

1  
2 MR. FAMIGHETTI: Yes.

3 (Thereupon the jury enters the courtroom.)

4 THE COURT: Call your next witness, Mr.  
5 Klein.

6 MR. KLEIN: Thank you, your Honor. The  
7 People call Detective Charles Fraas.

8 D E T E C T I V E C H A R L E S A . F R A A S ,  
9 a witness on behalf of the People, Shield 446,  
10 Scientific Investigation Bureau, Nassau County  
11 Police Department, having been first duly sworn,  
12 testified as follows:

13 DIRECT EXAMINATION

14 BY MR. KLEIN:

15 Q Detective Fraas, how long have you been a member  
16 of the Nassau County Police Department?

17 A Approximately 16 and a half years.

18 Q And out of those 16 and a half years, how long  
19 have you been assigned to the Scientific Investigation  
20 Bureau?

21 A Almost 16 years.

22 Q Could you describe what your present duties  
23 are with the Scientific Investigation Bureau?

24 A Yes, sir. My involvement with the lab involves  
25 the examination and analysis of physical evidence for

1  
2 biological materials such as blood, semen, other body  
3 fluids and hair.

4 Q And how long have your duties included the analysis  
5 of hair?

6 A A little over ten years.

7 Q Can you describe the process by which you - -  
8 the process you use to analyze hair?

9 A Yes, sir. It's a microscopic examination.  
10 The hair is examined under a stereo scope, a low power  
11 microscope and then under a high power microscope and  
12 if it's a comparison it would involve a comparison microscope,  
13 where we have two samples mounted separately on two separate  
14 microscopes which are bridged together by mirror where  
15 both samples could be viewed simultaneously in the same  
16 field.

17 Q Can you tell us what your training is in the  
18 field of hair analysis?

19 A Yes, sir. I have a few months of training under  
20 my immediate supervisors on basic hair examination, a  
21 week of training at the FBI Academy in microscoppy in human  
22 hair, University of Connecticut, forensic microscopy,  
23 attendance of numerous workshops sponsored by the American  
24 Academy of Forensic Science, Northeastern Association  
25 of Forensic Science, New York Microscopic Society and

1 various other institutions in the metropolitan area.

2 Q Have you had occasion to testify previously  
3 within your area of expertise?  
4

5 A Yes, sir.

6 Q And is that in criminal cases?

7 A Yes, sir.

8 Q Now, can you describe for us detective, what  
9 if any separate components there are in a human hair?

10 A A human hair has three basic anatomical regions.  
11 The outermost portion is called the cuticle. The central  
12 portion is called the medulla. The material between the  
13 medulla and outermost portion is called the cortex.

14 Q What portion would the root come into?

15 A The root is a separate entity unto itself.  
16 It produces those three areas.

17 Q Are those the areas that you examined with reference  
18 to a hair comparison?

19 A Yes, sir.

20 Q Let me show you what has been marked for identifica-  
21 tion as People's Exhibit 20. (Handed.) Do you recognize  
22 that item?

23 A Yes, sir.

24 Q What do you recognize that to be?

25 A Known scalp hairs removed from Theresa - -

1  
2 MR. ROBINSON: Objection, as to the character-  
3 ization, Judge. He can't make that characteri-  
4 zation. He doesn't know where that came from.  
5 It's a conclusion.

6 THE COURT: Overruled.

7 MR. ROBINSON: Please note my exception.

8 A Scalp hair samples removed from Theresa Fusco.

9 Q Did there come a time when you received that  
10 item?

11 A Yes, sir.

12 Q When was it that you received it?

13 A When I received the evidence from Officer Birdsall,  
14 December 11th, 1984, four o'clock in the afternoon.

15 Q Where were you when you received that?

16 A At Scientific Investigation Bureau.

17 Q Can you describe the condition that that item  
18 was in when you received it?

19 A It was enclosed. White envelope with Theresa  
20 Fusco's name and Medical Examiner's number on it. Inside  
21 that envelope were four other envelopes that were taken  
22 from her scalp hairs.

23 Q And inside those four other envelopes, what  
24 was inside them?

25 A Scalp hair samples.

1  
2 Q What did you do with them after you received  
3 them?

4 A They were retained in S.I.B. and used in comparison  
5 purposes.

6 Q Now, on March the 26th of 1985, did you along  
7 with Officer Birdsall have occasion to examine a van?

8 A Yes.

9 Q Where was the van when you examined it?

10 A In the Emergency Equipment building at headquarters,  
11 in Mineola.

12 Q Let me show you People's Exhibit 22 and People's  
13 Exhibit 30 for identification. (Handed.) Do you recognize  
14 those photographs or what is shown in the photographs?

15 A Yes, sir.

16 Q What do you recognize those to be?

17 A Photographs of the van that was examined on  
18 this December 11th date.

19 Q Call your attention first to 22 for identification,  
20 is that the exterior of the van as it was when you viewed  
21 it?

22 A Yes, sir.

23 Q And what about 30, what does that show?

24 A It's an interior shot of the same van taken  
25 from the rear.

1  
2 Q Is that the way it looked while you were examining  
3 it with Officer Birdsall?

4 A Yes, sir.

5 THE COURT: May I ask a question? What  
6 is the date you examined those?

7 THE WITNESS: March 26th, 1985.

8 Q Now, can you describe how you and Officer Birdsall  
9 examined the van?

10 A Yes, sir. We visually examined the van. We  
11 grided the interior into roughly eight sections and searched  
12 each grided area one at a time. Using a tweezer or hands  
13 to pick up obvious hairs or something of that nature and  
14 then vacuuming that same area before we would move on  
15 to the next.

16 Q What was done with whatever you removed from  
17 the area of the van?

18 A Each grided area, the items removed were placed  
19 into an envelope.

20 Q What was done with the envelope?

21 A The envelope was put in a collection box outside  
22 the van.

23 Q Did you make any markings on the envelopes?

24 A yes, sir.

25 Q What markings did you make?

1  
2 A Markings on the envelope were such as right  
3 rear area, left rear area, describing the area that was  
4 examined.

5 Q Let me show you what has been marked for identifica-  
6 tion as People's Exhibit 32. Do you recognize that exhibit?

7 A Yes, sir.

8 Q What do you recognize this to be?

9 A This is an envelope containing material that  
10 was removed from the right front seat floor area of the  
11 van.

12 Q Did you make any markings on that envelope?

13 A Yes, sir. I marked it with the S.I.B. number  
14 or my case number my initials and my question sample number  
15 eight. Q-8. That's my notation.

16 Q Now Detective Fraas, did you have occasion to  
17 examine that hair that you had in envelope Q-8 with the  
18 hair of Theresa Fusco that had been contained in envelope  
19 K-1?

20 A Yes, sir.

21 Q Did you do that with the microscope as you previously  
22 described?

23 A Yes, sir.

24 Q Where was it that you performed this analysis?

25 A In the Scientific Investigation Bureau.

1  
2 Q Do you have an opinion based upon your training  
3 and experience as to -- let me withdraw that. Had you  
4 formed an opinion based on your training and experience  
5 with respect to the comparison of the hairs from Q-8 and  
6 the hairs from K-1?

7 A Yes, sir.

8 Q What is that opinion?

9 A My opinion was that the question sample eight  
10 was microscopically alike in physical characteristics  
11 with the known sample removed from Theresa Fusco.

12 Q Now, can you describe for us some of the physical  
13 characteristics in the question hair that you found to  
14 be like the hair of Theresa Fusco, microscopically alike?

15 A Yes, sir, I can. We are referring to both samples.  
16 Q-8 and the known sample removed from Theresa physically.  
17 Caucasian scalp hairs. Color brown. Length, in the range  
18 of four to five, two-nine inches. Both question sample  
19 and known sample have cut tips. The diameter is approximately  
20 50 microns of the question sample which fits within the  
21 range of the known sample, which ranges from 56 to 96  
22 microns. The appearance of the cuticle, there was some  
23 variation in thickness of the individual hairs of both  
24 samples. The inner margin of the cuticle was not consistently  
25 defined in all hairs. The cuticle appears to be clear.



1 The scales are somewhat serrated on both samples. A little  
2 bit more so in areas that exhibit some artificial treatment.  
3 both the question sample and known sample exhibit - -  
4 I can only characterize it as residue of some artificial  
5 treatment. I don't know whether the hair was submitted  
6 to a perm or some sort of artificial treatment.  
7

8 MR. ROBINSON: Objection

9 MR. FAMIGHETTI: Objection.

10 THE COURT: I will sustain the objection.

11 Other than the conclusion that the hair was  
12 subjected to artificial treatment, the other  
13 will be stricken.

14 Q Where in the hair did you find artificial treatment?

15 A The distal portion of the hair. The hair closest  
16 to the far end, away from the root area.

17 Q Any other characteristics that you found similar?

18 A Yes, sir. The medulla appeared fragmented.  
19 Sometimes it appeared opaque and sometimes translucent.  
20 The pigment granules appear to have medium density, somewhat  
21 coarse with an oblong to long shape. The cortex cells  
22 were obscured. The overall appearance was somewhat straight  
23 with a little bit of waviness to it.

24 Q That's the hair itself?

25 A Yes, sir.

1  
2 Q Did you find anything in your comparison that  
3 was inconsistent between the known hair of Theresa Fusco  
4 and the question samples from the van?

5 A The question samples reveal characteristics  
6 that are within the range of a known sample.

7 Q So there is nothing inconsistent?

8 A No, sir.

9 MR. ROBINSON: Objection, to the last statement.  
10 judge.

11 THE COURT: No, I will permit it.

12 Q How many hairs from the envelope Q-8 did you  
13 find to be microscopically alike with the hair of Theresa  
14 Fusco?

