucasoid origin.

7 Q All right. Now, Mr. Petraco, do you not know that
8 there are many Hispanic people who have Caucasoid hair? Do
9 you know that for a fact?

10 A Yes, sir.

11 Q And so, therefore, the hair samples of some
12 Hispanic people would approximate in physical
13 characteristics to what is called a Caucasoid person, isn't
14 that a fact?

15 A It's been my experience Hispanic people tend to
16 have mixed racial characteristics. They reflect several --
17 they reflect all or any two of the races.

18 Q Yeah. There are some Hispanic people who would
19 have Negroid characteristics and some who would have
20 Caucasoid characteristics?

21 A Yes, sir.

22 Q So therefore what you call Caucasoid individual, in
23 fact the hair from Mr. Lopez that you found on the sleeve
24 could have come from a person of Hispanic origin, say, isn't
25 that a fact?

2 A That person would have to have all Caucasoid
3 characteristics.

4 Q And you said there are some Hispanic people who do
5 in fact have some Caucasoid characteristics?

6 A Yes.

7 Q So apart from telling us, for example, that this
8 hair came from a person with Caucasoid characteristics, and
9 that it was brown, you couldn't specify or could you specify
10 in any further detail the specific characteristics of this
11 hair?

12 A I'll give you a list of characteristics. What I
13 did was compare them against a known sample and render an
14 opinion as to possible occurrence of that hair from a known
15 sample.

16 Q I understand. You also said that the typical
17 person sheds about a hundred hairs per day, is that correct?

18 A Yes, sir.

19 Q And there are millions of people in New York City?

20 A Yes, sir.

21 Q So there are million of hairs he -- of hair --
22 of hairs that are shedded each day, aren't they?

23 A Yes, sir.

24 Q So if, for example, an individual goes to a school
25 where there are a lot of individuals who are of Caucasoid

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features, for example, it is possible, is it not, that this individual can accumulate on his clothes or whatever hair that is shed by different types of individuals?

MR. CLEMENTS: Objection.

THE COURT: Overruled.

Q Isn't that so?

A Yes, sir.

Q Now, the tests that you conducted, the criminalistics tests, can exclude -- you can say definitely that the hair found on this individual was not let's say Caucasoid or Negro hair, isn't that correct?

A Yes, most times.

Q But you can not say, can you, that this particular hair found on an individual's clothing came from a specific individual?

Can you state that with any degree of medical certainty or scientific certainty?

A Again, all you can state is that it fits into the range and it could have come from someone.

Q Right.

A You can not individualize it.

Q I understand. So there's a difference in saying it could have come and in saying that it did come from a particular individual, isn't that correct?

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A Yes, sir.

Q So all you can say is that the hair that is found on Lopez could have come from Patricia Meili, but as you sit there, you can not say that it did come from Patricia Meili, am I correct?

A Yes, sir.

Q Now, with regard to the soil characteristics that you mentioned with regard to Mr. Diller, you stated that you were not particularly familiar with all the different parts of Central Park in terms of examining the soil characteristics, is that correct?

A I'm looked at various areas of the park. He mentioned a particular area by a wall, I think was 106th Street. I'm not familiar with that area, no, sir.

Q But this soil that you gathered was gathered from a particular area in Central Park around the 102nd Street cross drive, am I correct?

A Yes, sir.

Q And in that particular day when you conducted these soil tests you did not also collect the soil from the reservoir, did you?

A No, I did not.

Q You didn't collect it from the ball fields, did you?

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A No, sir.

Q You didn't collect it from the north meadow, did you?

A No, I did not.

Q You didn't collect it from the Harlem meer, did you?

A No, I did not.

Q So all you can say is that -- and you also admitted that there are several uncultivated parts of Central Park, am I not correct?

MR. CLEMENTS: Objection as to form.

THE COURT: Objection as to form is sustained.

Q Are there several uncultivated areas in Central Park?

A To my knowledge, yes, sir.

Q So all you could say is that the soil on the clothing of let's say Kevin Richardson approximated in color and mineral content to the soil from the crime scene, am I not correct?

A Yes, sir.

Q And you do not know as you sit there whether it approximated in soil and mineral content to the soil from the ball fields, do you?

A I would think it doesn't because those ball fields

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tend to be cultivated areas. They have clay tracks and, you know, sod placed down.

Q Well, in areas around the reservoir, are there uncultivated areas around there?

A Yes, sir.

Q And again this particular activity that you do does not lead you to state with any degree of scientific certainty that this soil in fact came from a particular area of Central Park, am I not correct?