15 A Two.

16 MR. KLEIN: Your Honor, I would offer those  
17 four exhibits into evidence at this time. The  
18 two envelopes and the two photographs.

19 MR. ROBINSON: May I see them? (Handed.)

20 I have no objection to the photographs.  
21 I have objection to the Q-8 envelope at this  
22 point as to insufficient foundation. I would  
23 ask for an opportunity to cross-examine rather  
24 than simply voir dire on that issue before making  
25 a further objection.

THE COURT: You can voir or you can cross-examine. If you waive that, I'm going to admit it into evidence.

MR. ROBINSON: Then, I will voir dire, Judge. I may get lengthy, that's why I ask for an opportunity to cross-examine. If you wish to do it now I will do it now.

THE COURT: I don't wish to do anything. If you have an objection or do you want to voir dire?

MR. ROBINSON: I will voir dire.

VOIR DIRE

BY MR. ROBINSON:

Q People's 35, the envelope, when did you first receive that?

A The day of the examination of the van.

Q What date was that?

A March 26th, 1985.

Q I don't have any notation on the envelope indicating that date; is that correct?

A That's correct.

Q Where did you put this envelope?

A When?

Q When you received it?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A It was in the lab.

Q Where?

A In the examining room?

Q Where in the examining room?

A I don't recall the exact location.

Q You put it down on top of a lab table?

A I just testified I don't know exactly where it was placed in the examining room.

Q I just asked another question. Please answer that, if you can?

A What was the question?

Q Did you put it down on top of a lab table?

A And I just testified I don't remember exactly where in the lab.

Q I'm trying to jog the memory. Please bear with me. Did you put it in a drawer, if you recall?

A No.

Q You didn't put it in an evidence locker, right?

A That's correct.

Q So, you really don't know where the envelope was pursuant to your testimony from that time until when was the next time you saw it?

A I don't recall, sir.

Q How many scientists work in that lab?

A I would say somewhere in the area of 15 to 20.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

Q And there are three shifts per day working?

A No, sir.

Q How many shifts working?

A Two.

Q Eight to four and four to 12?

A Yes, sir.

Q There is access by other people to that lab;  
is that right?

A I don't know what you mean by other people.

Q Well, other police officers bringing in evidence  
and picking up reports and things of that nature?

A No. Anyone that is admitted to the lab is  
admitted by S.I.B. personnel.

Q In other words, they're buzzed in, right?

A That's correct.

Q They have to open one of those door latch things,  
the little electric door latches?

A No, they just pull the door.

Q In order to get out they don't have to be buzzed  
out, they can open the door from the inside and walk out?

A Yes, sir.

Q Anybody who is working in the lab would have  
access to this envelope?

A That's correct.

1  
2 MR. ROBINSON: I object to the introduction  
3 of this because of insufficient custody of it.

4 THE COURT: Objection overruled. I am  
5 admitting it into evidence. What weight you  
6 give to it will be up to you.

7 (Thereupon plastic envelope and contents  
8 marked People's Exhibit 32 in evidence.)

9 MR. FAMIGHETTI: Judge, just for the record,  
10 I have no objection.

11 (Thereupon plastic envelope and contents  
12 marked People's Exhibit 20 in evidence.)

13 (Thereupon photographs marked People's  
14 Exhibits 22 and 30 in evidence.)

15 MR. KLEIN: Could you just show Detective  
16 Fraas 32? (Handed.)

17 FURTHER DIRECT EXAMINATION

18 BY MR. KLEIN:

19 Q Detective, is your writing on the outside of  
20 that envelope?

21 A Yes, sir.

22 Q When did you put the writing on the outside  
23 of that envelope?

24 A At the time of examination of the van.

25 Q And does that indicate the area of the van the

1  
2 contents of the envelope came from?

3 A Yes, sir.

4 MR. KLEIN: I have no further questions,  
5 your Honor.

6 CROSS-EXAMINATION

7 BY MR. ROBINSON:

8 Q Detective Fraas, you said that you had been  
9 doing hair samples for how long now?

10 A Ten years.

11 Q And you initially got your training where, sir?

12 A FBI Academy.

13 Q One week?

14 A Yes, sir.

15 Q What did you do before that? What kind of training?

16 A In what regard, sir?

17 Q Regarding hair sampling?

18 A Some basic training under my immediate supervisors.

19 Q Those people were also police officers?

20 A Yes, sir.

21 Q Now, basic information, detective, with regard  
22 to hair, there are three stages of hair development; is  
23 that correct?

24 A That's correct.

25 Q One is the growing stage or called an anagen

1  
2 type of hair?

3 A Yes, sir.

4 Q That comprises about how much of the total surface  
5 area of the head?

6 A I would say about 95 percent.

7 Q In that stage, is it fair to say that the root  
8 is not terribly well formed? it's more like a mushy substance  
9 that's kind of growing out until it becomes carotized?

10 A Yes, sir, that's a somewhat correct statement.

11 Q In that formation, if the hair were to be plucked,  
12 part of the dermis or the surrounding cellular material,  
13 skin material would travel with that hair; is that correct?

14 A That happens on occasion, yes, sir.

15 Q Well, there are two other types of hair; is  
16 that correct, the telogen and the catagen hairs?

17 A Yes, sir.

18 Q In telogen is a dead hair or a nongrowing hair?

19 A A completed hair, yes, sir.

20 Q That's the last stage of hair growth before  
21 the hair falls out or is pulled out?

22 A That's correct.

23 Q That's got a very well defined root to it, right?

24 A That's correct.

25 Q If that hair were to be pulled out, not much



cellular substance would come out with it; is that correct?

A Generally, that is correct, yes, sir.

Q And as you pull out a growing hair - -  
withdrawn. With the growing hair, the area that forms  
- - withdrawn.

MR. ROBINSON: Excuse me, Judge. Perhaps  
this will help us. Could I have these marked,  
Judge?

(Thereupon two diagrams of hair marked Defendant's  
Exhibits HH and II for identification.)

Q Would you take a look at HH, the anagen? Is  
that a fair and accurate depiction of the scientific diagram  
of a growing hair?

A No, not at all.

Q How would you say that's different?

A Well, for one, you have pointed to the  
cuticle at some area in the hair that I don't know if  
I would identify that as a cuticle right at that point.

Q What else?

A You have something notated as inner root sheath.

Q That's not accurate either?

A I'm not so sure. This is a drawing.

Q You have had training in this area; is that  
right, FBI Academy or seminars?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A Yes, sir.

Q And you have seen such diagrams such as this before, have you not?

A I have seen things close to this, yes, sir.  
I have never seen this one particularly, no.

MR. ROBINSON: May I have this marked also,  
Forensic Science Handbook by Richard Safferstein?

(Thereupon book marked Defendant's Exhibit  
JJ for identification.)

Q Could you take a look at that, please? (Handed.)

A I'm looking, counselor.

Q Do you see a distinction between the diagram  
and the book and the diagram that has been offered to  
you?

A I'm having a difficult time following the lines  
here.

Q Well, do you take exception to them? I will  
give you a magic marker. You can remark them.

A As I said, I'm looking. It seems to be fairly  
close.

Q Would you agree that that's a fair and accurate  
depiction of a grown hair then, root area of growing hair?

A The book or the cardboard?

Q The cardboard?

1 A It seems to be close to what's here.

2  
3 Q Do you accept that that's a fair and accurate  
4 depiction of what you understand a growing hair to look  
5 like, the root of a growing hair?

6 A This is a schematic. This isn't the way every  
7 hair appears. This is an overall generalized view. You  
8 don't see all this structure every time you look at a  
9 hair under the microscope?

10 Q That's right. Every hair is really different,  
11 isn't that correct? ✓

12 A There are no two hairs alike, that's correct ✓  
13 in all respects.

14 Q In fact, there are no two hairs alike on the  
15 same person's head; isn't that correct? ✓

16 In all respects, that's a correct statement,  
17 yes. ✓

18 Q In fact, you can't really say that two hairs  
19 are identical ever, isn't that correct?

20 A That's a correct statement.

21 Q So, when you say the hairs from Q-8 and X-1  
22 are alike, that's about as close a description as you  
23 can get because of the inaccuracy of this entire area  
24 of science; isn't that correct?

25 A I don't agree with that whole statement, no,

1  
2 sir.

3 Q You do agree though that you are not particularly  
4 happy with hair comparisons, aren't you?

5 A I wish it was a bit more exact, yes, sir.

6 Q We all wish it was a bit more exact, because  
7 then we could prove things a lot more clearly. This is  
8 conclusive evidence that you have here, right?

9 MR. KLEIN: Objection.

10 THE COURT: Sustained.

11 Q You can't tell us beyond a reasonable doubt  
12 in your mind that the hairs that you found in Q-8 and  
13 K-1, the hairs in the van and Theresa Fusco are identical?

14 MR. KLEIN: Objection.

15 Q Is that correct?

16 THE COURT: Sustained, as to form.

17 Q You can't tell us that Q-8 and K-1 are identical,  
18 can you?

19 A That's a correct statement, sir.

20 Q Now, about how many hairs fall out of the head  
21 on a normal day, you know, in an average number of people?

22 A Don't hold me to a number, counselor. I have  
23 read in the area of 50 to 100.

24 Q That's under normal circumstances, right?

25 A Yes, sir.

1  
2 Q Those are the telogen hairs?

3 A The premature hairs, right.

4 MR. ROBINSON: I would like to offer that  
5 first diagram.

6 MR. KLEIN: I don't think a proper foundation  
7 based on his testimony has been laid.

8 MR. ROBINSON: I think it is. He indicated  
9 it was a fair description of a schematic of  
10 a growing hair.

11 THE COURT: Well, subject to what the jury  
12 has heard that this was characterized by the  
13 detective as fairly accurate for whatever probative  
14 value it has, I will admit it.

15 (Thereupon diagram marked Defendant's Exhibit  
16 HH in evidence.)

17 Q Would you hold it up, Detective Fraas? Would  
18 you indicate the area that you call the root on this diagram?

19 A The area below the surface of the skin.

20 Q That entire area?

21 A Yes.

22 Q The surface of the skin is the very top line  
23 that goes out in horizontal fashion?

24 A Yes, sir. (Indicating.)

25 Q That tends, to go down to the center base then?

1  
2 A Yes. It's a very general term, root. Some  
3 people refer to the growing area as the root. Some people  
4 define the whole area underneath the skin, root. It's  
5 not really a definitive term.

6 Q Could you now look at the other exhibit, please?

7 A Yes, sir.

8 Q Would those diagrams of the catagen phases of  
9 the hair growth also be fairly accurate as you indicated  
10 the other one looked?

39 11 A Can I look at the textbook?

12 Q Sure, by all means. (Handed.)

13 A Thank you. (Pause.) Yes, sir.

14 Q Is that fairly accurate also as to what you  
15 know about the telogen, catagen stage?

16 A This flashcard reflects very closely what is  
17 in the textbook.

18 Q Is that what your understanding is from  
19 your experience, although it is more of a schematic as  
20 to what the hair looks like when it is in those phases?

21 A Yes, sir.

22 MR. ROBINSON: I would offer it on the  
23 same basis.

24 MR. KLEIN: No objection.

25 (Thereupon diagram marked Defendant's Exhibit

II in evidence.)

MR. ROBINSON: Would you hold it up for  
Detective Fraas?

Q Will you point to the catagen stage and indicate  
the area under the skin that indicates the bulb that starts  
to form when the hair starts to go into the - -

A You are talking about the club?

Q Yes.

A That portion that's shaded in.

Q You call it a club. Is that what you know it  
to be also?

A Bulb, club, I've heard them use both terms.

Q In fact, there is no real specific designations  
in this whole area of science, is there? There is nothing  
uniform throughout the entire field of endeavor?

A No, it's not an accurate statement.

Q It's not an accurate science, is it?

A Accurate in terms of what?

Q Absolute?

A There are some absolute in hair examination,  
yes, there are.

Q One of those absolutes, by the way is that you  
can do a PGM study on the cellular material that comes  
out with an anagen hair root; is that correct?

1 A I'm sorry, counselor, I was distracted.

2 Q One of the things that is absolute, you can  
3 do a PGM test to determine through enzymes and chemistry  
4 for blood type from which that particular hair came from,  
5 can you not?

6 A When you say absolute, you mean in all cases,  
7 every time I look at a hair, I can determine that test?

8 Q No, you can't do that, can you?

9 A No, sir.

10 Q But, if there was cellular particles that were  
11 pulled with that hair, you could take those cellular particles  
12 and do a PGM test, right?

13 A There would have to be some certain presumptions  
14 that would precurse that examination.

15 Q You mean time and things of that nature?

16 A Yes. The amount of material, how old is the  
17 hair, things of that nature.

18 Q But, it can be done in certain circumstances?

19 A Yes.

20 Q In general, there are a lot of inaccuracies  
21 in this field of endeavor; isn't that true?

22 A I'm having a hard time feeling comfortable with  
23 the same terminology that you are using.

24 Q All right. We will use different terminology.  
25



1  
2 In fact, these different scientists in this field use  
3 different terminology for the same things they see under  
4 the microscopes?

5 A Yes, sir. There isn't a uniformity of terminology  
6 throughout the field, correct.

7 Q In fact, there was recently a committee formed,  
8 a national hair committee formed, National Forensic Hair  
9 Committee formed?

10 A Yes, there is.

11 Q And the purpose of that was to get some uniformity  
12 in the field?

13 THE COURT: Is that uniformly on the terminolog.

14 THE WITNESS: In terminology. Basic techniques  
15 on how to do hair examinations, in how to describe  
16 the hairs uniformly from lab to lab.

17 Q Now, in the anagen phase, that growing phase  
18 again, as the hair comes out of that very bottom of the  
19 base unit, it goes toward the surface of the skin, it  
20 undergoes sort of a hardening processing?

21 A Yes, sir.

22 Q That is called keratinization?

23 A Yes, sir.

24 Q Almost like a sprout of grass coming out of  
25 the earth in the spring?

1

2

A Yes. The hair is only alive in that growing area.

3

4

Q Could you show that area to us in the anagen stage?

5

6

A Yes, sir. Down in this area here.

7

8

Q Now that area is the very base of the hair root; is that right?

9

A Yes, sir.

10

Q That's a mushy area?

11

A It's a soft tissue area, yes, sir.

12

13

Q As it goes up towards the surface of the skin it starts to harden up?

14

A Yes, sir.

15

16

Q That's when you see the cuticle and the scales forming the outer diameter of the hair; is that right?

17

A Yes.

18

19

20

Q Now, in that area, is that area more prone towards chemical interaction than once it has left the surface of the skin?

21

22

23

A Are you asking me if the viable portion of the hair, the living tissue is more viable than the environmental forces, than the part living above the skin?

24

Q Yes.

25

A That would be a correct statement.

1  
2 Q How about the area between the base of the root  
3 and the skin surface?

4 A Talking of this area here?

5 Q About midway between?

6 A I'm not so sure about that.

7 Q That's where the medulla starts to form; is  
8 that correct?

9 A Yes. There are medullar cells that form the  
10 medulla in that area.

11 Q In fact, can you point to the medulla for the  
12 jury, please?

13 A You have it marked right here. (Indicating.)  
14 It should have two "Ls," by the way.

15 Q Somebody made a mistake?

16 A That's what I said before.

17 Q Was that the basis of your reservation?

18 A That was one thing I objected to.

19 Q The center of the hair at the very top?

20 A Up here?

21 Q Yes.

22 A Yes, sir.

23 Q That shows a complete medulla; is that correct?  
24 Is that what a complete medulla would look like?

25 A It shows the medulla area, yes, sir.

1

2

Q Medulla in fact is a void in the hair?

3

4

5

6

A In some instances it is and isn't. If it is a void as depicted in the board, there is. In microscopy, light passes through an evacuated medulla. It appears dark.

7

Q Like looking up from under water, correct?

8

A I don't know if I would make that analogy.

9

10

Q It's not really black, it's opaque; is that right?

11

12

A It will appear opaque if it's evacuated. If it's empty.

13

14

Q If it's filled, it becomes translucent again and you can see through it again?

15

A Yes, sir.

16

17

Q Just as you can see through the rest of hair particles, correct?

18

A I don't know if I follow the whole statement.

19

20

Q The cortex fills the rest of the hair diameter, right?

21

A yes.

22

23

Q Like the led in a pencil, is where the medulla would be?

24

A That's an analogy that people draw.

25

Q That would be right?

1 A It simplifies it, yes.

2 Q The wood of the pencil would be like the cortex  
3 of the hair, right?  
4

5 A Yes, sir.

6 Q Now, you indicated that the range of the diameter  
7 of these hairs in the question sample, the question sample  
8 was Q-8; is that correct?

9 A Yes, sir.

10 Q But only two hairs out of four hairs that were  
11 in that particular envelope, right?

12 A Yes, sir.

13 Q Came up as a match as far as you are concerned?

14 A Were microscopically alike.

15 Q Now, you said that they had a diameter of  
16 approximately 60 microns; is that correct?

17 A Yes, sir.

18 Q That fell within the range of the known samples  
19 which was between 56 and 96 microns?

20 A Yes, sir.

21 Q Now, that is very - - it's only within four  
22 microns at the lower end, right?

23 A That's a correct statement.

24 Q Now, the 56 to 96 micron range that you took,  
25 on how many hairs did you base that on?

1  
2 A A number of hairs.

3 Q You only took 20 hairs and mounted them in microscope  
4 on slides; is that true?

5 A Yes, sir.

6 Q There were approximately 200 hairs in the whole  
7 sample?

8 A I don't know how many there were. There were  
9 substantially more than 20.

10 Q Would it be fair to say that there were about  
11 50 in each of those small quadrants, the small envelopes?

12 A Counsel, I didn't count them, but there was  
13 substantially more than 20.

14 Q In fact, you didn't keep any record of how many  
15 hairs were kept in that envelope in the four envelopes?

16 A That's correct.

17 Q In fact, nobody took a count on those hairs,  
18 is that right?

19 A Yes, sir.

20 Q In fact, all we have is simply a lump of hair  
21 here in each one of these, right?

22 A What we have is a scalp hair sample. Lump of  
23 hair is your terminology.

24 Q Just a grouping of hair, right?

25 A Yes, sir.

1  
2 Q And when you took those 20 scalp hairs, did  
3 you take five from each of these smaller envelopes?

4 A I took a number of hairs from each envelope,  
5 yes, sir.

6 Q But, you are not sure how many?

7 A No, sir.

8 Q So, it could have been more than five from each  
9 one?

10 A I randomly selected hairs from each envelope,  
11 sir.

12 Q And you didn't keep any count of the hairs that  
13 you took out either, did you, of those envelopes?

14 A The hairs that I removed from the envelope,  
15 I mounted on the slide, sir.

16 Q Every one of them?

17 A Yes, sir.

18 Q When did you do that?

19 A Subsequent to receiving the hair.

20 Q Well, was it the same day? You got them on  
21 the 11th of December, 1984?

22 A If I can check my report?

23 Q Sure.

24 A I don't recall whether on December 11th I mounted  
25 hairs. It was either that day or very soon after.

1  
2 Q Okay. So, while you had that envelope filled  
3 with all the hairs, they weren't in that closed plastic  
4 outer container, were they?