A Not particular area, but can in fact allow me to say that I believe it came from Central Park.

Q Yeah. You can state as you sit there that it is similar to the soil and mineral content of a particular area, am I correct?

A Yes, sir.

Q But you can not say with any degree of scientific certainty that it did in fact come from that area, am I correct?

A Again, I can say that I believe it came from that area with my data that I'm collecting, all right. That's with a degree of scientific certainty. But I can't say it came from one specific spot in Central Park, I think is what you're asking.

Q I understand.

2 A Okay.

3 Q And since you did not collect the soil and mineral
4 content from the other areas, you have no basis for
5 comparing the soil on his clothes with those other areas?

6 A I have over the years collected soil from various
7 areas in the park, uncultivated areas.

8 Q I'm not asking you what you did in the past. What
9 you did in that particular --

10 A It was part of my examination. I have on record
11 what in fact I found in these different areas, so at a later
12 date if I ever have to do a comparison I have something to
13 compare it against.

14 Q In that particular test you didn't compare it with
15 those other areas in Central Park, did you?

16 A No, sir.

17 MR. MOORE: No further questions.

18 REDIRECT EXAMINATION

19 BY MR. CLEMENTS:.

20 Q Detective, what have you done since you retired
21 from the police department?

22 MR. MOORE: Objection.

23 THE COURT: Overruled.

24 A I've returned to school.

25 Q With respect to the bags of clothing that you

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received at the police department laboratory, what condition

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were those bags of clothing in when you received them?

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A Sealed state.

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Q Okay. Was each individual's clothing sealed in a

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separate bag?

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A Yes, it was.

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Q Detective, I'd like to direct your attention to the

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characteristics that you observed with respect to the known

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head and pubic hair samples from Patricia Meili. Would you

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tell the members of the jury what characteristics you say

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you observed with respect to the head hair standard?

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A You want all the characteristics?

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Q Yes, if you would.

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A (Pause)

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Q Are you looking at some notes to refresh your

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recollection about the characteristics with respect to the

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head hair standard from Patricia Meili?

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A Yes, I am. First thing I did was look at the

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length and shapes it. And I measured them with a ruler.

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Q You have to speak into the microphone.

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A First I look at the length and shape. They're all

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shaped in configuration. I looked at it under reflective

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light for color. I did that with my stereo microscope so I

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could see what the color would look like under normal

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reflective light. When I mounted the hairs and looked at them with a microscope I looked at transmitted light color, which is what you saw this after -- earlier this afternoon.

Then I looked at areas of the tip. There was a range of physical characteristics. Some were cut. Some were tapered. I looked at the pigmentation along the shaft, the sides, the shape of the pigment granules, distribution of pigment granules, looked at the configuration of the medulla configuration, which is the central canal going down. I looked at the make-up of the cuticle, see if it was serrated, if it was smooth. I also looked at the proximal end, which is the root end of the hair, the hair closest -- part closest to the head in this case. I looked at that end to see if in fact what kind of root was there, if I -- any cortical fuscii or other characteristics, a whole list of characteristics.

Plus I made measurements of the shaft diameter variation along many different hairs, not just one, but probably a couple -- at least two dozen of the different hairs from that sample.

Q For example, what was the range in diameter of her head hair?

A Thickness range ranged from anywhere from thirty

1 micrometers, which is -- one micrometer is equal to a
2 millionth of an inch -- I'm sorry. A millionth of a
3 meter, one micrometer, is equally to one millionth of a
4 meter. These were thirty micrometers thick. It was thirty
5 millionths of a meter to approximately ninety meters. That
6 was the range of thickness along the shaft of the hair.
7 There were various ranges. Some had no range. Some were
8 about forty micrometers thick. Some were fifty micrometers
9 thick. Some reflected range.
10

11 Q Were there any other characteristics that you
12 observed with respect to the head hair sample?

13 A Yes. Color range was a light blondish color to a
14 brown color. The medulla was absent in some hairs. It was
15 fragments in some hairs. It was amorphous in some hairs.
16 The pigment was fine to medium. The distribution was even
17 along the hairs. And all these other physical
18 characteristics.

19 I'd like to point out that's not where we stopped. What
20 we do next is take that --

21 MR. MOORE: Objection.

22 THE COURT: Go ahead. What did you --

23 Q What you did?

24 A What I did in this case was in fact once I thought
25 I had a similarity between the questions and the knowns, I

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took that known hair that I thought was similar and took the questioned hair and then went from root to tip and compared those side-by-side on that comparison microscope. You can -- when you look through a comparison microscope you actually overlay one hair -- optically overlay one hair on top of the other so you can see any subtle variation in thickness. You can see any subtle variation in the pigment color, which is I find to be a very important characteristic when you're doing a comparison when you want to see if a hair could have come from someone.