5 A No, sir.

6 Q In fact, they were just sitting in that open  
7 envelope, the larger open envelope in the lab someplace,  
8 right?

9 A They were in that envelope together with other  
10 evidence from the case.

11 Q You are not quite sure where that was?

12 A It's in the examining room

13 Q You do not know beyond that where they were?

14 A On the examining table in the examining room.

15 Q Now, when you finally took these hairs out how  
16 do you go about mounting them on a slide?

17 A I remove the hair either with my fingers or  
18 with forceps, place them on a microscope slide and cover  
19 them with perm mount and cover them with a cover slip.

20 Q And they are dried in the air, right?

21 A Once the cover slip goes over it, the perm mount  
22 will harden sometime in the future, yes, sir.

23 Q Didn't you first measure those hairs for length  
24 before putting them in the slide?

25 A Some of them, I did, yes, sir.



1  
2 Q In fact, the slides are maybe only two and a  
3 half inches wide by a half inch, three-quarters of an  
4 inch wide?

5 A That's pretty close.

6 Q In order to put the hair on it you have to spaghetti  
7 it or figure eight on it?

8 A Yes.

9 Q have you gone and incorporated that?

10 A Yes, with a piece of string or thread.

11 Q Have you put them on a ruler and measured them?

12 A I don't recall how I measured them exactly,  
13 sir.

14 Q Do you have your worksheets when you were taking  
15 down your information down about the hairs?

16 A Yes, sir.

17 Q May I see that, please? (Handed.)  
18 Do you know when you made this worksheet out?

19 A No, sir.

20 Q You do know you made it contemporaneous with  
21 your examination?

22 A No, I made it while I was examining the hair  
23 or sometime right after. I don't have the date on it.

24 Q When did you hold that examination? When  
25 you do a hair examination in comparison, it's very subjective,

1  
2 is it not? In other words, it's the subjective workings  
3 of your mind that comes up with the final determination  
4 that you come up with here today; isn't that true?

5 A I don't know. That statement makes it sound  
6 very haphazard.

7 Q Of course, you can't feed all this information  
8 into a computer in this fashion. Have you done that?

9 A No, that's something being toyed with.

10 Q Being toyed with, but not accomplished at this  
11 point; is that right?

12 A That's an accurate statement.

13 Q Because of all the variations and varieties  
14 and characteristics within the gamut of hair?

15 A No, that's not really the essential problem.

16 Q Well, part of the problem is that there is a  
17 lack of ability of a human investigator of a scientist's  
18 action to describe the various characteristics that they  
19 are saying under the microscope, isn't that part of the  
20 problem?

21 A Not quite. If you would just let me qualify  
22 that a little bit.

23 Q Certainly.

24 A There are some problems with the nature of this  
25 examination from individual to individual. I might describe

1  
2 someone's jacket as a gray and someone might say it's  
3 dark gray.

4 Q Isn't that subjectiveness? Isn't that the very  
5 nature of what - -

6 MR. KLEIN: Judge, can he finish his  
7 answer.

8 THE COURT: Are you finished?

9 MR. ROBINSON: I was going to let him continue.  
10 But, I didn't think this was meant to go as  
11 a disertation. I thought it was cross-examination.

12 THE COURT: Are you finished?

13 THE WITNESS: Yes, Judge. Thank you.

14 Q Isn't that the very nature of subjectivity that,  
15 there are different definitions of that guys gray jacket?  
16 Two people see them differently?

17 A Yes. Two people may see it differently but  
18 only one person is doing the examination. So the fact  
19 that you may describe the hair a little bit differently  
20 than we may not be very important. If we would come up  
21 with the same conclusion you may describe the hair  
22 as not being light brown or brown or maybe not lively  
23 pigmented. The nature of the hair comparison is though  
24 that you have both samples side by side in the same viewing  
25 field and the real nugget, nugget of information that

1  
2 is information, is do they appear to be consistent or  
3 microscopically alike.

4 Q And that's something that we must, in listening  
5 to the person who has done the examination, accept or  
6 not based upon their opinion; is that right?

7 MR. KLEIN: Objection.

8 THE COURT: Sustained.

9 Q In other words, it's your opinion that we have  
10 to rely upon here; is that right?

11 MR. KLEIN: Objection.

12 THE COURT: Sustained.

13 Q Isn't your expert opinion upon which you base  
14 the fact or the statement that these two hair samples  
15 are microscopically alike?

16 A Based on my observations.

17 Q That wasn't my question. Isn't it your expert  
18 opinion? He will be able to give you an opportunity to  
19 explain why.

20 A I'm not interested in that, counselor. I'm  
21 listening to your question.

22 Q I understand that. Isn't it a fact that it's  
23 your expert opinion that you have based your conclusion  
24 that these two hair samples are microscopically alike?

25 A That's a correct statement, yes, sir.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Q And you base that upon a number of characteristics, in fact, an entire array of characteristics, right?

A Yes, sir.

Q And you told us that those characteristics can vary within the same scalp of hair, right?

A I testified that there is a range of characteristics exhibited in the known, yes, sir.

Q In fact, you might come up with a different determination even looking at the two hairs within the sample, coming from the same scalp?

A In other words, you are asking me could two hairs differ from one another in the same scalp?

Q That's right.

A yes, sir.

Q And it's true also that you can actually find a hair from another person that could be microscopically alike to this particular hair or any particular hair that you might find; isn't that true?

A That's a possibility, yes, sir.

Q Now, how many hair samples did you look at that day or throughout the entire term of your examination and comparison?

A You are talking about in relation to this case?

Q Yes.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A Quite a few. Numbers.

Q Now, you looked at 20 slides from the known sample, right?

A Yes, sir.

Q That was Theresa Fusco's hair?

A Yes, sir.

Q And you looked at a number of other slides; is that correct? How many?

A In relation to Q-8?

Q No, in relation to all of the samples?

A I looked at maybe ten or 12 folders containing hairs involved with this case and each folder would contain 20 slides and some of the slides may contain more than one hair so it would be hundreds of hairs.

Q These slides come from - -

A It's taped up, counselor.

MR. ROBINSON: May I open it?

THE COURT: Scapel or scissor will open

it.

Q I note that this has been opened in the past; is that right?

A Yes, sir.

Q And each time that you open this, do you date it and sign it?

1  
2 A No, sir.

3 Q And have you been the only one to open this  
4 item?

5 A No, sir.

6 Q If you will? (Pause.)

7 MR. ROBINSON: If you will pardon me for  
8 just a moment, Judge? (Pause.)

9 Q Now, you indicated that the hair sampled in  
10 the range of length were between four and five inches;  
11 is that right?

12 A That's an approximation, counselor.

13 Q And you indicated that the range in the known  
14 samples was approximately five to nine inches; is that  
15 correct?

16 A I believe I said four to nine inches, sir.  
17 That's what I have in my notes here.

18 Q Didn't you indicate on direct examination - -  
19 withdrawn.

20 So in other words, you just made an approximation  
21 of these lengths?

22 A Yes, sir.

23 Q I would ask you to view K-20 and tell me if  
24 that's four inches?

25 A That may be a bit less.

1  
2 Q Now, when you tell us that these hairs are alike,  
3 you also indicated that they all had cut tips; is that  
4 correct?

5 A Are we talking the question samples or the known  
6 samples?

7 Q The know?

8 A That's correct.

9 Q The question samples?

10 A The question samples also had cut tips.

11 Q The cut tip means the end of the hair has a  
12 cleanly denoted break to it?

13 A Yes, sir.

14 Q It's not in any way frayed or damaged; is that  
15 correct?

16 A No, sir.

17 Q THE COURT: Is it no, it's not correct?

18 THE WITNESS: As I understood it, counsel  
19 if the hair could be abraded and frayed and  
20 I said it still could be cut. It could be  
21 abraded and frayed and still have cut ends.

40 22 Q In fact, that would be in what fashion with  
23 a razor cut?

24 A No, it happens with a scissor cut. It doesn't  
25 cleanly cut. It will pull one end more than the other.



1  
2 Q Did you notice any damage done to the shaft  
3 of the hairs that you found in Q-8, the ones that were  
4 questioned?

5 A What do you mean by damaged, sir?

6 Q Did you find any denting, sharp pinching or  
7 any debris on any particular hairs that you found in the  
8 van?

9 A Denting?

10 Q Any damage? Do you know what that means?

11 A I'm trying to understand. You have to define  
12 what damage is.

13 Q Have you ever seen a damaged hair?

14 A Have I seen hair that's been damaged? I have  
15 seen hair that has been singed. I have seen hair that  
16 has been crushed. Yes, I have seen that.

17 Q Did you notice any damage, however you want  
18 to define it?

19 A Physical damage?

20 Q Physical damage in Q-8 samples?

21 A I don't know if you would call it physical.  
22 But, on the tip end I noticed that one of the hairs was  
23 split. Still not but split. If you want to classify  
24 that as damaged - -

25 Q You added certain debris to the envelope after

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

you vacuumed?

A I added debris.

Q Didn't you take your vacuum to the front passenger seat area?

A Yes, there was debris including the hairs included in the envelope.

Q In fact, you had added that to the envelope after you had already placed those hairs in the envelope, right?

A I believe it was all done at the same time, counselor.

Q Was it all done at the same time. Could you have picked up those hairs in the vacuum cleaner then?

A I'm not -- I don't follow your question.

Q You mean it was happening simultaneously along with the hair being plucked?

A The area of examination in the grid, as I explained earlier, some hairs may have been plucked and then at that particular point some may have been vacuumed. I cannot tell you whether those question samples were plucked or vacuumed.

Q In fact, you had changed the filter on the vacuum; is that right?

A For each area.

1  
2 Q But you really do not know what might have hung  
3 up in the tubes of the vacuum or any place else?

4 A That's a good point. No, sir, I wouldn't.

5 Q When did it happen that you finally rendered  
6 a decision or opinion that these hairs are microscopically  
7 alike?

8 A I don't recall, sir. I don't have any date  
9 recorded on that.

10 Q Do you have a recollection - - you must have  
11 contacted somebody at the Homicide Squad as a result of  
12 that determination, didn't you?

13 A I most surely did, yes, sir.

14 Q Well, wouldn't you have called the District  
15 Attorney's Office at that point?

16 A No, sir.

17 Q Do you recall having a conversation with anybody  
18 regarding this opinion?

19 A I recall quite vaguely having a conversation  
20 with Detective Volpe. But, I'm quite certain when.

21 Q Now, when you reviewed these slides, did you  
22 have anybody else working with you?

23 A When I reviewed the slide when?

24 Q When you were microscopically comparing the  
25 slides?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A You mean back a year and a half ago?

Q In and about when it happened? I haven't heard  
when it happened, so - -

A It happened some day subsequent to me receiving  
the evidence.

Q We know it wasn't that recently. We know it  
was about a year and a half ago or thereabouts?

A Yes, sir.

Q Or do we? Did it happen in 1984, 1985?

A Yes, sir.

Q Did you have any other scientists working with  
you at that time?

A No, sir.

Q So, you were working alone on this part of it?

A Yes, sir.

Q How many days did you spend going over the various  
comparisons of the hairs?

A On this case, days and days and days, interspersed  
working on my other cases.

Q When did you first - - withdraw.

Did you ever go back to the original envelope  
that had the known samples in it to mount the additional  
slides?

A No, I don't recall doing that, sir.

1  
2 Q When you would be mounting these slides, did  
3 you look at them immediately in front of the microscope  
4 for scientific curiosity?

5 A Which sample are we talking about?

6 Q The known sample. Did you start looking at  
7 them? Did you make a cursory inspection of them?

8 A Yes, I may have put them under a stereoscope,  
9 which is not quite as powerful as a microscope.

10 Q Had you ever taken a look at the two of the  
11 known samples together for a comparison?

12 A Side by side?

13 Q Yes.

14 A I don't recall doing that, no, sir.

15 Q Do you mean in this particular case or as a  
16 matter of routine?

17 Q In this case?

18 A I don't recall.

19 Q Now, you indicated that there was an overall  
20 clear appearance to the cuticle. What do you mean by  
21 that?

22 Can you show us on that anagen diagram?

23 A That wouldn't help. The cuticle could appear  
24 to be clear, transparent. It could appear somewhat cloudy.  
25 It could even have a somewhat yellowish appearance to

1  
2 it also.

3 Q Now, once a hair is taken out the scalp, out  
4 of the root area, and deposited in the elements, isn't  
5 it a fact that that hair will stay in basically the same  
6 condition for a long period of time, as a general rule?

7 A No, I would be uncomfortable agreeing with that.

8 Q Isn't it a fact that they found hairs from mummies  
9 in Egypt under the right circumstances?

10 A Yes, sir.

11 Q Isn't it a fact that a hair, a normal undiseased  
12 hair, if you look at it, the diameter of it, if you look  
13 across it, will appear somewhat clear looking through  
14 it; is that right?

15 A If I was to take a cross section of the hair  
16 and look at it through a microscope, it would appear clear.

17 Q Well, it would appear clear. It would have  
18 a color to it but you could basically look through it  
19 because it's translucent?

20 A Parts of it would look translucent but other  
21 bodies in the cortex are going to be opaque or dark or  
22 somewhere in between.

23 Q Now, in the hair samples that you reviewed,  
24 the knowns, did you notice any opacity, opaque area below  
25 the skin line?

1  
2 A Yes, sir, I have.

3 Q And that wasn't just the medulla; is that correct?  
4 That wasn't just that little fragmented medulla area,  
5 right?

6 A I'm not quite sure what it is, counselor.

7 Q Isn't it a fact that within the last month or  
8 so you have come to be informed that there is a consistency  
9 about the known samples that there is an opaque banding  
10 over the banding just below the skin line in the those  
11 hairs.

12 MR. KLEIN: Objection.

13 THE COURT: Sustained.

14 Q Have you through your own viewing -- withdrawn.  
15 Have you done a new or another review of these  
16 20 slides, these known slides, recently?

17 A Yes, sir.

18 Q When was that?

19 A I believe this reviewing process was initiated  
20 approximately three and a half weeks ago.

21 Q Was that as a result of a conversation you had  
22 with a Professor DeForest?

23 A That's correct.

24 Q And who is Professor DeForest?

25 A Dr. Pete DeForest, he's an instructor at John

1 Jay College of Criminal Justice.

2 Q Is he also a member of that National Committee  
3 on hair?  
4

5 A Yes, sir, he is, sir.

6 Q And you have reviewed his handbook on forensic  
7 hair; is that right, hair examination?

8 A No, sir.

9 Q Well, as a result of an examination done by  
10 him in your presence, was that the reason that you went  
11 back and reviewed these slides again?

12 A Well, I reviewed the slides again but actually  
13 what really took place was some information gathering  
14 in the time period since then.

15 Q That information gathering goes to an issue  
16 as to whether or not there is an opaque banding in the  
17 area just below the skin line; is that correct?

18 A That's part of the discussion, yes, sir.

19 Q Now, that discussion relates to how that banding  
20 occurs; is that correct or why it occurs?

21 A Why it occurs?

22 Q And can a time frame be associated with that?  
23 Is it in fact that condition that occurs after death and  
24 how long afterwards and this is an area that you were  
25 unaware of before having this conversation with Professor



DeForest; Is that correct?

A Yes, sir.

Q What we are referring to here is that isn't it a fact that there has been the belief that as a result of decomposition of the body, a certain eating way of the hair occurs just below the skin line or chemical change?

MR. KLEIN: Objection.

THE COURT: I would like that read back.

(Question read back.)

Q You were with Professor DeForest three weeks ago?

A Yes, sir.

Q He was reviewing the known samples in your presence?

A Yes, sir.

Q Then he reviewed the question samples; is that correct?

A Yes, sir, it is.

Q Upon reviewing the first question sample, he stopped short on you, didn't he?

MR. KLEIN: Objection.

THE COURT: Sustained.

Q Did Professor DeForest indicate to you that the samples, if the question samples came from a decomposed body, --

MR. KLEIN: Objection.

THE COURT: Sustained.

Q Did you, as a result of a conversation with Professor DeForest, examine these question samples to known sample slides?

A Yes, sir.

Q In fact, as a result of those examinations, did you later contact Professor DeForest in order to find another source to verify whether or not the theory that these - - whether or not the theory had been set forth or put forth could be verified for you?

MR. KLEIN: Objection.

THE COURT: Sustained.

Q Did you ever call another forensic scientist with regard to these types of occurrences where this opacity occurs just before the skin line?

A Yes, sir, I did.

Q Who was that?

A I called Dr. - - I'm not sure of his first name. But, his last name is Oeta, of the International Research in Japan, Tokyo, and spoke to and visited with Nick Petraco, Detective, in criminalistics in New York City police lab.

Q Nick Petraco is also a student or doctoral student, not of Professor DeForest?

1 A No, sir.

2 Q He has been?

3 A A doctoral student, not to my knowledge.

4 Q A student?

5 A Yes, sir.

6 Q Now, did you come to note in question samples  
7 and in known samples, whether or not there was an opaque  
8 banding just below the skin line in the anagen growing  
9 face hairs

10 A Did I come to note when?

11 Q In the last three weeks?

12 A Yes, sir, I have.

13 Q And you have seen that banding there?

14 A I have seen the banding in the question samples  
15 and the known samples, yes, sir.

16 Q You did not make any note of that in your initial  
17 notes; is that correct?

18 A That's correct.

19 Q In fact, you didn't even take any notice of  
20 those things?

21 A I noticed it, but I really didn't know what  
22 it meant.

23 Q What it means is that the chemical deterioration  
24 of the body, after death actually intrudes on that portion  
25

1 of the hair and causes an opaque condition, to occur, doesn't  
2 it?

3 A I'm not so sure that that's an accurate represen-  
4 tation of what's going on.

5 Q That's what the theory - -

6 A I didn't finish my answer.

7 Q I'm sorry.

8 A As far as theory goes, I have attempted to go  
9 to the library and extract some information on it. There  
10 is little to none. In talking to Dr. Ceta in Japan, he  
11 has noted this condition - -

12 MR. ROBINSON: I have to object to any  
13 hearsay on this, if that's going to be hearsay.  
14 I intend on producing Dr. DeForest.

15 MR. KLEIN: I object to this.

16 MR. ROBINSON: Unless Dr. Ceta appears  
17 here, that would be hearsay.

18 THE COURT: You are making statements.  
19 Don't tell us what he told you.

20 A In my information gathering on this subject,  
21 it has been brought to my attention that a minimal amount  
22 of research has been done and this degradation of the  
23 root area and this landing as you refer to above the root  
24 area has been noted by some people and associated with  
25

1  
2 death.