It's a very -- it's not just a superficial examination. It's a very stringent examination.

MR. MOORE: Objection.

THE COURT: Don't explain it. Just tell us what you did.

A What you do, you take that questioned hair. Once you think you have a similarity, one hair similar to another, and you compare them side-by-side. It might take a couple of hours to compare one hair. You look at all these features in the hair. So not just writing these down and noting that these features are there, but the next thing you do is take one and compare it directly to the other hair from the root area right to the tip area.

Q Now, Mr. Moore asked you some questions about the

1 hair that was recovered from the shirt of Steven Lopez. I
2 believe he designated that Q 19?

3 A Yes.

4 Q Do you recall what the characteristics were of that
5 hair?

6 A Pull my notes out. The questioned hair, question
7 19, again I have a whole range of characteristics that I
8 looked at, again such as the color, it was a light bloodish
9 colored hair, reflected light color and transmitted light
10 color.

11 I look at the medulla. Was absent. The tip was cut.
12 The shape was old cross-section. The root was intelligent,
13 which means it's a shed hair. The cuticle margin was thin.
14 Again all of these characteristics, thickness, the range and
15 variation was between thirty-five micrometers and fifty-five
16 micrometers on this particular hair. And it fit into the
17 range.

18 The next thing I did was take that questioned hair and
19 compare it directly to the known sample of head hair from
20 Patricia Meili.

21 Q And you do that using the comparison microscope
22 that we saw on the slide?

23 A Yes.

24 Q Now, did you physically compare that hair Q 19 with
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the known head and pubic hair samples of Steven Lopez?

A Again when I looked at that questioned hair and I got the knowns from Steven Lopez, I looked at them. They were grossly different just by eye and by stereo microscope, so there was no reason to go on further as far as an examination would go.

Q What do you mean that they were grossly different?

A Color was grossly different as far as one was very dark brown, one was extremely light, almost blond. The thickness, one was much coarser than the other. Just by eye, from having experience of having done literally thousands of hair comparisons, that in fact you could tell right away if one was a potential of being similar and one is totally different.

Q Mr. Diller asked you some questions about the transfer of hair between clothing. Do you recall those questions?

A Yes.

Q With respect to Kevin Richardson's underwear, what type of hair was recovered from Kevin Richardson's underwear -- underpants?

A From his underpants, primarily pubic hairs.

Q And in addition to the pubic hairs, was any other hair recovered?

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A From his underpants there was one fragment of Caucasian head hair.

Q Was that head hair compared with the hair of Patricia Meili?

A Yes, sir.

Q What were the results of that comparison?

A That that questioned hair was similar to the knowns. Again, with the same kind of rigorous comparison. In fact, that questioned hair was similar to the known K one sample, and that it could have originated from the source of the known.

Q Are you able to state that opinion to a reasonable degree of scientific certainty?

A Yes, sir.

Q And with respect to the other comparisons that you made today, are you able to state those opinions to a reasonable degree of scientific certainty?

A Yes, sir.

Q Mr. Moore asked you some questions about different areas of the park. Do you know whether there is cultivated soil or uncultivated soil in the area of the jogging track around the reservoir?

A Just from my own personal knowledge, no. Just from sight, some areas looked like they're cultivated, some areas

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look like they're not cultivated.

Q And with respect to the ball fields in the area of the north meadow, are they cultivated or uncultivated, if you know?

A Ball fields would normally be cultivated. I don't know for a fact that they were, but I would be surprised if they weren't.

Q What do you mean by cultivated?

A Again, made to look like a ball field. You put red clay around the track to run the bases. You put sod in the center of the diamond, like most ball parks would have. So that would be a cultivated area.

When you're changing -- basically you're changing the top layer geology of that area to suit your need.

(Continued on the following page.)

T 4

Q. Thank you.

MR. CLEMENTS: I have no further questions.

CROSS-EXAMINATION BY

MR. DILLER:

Q. Mr. Petraco, the known sample from Patricia Meili, I believe the head sample, is K 1?

A. Yes.

Q. How large a fragment was it? Could you describe to us what that fragment was?

A. From the knowns?

Q. The known sample.

A. How many hairs?

Q. How many hairs you had and the length of it. The length of the sample.

A. The known head hairs that I measured ranged from about two centimeters to eleven centimeters.

Q. And what was the range that you took from Q 11, the underpants of Kevin Richardson, 134 in evidence?

A. I'll look at it. Excuse me.

This is not a range. This is just one fragment. I measured it.