3 Q Any affects after death?

4 A I don't know. I'm trying to finish my answer.

5 Q I'm sorry.

6 A You asked me well, what process took place.

7 There is very little information in the process of what  
8 is taking place. There appears to be some bacterial action  
9 taking place on the bottom root portion. That is a viable  
10 area that can be attached by bacteria or other agents.  
11 The banding is somewhat above that root area in an area  
12 of hair that may be a little bit more firmer, a little  
13 bit more solid, a little bit more carotized. That same  
14 banding condition I had noticed above the hair shaft in  
15 some diseased shaft. So, I'm not so sure that one process  
16 is directly related to the other.

17 Q In fact though, you have noticed this condition  
18 in bodies that you have reviewed or hair that comes  
19 from bodies that have been exposed to the elements for  
20 a period, have you not?

21 A That's not a true statement.

22 Q Dr. DeForest indicated that to you in your presence,  
23 did he not?

24 MR. KLEIN: Objection.

25 THE COURT: Sustained.

1  
2 Q In fact, Detective, one of the principle aspects  
3 of identification of matches that is heralded throughout  
4 all the forensic handbooks is the experience of the viewer  
5 of the two question samples, the known and the question  
6 samples?

7 THE COURT: The hair examined?

8 MR. ROBINSON: Yes.

9 Q Isn't that one of the most important prospects  
10 of the entire procedure?

11 A Again, simply not just a yes or no. Forgive  
12 me, counselor.

13 Q Sure.

14 A Experience is very important. Training is very  
15 important. The number of hours one physically sits down  
16 and does this technique is very important.

17 MR. ROBINSON: Excuse me. Just a moment,

18 Judge? I just want to find one particular point.

19 I couldn't mark the book. (Pause.)

20 Q Are you familiar with Richard Safferstein on  
21 forensic science?

22 A Yes, sir.

23 Q You utilized that book in your everyday or regular  
24 forensic studies?

25 A Yes, sir.

1

2

Q You have read the book, of course?

3

A Yes, I have.

4

5

Q Will you agree with his position that the experience and ability of the hair examined is perhaps the most important aspect of hair identification?

6

7

A I think I did agree with him.

8

9

Q Okay. That wasn't how I heard it. Now, when you reviewed the hair you made notes, right? Those are the yellow page notes that you mentioned?

10

11

A Yes.

12

13

Q You made those notes either sometime during or after the examination you did, right?

14

A Yes, sirs.

15

16

Q I would direct your attention to page two of those notes - - withdrawn.

17

18

I will direct your attention to page one. You indicated the race was both Caucasian in K-1 and Q-8?

19

A That is correct.

20

21

Q Throughout the page one, you used the terminology K-1 and Q-8?

22

A That's correct.

23

24

Q On page two, you now change it where it says pigment. Q-1 and K-8?

25

A Dr. DeForest pointed that out to me. I transposed

the numbers and letters.

Q You did that in 10, 11 and 13?

A Yes, sir.

Q Those were simply an error?

A Yes.

Q Did you make any other errors in this procedure?

MR. KLEIN: Objection.

THE COURT: I will permit it. You mean  
on that yellow sheet?

MR. ROBINSON: No, on his comparison.

A I don't believe so, no, sir.

Q I direct your attention to the police report  
dated - - it doesn't have a date on it. Three page report.  
Do you have that?

A Yes, sir, I have a copy of it.

Q I direct your attention to subdivision two where  
it says received from Police Officer Birdsall on March  
26th, 1985?

A Yes, sir.

Q Now, you received at that time 21 different  
samples; is that right and you noted them Q-1 through  
Q-21?

A Yes, sir.

Q On the bottom you indicated samples of Q1-21



1 were removed from the defendant's van, right?

2 A Yes, sir.

3 Q And then I direct your attention to number four  
4 where it says received from Police Officer Birdsall on  
5 October 1st, 1985?  
6

7 A Page two?

8 Q Right.

9 A yes, sir.

10 Q You had hair samples Q-24 through Q-28; is that  
11 correct?

12 A Yes, sir, it is.

13 Q Then, you have bottom, samples of Q-14 through  
14 Q-28 removed from defendant's truck?

15 A That's a typo. It should have been Q-24. That's  
16 a typo. It should have been picked up when I signed the  
17 report. But, regrettably, I didn't.

18 Q do you have any other errors that you made in  
19 this comparison?

20 MR. KLEIN: Again, Judge, I object to that.

21 THE COURT: Sustained.

22 Q Detective Fraas, did you make a - - withdrawn.

23 You identified approximately ten or 12  
24 different characteristics from these two different hair  
25 samples; is that right?

1  
2 A Ten or 12 different categories. There may be  
3 a few characteristics in different categories.

4 Q It's based upon your mental comparison of the  
5 known samples as against the question samples that you  
6 finally derived or determined an opinion; is that right?

7 A My opinion led to a conclusion, yes, sir.

8 Q And that conclusion is what you have offered  
9 here today; is that right?

10 A Yes, sir.

11 Q In fact, when you made these yellow pages of  
12 notes, those were made after the fact, weren't they because  
13 in fact you were just writing out those numbers later  
14 on?

15 A I may have had them on a different piece of  
16 paper and decided to put them on something legible, counselor.  
17 My notes aren't always the neatest.

18 Q Sort of like a doctor in training?

19 A I should be so lucky.

20 Q One other thing, where it says roots on those  
21 pages, it says follicular tags attached. What does that  
22 mean?

23 A It means that there was some material that adhered  
24 to the root.

25 Q That was cellular material?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A Yes, sir.

Q You never did any PGM testing of those cells?

A That's correct.

Q That might have led you to a more accurate determination, wouldn't it?

A I don't think so, counselor.

Q Well, you would have been able to tell a blood grouping type at that point if you would have been able to make a successful PGM test, would you not?

A Yes, sir. In my opinion, I don't think I could have.

Q You never tried?

A That's correct.

Q In fact, you relied upon the analysis that you did which is nothing more than a visual analysis; is that correct?

A When you set it up more like I should be embarrassed that I didn't do anything more?

Q Listen, I would have loved you to have done every test. I would like to make a hundred percent sure. I have a client here to protect - -

MR. KLEIN: Objection, Judge, to his comments.

THE COURT: Yes. Sustained. Ask questions.

Mr. Robinson.

1  
2 Q As far as you are concerned, you never had any  
3 experience with these opaque bands before in the past?

4 A I really don't have any knowledge of just what  
5 that means, no, sir.

6 Q The opaque bands that I was talking to you before  
41 7 about was just below the skin line. Can I have you point  
8 out the section on the anagen diagram again?

9 A Yes, sir. (Indicating.)

10 Q Can you just point out to the jury the area  
11 that we are talking about?

12 A The banding effect that counsel is talking about  
13 would roughly be in this area. (Indicating.)

14 Q Indicating approximately between the bottom  
15 of the root and the surface?

16 A Yes, sir.

17 Q That's an area that's just been recently carotonized  
18 and yet not fully outside the skin yet; is that right?

19 A I suspect that's true.

20 Q Hair grows approximately three millimeters a  
21 day, right?

22 A half an inch a month, however that works out.

23 Q So, as it moves up and out of the root and beyond  
24 the skin, it becomes harder; is that fair?

25 A Yes, sir.

1  
2 Q That's the carbonization that we are speaking  
3 about?

4 A Yes.

5 Q By the way, hair doesn't grow once a person  
6 dies; is that correct?

7 A To my knowledge, once you are dead, your growth  
8 process stops.

9 Q All the myths that corpses with three yards  
10 of hair is all - -

11 A That's what it is, a myth.

12 Q In fact, the only hair that you noted out of  
13 the 20 hairs that had this banding on it were anagen phased  
14 hairs?

15 A That I'm not sure of, counsel, no.

16 Q Well, the anagen hairs didn't show acute banding,  
17 did they?

18 A As I recall, when I reviewed those slides again  
19 from the known sample K-1, there was a wide range of this  
20 condition in many different hairs. There growth phases,  
21 I really don't recall, counselor.

22 Q You didn't make any particular notes on the  
23 individuals particular hair?

24 A No, sir.

25 Q By the way, when you took a look at all those

1  
2 samples that you took from the van, how many were there  
3 all told, 20?

4 A Samples?

5 Q Samples.

6 A I don't know what you mean by samples. There  
7 were more than 20 hairs.

8 Q Twenty envelopes?

9 A Twenty-one samples include the blankets and  
10 the hairs from the carpet, yes, sir. Twenty-one samplings.

11 Q And in those samplings, there were what, four,  
12 five, ten hairs in each one perhaps?

13 A Or more.

14 Q So, you looked at perhaps a hundred hairs or  
15 more?

16 A Or more, yes, sir.

17 Q Did you find any hairs from John Restivo?

18 A No, sir.

19 Q Among all those hairs in the van that were found  
20 you found no hairs from John Restivo?

21 A That's correct.

22 Q You have a hair sample from John Restivo; is  
23 that right?

24 A Yes, I did.

25 Q When was that taken, do you recall?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A If I can refer to my report?

Q Sure.

A I don't believe it's included in this report.

Q It was sometime in 1985?

MR. KLEIN: I have a copy of it if he wants to refer to it?

THE WITNESS: Yes, sir. We were present at the same time, you and I.

A Yes, sir. I have a copy of the report here.

Q When was that?

A April 18th, 1986 at 2:30 in the afternoon.

Q By the way, did you find any hairs from John Kogut in that van?

A John Kogut? I can't answer that question because I never received, to my knowledge, any samples from John Kogut.

Q You never received any hair sample from him?

A I don't believe so, counselor. No.

Q How about Dennis Halstead?

A I don't believe I received any from either, sir.

Q Well, isn't one of the principle aspects of your duty to obtain as many samples from People

1  
2 who could have been in that particular van so that you  
3 could avoid any potential coincidental situation?

4 MR. KLEIN: Objection?

5 THE COURT: I will sustain an objection  
6 as to form.

7 Q As a scientist isn't one of your principle jobs  
8 to obtain hair samples from everybody who could have been  
9 subject to leaving a particular hair in an area?

10 A Yes, sir.

11 Q And you are familiar, were you not with the  
12 general scenario that was being presented in this case,  
13 were you not?

14 A Yes, I was.

15 Q You didn't request any hairs from Dennis Halstead  
16 or John Kogut?

17 A That's not a correct statement?

18 Q Did you ever ask anybody to get you those hair  
19 samples?

20 A Yes, I did.

21 Q Who?

22 A Detective Volpe.

23 Q In fact, do you know whether - - in fact, do  
24 you know that when you came to get the hair samples from  
25 John Restivo it was pursuant to court order which was



1  
2 agreed upon, stipulated, that he would agree to give that  
3 sample, right?

4 A Yes, sir.

5 Q No court order was ever obtained for John Kogut  
6 and Dennis Halstead, right?

7 A I couldn't testify to that.

8 Q But you never saw any such samples from either  
9 of those parties, right?

10 A That's correct, sir.

11 Q By the way, did you also review hair samples  
12 from that scene, from those blankets that were found at  
13 the scene where the body was found?

14 MR. KLEIN: I object.

15 THE COURT: Sustained.

16 Q Did you review - - I'm sorry. Did you receive  
17 on December 11th, 1984 hair samples which had been removed  
18 from a blue blanket in which you termed Q-5a?

19 A Yes, sir.

20 Q And were you informed that that blue blanket  
21 came from the area where Theresa Fusco's body had been  
22 found?

23 MR. KLEIN: Objection.

24 THE COURT: Sustained.

25 Q Do you have any notation as to where Q-5a

1  
2 came from?

3 A No, sir.

4 Q Did you ever come to know where Q-5a came from?

5 MR. KLEIN: Objection.

6 THE COURT: Sustained.

7 MR. ROBINSON: If he knows, Judge?

8 THE WITNESS: Yes.

9 Q Did you ever travel to Lynbrook and obtain these  
10 samples, this blue blanket, obtain samples from it?

11 A No, sir.

12 Q Let me ask you this: How about the beige blanket  
13 that was given to you, hair samples that were given to  
14 you on 12/11/84?

15 A What do you mean? How about it?

16 Q Withdrawn.

17 Did you find any of John Restivo's hairs on  
18 the blue blanket that was given to you, the samples that  
19 were given to you on 12/11/84?

20 A No, sir.

21 Q Did you find any of John Restivo's hair on the  
22 beige blanket?

23 A No, sir.

24 Q Or the other two blankets that were subsequently  
25 given to you?

1 A We have a beige blanket, a blue blanket.

2  
3 Q You indicated earlier that there were four blankets,  
4 all told?

5 A I thought I indicated that. I don't recall  
6 four.

7 Q A yellow blanket and a beige blanket were forwarded  
8 to you on 12/11/84 by Wayne Birdsall, do you recall that?

9 A I'm a little confused. I have two items that  
10 were forwarded to me on that date and time by Officer  
11 Birdsall. But, I have them described as a blue blanket  
12 and beige blanket on item one, page one of my report.  
13 Are we talking about the same thing?

14 Q I show you that. (Handed.) Did you ever receive  
15 samples from Wayne Birdsall, beige and yellow blanket?

16 A We are talking about the same evidence. It's  
17 the same date and time. It's two blankets. There seems  
18 to be some confusion over the color. He has them described  
19 as yellow and beige and I have it as beige and blue.

20 Q So, that would be another error?

21 MR. ALBIN: It's not an error. I object  
22 to that.

23 MR. ROBINSON: I object to it.

24 MR. ALBIN: Objection to it. It's not  
25 his paperwork.

THE COURT: Sustained.

Q Would that be another indication of the type of subjective determinations made by people as to the coloration and things?

MR. KLEIN: Objection.

THE COURT: Sustained.

Q You are not sure of where that set of slides, that little folder of slides was kept or the hair - - I'm sorry, not the slides, you are not sure where the envelope, this opened envelope with the four smaller envelopes was kept before or after you made this comparison?

A Yes, it was kept in a box on the examining table.

Q It wasn't kept in a locked locker; is that right?

A That's correct.

Q And it wasn't kept in a locked drawer; is that right?

A That's correct.

Q And it wasn't logged in and logged out and resealed each time it was logged out; is that right?

A That's correct.

Q And it was available to 15 other people working in that lab at all times the entire time it was in that box; is that correct?

A That's correct.

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A That's correct.

Q And nobody else logged in or out of that envelope every time they looked in it?

MR. KLEIN: Objection, Judge. There is no testimony or evidence that anybody looked in it .

THE COURT: Well, he can answer the question.

Q Is that right?

A I have no knowledge that anyone tampered with the evidence.

Q You do not personally have that knowledge because you were personally there all that time; is that correct?

A That's correct.

Q In fact, during the period of time that you looked at the evidence when you first got the envelope in the time you first mounted those slides up, there was an entire other shift working that day other than when you were working?

A That's correct.

Q How many people work during the day on that other shift?

A It varies. It could be two. It could be five.

Q And homicide detectives come and go as long as they are buzzed in with information?

1  
2 MR. KLEIN: I object to the question.

3  
4 THE COURT: Sustained.

5 Q As long as you buzz a police officer in through  
6 that door, there is no log kept of who comes into that  
7 area; is that correct?

8 A That's a correct statement, yes, sir.

9 Q When Detective Waltman came in on December 6th,  
10 nobody kept any notation of his entry into that area;  
11 is that right?

12 MR. KLEIN: Objection, Judge.

13 THE COURT: Sustained.

14 Q Did anyone keep a log of him coming into the  
15 lab that day?

16 A We don't keep a log of people coming and going  
17 as a matter of regular police business.

18 Q Did Detective Volpe come up and visit at all  
19 while you were going through the slides at hand?

20 A I'm sure I saw Detective Volpe sometime but  
21 I'm sure I don't have any specific recollection.

22 Q The time period that the original hairs were  
23 taken from the deceased was December 6th, 1984; is that  
24 right?

25 A It was sometime, November, December, late '84.  
I don't remember the exact date.

1  
2 Q The time that you got - - that you received  
3 the question samples was March 26th, 1985, some four months  
4 later, right?

5 A Yes, sir. Four and a half months, I guess.

6 Q And you received other samples that you compared  
7 with those samples in the meantime and none of them matched?

8 A The items that are included in my report.

9 Q But, you had done other comparisons?

10 A You mean on other cases?

11 Q From this case. You compared all the hair samples  
12 that you obtained from the blankets and stuff like that?

13 A Yes.

14 Q Now, did you receive hair samples from John  
15 Restivo on March 5th, 1985?

16 A John Restivo's hair samples, as I testified  
17 before, were received in your presence in April of 1986.

18 Q Did Detective Volpe ever give you any hair samples  
19 from John Restivo prior to that time?

20 A I certainly don't recall that, counselor. I  
21 don't have it in my report.

22 Q You would have logged it in?

23 A Yes, sir.

24 Q You didn't overlook that?

25 A No, sir.

MR. ROBINSON: I have no further questions.

MR. FAMIGHETTI: May I just ask a few questions?

THE COURT: Yes.

CROSS-EXAMINATION

BY MR. FAMIGHETTI:

Q Good afternoon, detective.

A Good afternoon.

Q As I understand your testimony, you asked someone to get you to acquire a sample of John Restivo's hair and a court order was acquired and that sample was provided; is that correct?

A Yes, sir.

Q Then you asked someone to get a sample of Dennis Halstead's hair and nothing happened?

A That's correct.

Q So you never compared Dennis Halstead's hair with any of the questioned hairs that you acquired from the van; is that a fair statement?

A Yes, it is.

Q Hairs from different portions of the human body exhibit different characteristics; is that correct?

A Yes, sir.

Q In other words, a scalp hair is different than a pubic hair, true?



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A Yes, sir.

Q It's readily determinable?

A In most instances, yes.

Q Now, how many hairs would you approximate were acquired from this van on March 26th, 1985?

A A hundred or more.

Q Now, this case involved an alleged sexual assault, right?

A Yes.

Q Of those hundred or more hairs, Detective Fraas, were any of them pubic hairs?

A I don't recall.

Q Did you examine each and every one of them?

A Yes.

Q You don't remember whether or not any of them were pubic hairs?

A No, I really don't recall, counselor.

Q Did you have a known sample of pubic hair from the deceased?

A No, sir, I didn't.

Q During the course of a forensic investigation of a van such as the one that has been testified about in this case and in terms of this type of crime or sex crime was alleged to have occurred, is it an alleged procedure

1  
2 to look for semen stains in this thick - - in a van such  
3 as this?

4 A Yes, sir.

5 Q Was that done?

6 A It wasn't done by me, sir. I only have hair  
7 association for this case. I can't testify for Officer  
8 Birdsall's actions.

9 Q It's done with a black light technique?

10 A A UV light can be used for that type examination,  
11 yes, sir.

12 Q That light is used in connection with different  
13 materials. If it hits or is shined upon an area that  
14 has a semen stain, it shows up?