Q. Yeah.

A. Q 11 was approximately two centimeters long.

Q. And the known sample ranged from two to eleven?

A. Yes. But again, this is a fragment. It could have been smaller. It could have been a centimeter. It's broken off. It's a hair that's broken. It doesn't have a root tip and it doesn't have a tip. It's just broken hair. So that hair could be any size. It doesn't have to fit in that range. Although it did, it doesn't necessarily have to. It could be a smaller hair that broke off.

Q. Mr. Clements asked you if you received the property in a sealed state?

A. Yes.

Q. You don't know the state it existed, prior to the time you received it. Do you?

A. No, sir.

Q. And he also indicated -- questioned you with respect to the clothes in the bag. Weren't all Kevin's clothes in one bag, other than the jacket?

A. Yes.

Q. In fact, they were pressed in pretty tightly. Were they not?

A. Yes, sir.

MR. DILLER: I have no further questions.

RE CROSS EXAMINATION

BY MR. MOORE:

Q. With respect to the questioned hair found on Steven Lopez; isn't it a fact you found four different sets of hair on Steven Lopez?

A. On Steven Lopez I found numerous hairs. Yes, sir.

Q. Isn't it a fact you found a set of hair, which you designated as Q 18? Am I correct?

A. Yes, sir.

Let me get my notes but.

MR. CLEMENTS: Objection as beyond the scope.

THE COURT: Overruled.

A. Okay.

On Mr. Lopez' clothing, one of the sets of hair was several fragments of hair. In fact, eight fragments that I designated as Q 18.

Q. Good. Okay.

That was, in fact, dissimilar from the known sample from Patricia Meili?

A. Yes, sir.

Q. You found another sample, which you designated. Q 20. Am I correct?

A. Yes, sir.

Q. That was, in fact, also dissimilar of the known hair sample of Patricia Meili. Is that correct?

A. Yes, sir.

Q. You found another set which you designated Q 21.

Am I not correct?

A. Yes.

Q. That was also dissimilar to Patricia Meili. Am I not correct?

A. Yes.

Q. With respect to the Q 19, which was the only one that was similar, that was head hair. Wasn't it?

A. Yes, sir.

Q. You described it as shed head hair?

A. Yes. It had a telogen phase root. It means it had a dried-up root bulb. It was just shuffled off by the body.

Q. That indicated that it may have come from hair that was shed, for example, and for example that fell on his clothing. Is that correct?

A. Yes. It's possible.

Q. You also described, in terms of physical characteristics, you said it was very lightly colored, almost blonde?

A. Yes, light colored.

Q. You used the word "blonde"?

A. Light brown to a blonde, yes.

Q. In fact, in terms of color, the hair of Patricia

Meili was not blonde. Was it?

A. Her hair --

Q. I'm asking him --

THE COURT: You're asking him. Let him answer.

Q. It was --

THE COURT: Just a moment.

Do you want to withdraw the question?

MR. MOORE: No. No. I would ask the question.

Q. Was the hair of Patricia Meili blonde? Yes or no?

A. Some of the hair is light colored like a blonde color to brown, a light brown color.

Q. But you indicated that that color, the Q 19, was in fact blonde. Was it not?

A. Again, it's a light colored blonde to a light brown colored hair.

Q. So you were giving the range of colors. Isn't that correct?

A. Yes.

Q. You're not specifying any specific color?

A. No. I specified the colors when I really get down to looking at colors. When I do that comparison, when I get that questioned hair and I get that known hair and I put

1
2 them on a comparison microscope and look at them side by
3 side, that's when I really look at the coloring and make a
4 determination, is there a subtle difference in there or
5 isn't there. If there was a very strong difference, I would
6 obviously conclude that the hair could not have originated
7 from that particular individual.

8 MR. MOORE: No further questions.

9 THE COURT: Do you have anything else?

10 MR. CLEMENTS: No, your Honor.

11 THE COURT: Thank you.

12 (Witness leaves courtroom.)

13 THE COURT: Members of the jury, we'll recess
14 at this point.

15 As you probably remember, Thursday is my
16 calendar day in which I must take other cases that
17 have nothing to do with this case but I must
18 calendar them. That will be tomorrow morning.

19 We will not resume until tomorrow afternoon
20 at 2:15.

21 I will ask everybody, participants, jurors,
22 to make a special effort to get here so that we
23 can start at 2:15 tomorrow, so we can utilize as
24 much of tomorrow afternoon as possible.

25 In the meantime, as always, please do not