15 A Yes. It helps detect a stained area from a  
16 background.

17 Q So, to your knowledge, there were no pubic hairs  
18 recovered from that van; is that correct?

19 A No. What I am saying is I don't recall whether  
20 there were pubic hairs or not.

21 Q Well, there weren't any that you utilized in  
22 connection with this examination; is that right?

23 A That's correct.

24 Q And there weren't any recovered from the deceased  
25 at the autopsy; is that correct?

A Yes, sir.

Q And there wasn't any semen recovered, any instances or any indication of semen noted on the forensic examination which took place March 26th, 1985; is that correct?

A You are asking me to testify to Officer Birdsall's findings.

Q You were there that day?

A I was there, but I really don't recall.

Q Did you see a black light used that day?

A I don't recall, counselor.

MR. FAMIGHETTI: Nothing further.

REDIRECT EXAMINATION

BY MR. KLEIN:

Q Detective Fraas, were you able to conduct the PGM study on the two questioned hairs from Q-A?

A No, sir.

Q Why is that?

A One of the question hairs had minimal to no tissue adhering to it. The other one had some, but not a whole lot.

Q And you testified that those folders were opened before today; is that correct?

A Yes, sir.

Q And you also mentioned a person named Professor

1  
2 DeForest. Were they open in the presence of Professor  
3 DeForest?

4 A Yes.

5 Q And he examined those items?

6 A Yes.

7 Q And finally, you mentioned or Mr. Robinson mentioned  
8 the characteristic of the banding, the opaque area on  
9 the lower portion of the hair and you indicated that subsequent  
10 to your conversation with Professor DeForest, that you  
11 had seen that; is that correct?

12 A Yes, sir.

13 Q Did you look for that on the known hairs of  
14 Theresa Fusco?

15 A Subsequent to this?

16 Q Yes.

17 A Yes, sir.

18 Q And did you see it on the - - all the known  
19 hairs that you looked at of Theresa Fusco?

20 A No, not all the known hairs, no.

21 Q Have you examined hairs that were removed from  
22 people's heads prior to death with respect to the presence  
23 of those opaque banding?

24 A During the course of my work I have examined  
25 hundreds and hundreds of hairs, yes.

MR. ROBINSON: Objection, Judge. It's not responsive.

MR. KLEIN: He said, "Yes."

MR. ROBINSON: It's not responsive to that particular question. I'm sorry. I ask it be read back.

THE COURT: All right. Read it back.

(Question and answer read back.)

THE COURT: The answer as started will be given. Do you want it read back again?

THE WITNESS: No, sir.

Q Have you seen that banding characteristic on hair removed prior to that?

A Not in the root area, no.

Q Have you seen it in other areas?

A I have seen a condition of banding in a shaft area, yes.

Q Now, have you examined hair and noticed that banding condition on hair that has been removed after death?

A Have I?

Q Yes.

A Subsequent to talking to Professor DeForest?

Q Yes.

1  
2 A Yes, I have.

3 Q How soon - -

4 A Hairs removed, how soon after death have you  
5 noted that banding?

6 A Most recently, less than 12 hours and approximately  
7 eight or nine hours after death.

8 MR. KLEIN: Thank you, your Honor.

9 RECROSS-EXAMINATION

10 BY MR. ROBINSON:

11 Q Now you say that you have never seen this occur  
12 before death in the hair that you viewed except above  
13 root areas; is that correct?

14 A Yes, sir.

15 Q So this opaque quality can occur in a hair before  
16 death?

17 A Premortem, sir.

18 Q But after death, you have never seen it in that  
19 particular area; is that correct? Before this particular  
20 study that you have done recently, is that right?

21 A Yes, sir.

22 Q Now, as a result of this whole investigation  
23 now that you have done in the last three weeks, you now  
24 say that you have seen it within eight to nine hours of  
25 death?

1

2

A Yes, sir.

3

4

Q Let me ask you have you done any research in this area before this?

5

A Before this? No, sir, not at all.

6

7

Q In fact, you can't find any studies on it; is that correct?

8

A That's correct.

9

Q There is nothing published on it?

10

A I tried to find something, counselor. No.

11

Q By the way, you have never published, have you?

12

A No.

13

14

Q Can you describe what publishing is in the scientific area?

15

16

17

A Yes, someone performs a study or performs a case study, sends it into a journal. It's edited by a group of editors and if it's accepted, it's published.

18

Q And utilized by scientists?

19

A It's there for our edification.

20

Q You have never written any books, right?

21

A That's correct.

22

23

Q And you say you have done how many hair reviews, comparisons?

24

A Hundreds.

25

Q You keep your own collection of slides?

1  
2 A No, sir. Everything is invoiced to the Property  
3 Bureau.

4 Q So you don't keep any kind of sample collection  
5 to review and refer back to?

6 A I wish I could. But, everything has to be invoiced  
7 to property.

8 Q Now, when was it that you saw this occur, this  
9 eight to nine hour span occur, example of having within  
10 eight to nine hours?

11 A Most recently in a homicide investigation where  
12 a 16 year old boy killed in Long Beach approximately a  
13 week ago. There is some speculation between the time  
14 of death between 1:30 and 5:30. He was autopsied I'm told  
15 about 1:30 to two o'clock.

16 Q You are told?

17 A By the Medical Examiner's Office, yes, sir.  
18 In another instance - -

19 Q So that could mean - -

20 A I haven't finished my answer.

21 Q Can we take that piece apart - - go ahead and  
22 finish.

23 A In the second instance, in conjunction with  
24 Detective Petraco in the police lab, hit and run victim  
25 was verified and autopsied approximately eight or nine



1  
2 later and again that condition was evident in those samples  
3 and in the Central Park homicide where a girl was allegedly  
4 strangled, I'm sorry, by Mr. Chambers, we have the same  
5 condition and that time frame is 24 to 30 hours.

6 Q Have you done any follow-up surveys or studies  
7 with controlled groups of any sort?

8 A No, sir. I'd love to.

9 Q Have you found that - - have you done any studies  
10 with regard to the type of exposure that might be required  
11 to have this occur?

12 A No, sir.

13 Q One thing we do know here is that this banding,  
14 this opaque banding below the skin line does not happen  
15 when the hair has been plucked out while the body was  
16 alive; is that right?

17 A I could only answer that question if we did  
18 a premortem and postmortem from a live person and taken  
19 from a dead person. That would be one of the basic  
20 things you would do to research this problem out.

21 Q Then, what you said about this eight to nine  
22 and less than 12 hours is just a few smatterings or  
23 samplings that you have come up with; is that right?

24 A Those are a few cases that we have just reinvesti-  
25 gated most recently.

1  
2 Q In order to explain away a situation where a  
3 hair from a decomposed body, a dead body is supposed to  
4 be found in my client's van, right?

5 MR. KLEIN: Objection.

6 THE COURT: Sustained.

7 Q To try to give an explanation as to how the  
8 hair allegedly was found in that van, came from a dead  
9 body?

10 MR. KLEIN: Objection.

11 THE COURT: Sustained.

12 Q Well, you are offering an explanation here,  
13 are you not, that this could not have happened or you  
14 told us any less than eight to nine hours - -

15 MR. KLEIN: Objection, Judge. He didn't  
16 say that.

17 THE COURT: Sustained.

18 Q You have given us an example, have you not,  
19 that the one sample was eight to nine hours after death;  
20 is that right?

21 A Yes, sir.

22 Q But, you have already told us that that  
23 eight to nine hours could have been as much as 13 hours  
24 because there was a four hour gap in that time limit,  
25 admittedly, right?

1 A In the one case.

2 Q In the first case that you mentioned?

3 A In the first case it could have been as much  
4 as 12 and less or as small as eight. In the second scenario  
5 from Detective Petraco's case, I believe we are locked  
6 into eight or nine hours. In the third scenario, it's  
7 20 to 30 hours. Somewhere in that range.

8 Q Now, you looked at the various hairs in the  
9 known sample and in the unknown sample; is that right?

10 A Yes, sir.

11 Q The known sample came from Theresa Fusco's body  
12 which had been exposed to the elements for approximately  
13 three and a half weeks; is that correct?

14 A That's correct.

15 Q The known samples supposed to have come from  
16 my client's van looked almost identical in that banding  
17 area, did they not?

18 A Question samples?

19 Q The question samples.

20 A Identical in what respect.

21 Q The banding. The banding looked almost the  
22 same as the majority of the known samples; is that correct?

23 A Are you talking about the degree of banding?

24 Q The degree of banding.  
25

1  
2 A The known sample had a wide degree. Some had  
3 little to none and some had banding in the same amount  
4 that the question sample did.

5 Q Isn't it a fact that the range of banding in  
6 the known samples was fair to heavy banding at least in  
7 the anagen, pending - -

8 A I'm trying to recall. It might be an accurate  
9 statement.

10 Q Do you have notes - -

11 A No, sir.

12 Q - - of a recent review that you have done in  
13 the last few weeks?

14 A No, sir.

15 Q The question samples that you viewed - -

16 A yes, sir.

17 Q - - they had a similar type of banding, did  
18 they not?

19 A Similar to what?

20 Q They weren't just a very minute amount of opaque  
21 quality, they were pretty much consistent with the known  
22 samples, the range of known samples?

23 A They fit in the range, yes.

24 Q The two hairs in the anagen samples were two  
25 growing hairs?

1 A That I recall. I remember one was.

2 Q They didn't have a club on the bottom of them  
3 like the telogen hairs, right?

4 A One of the hairs is, I believe fragmented in  
5 the root area. One is a complete anagen hair, yes, sir.

6 Q Let's take an anagen hair. That anagen hair  
7 showed this quality to it, this opaque banding?

8 A Yes, sir, it did.

9 Q And consistent range as the known sample hairs  
10 showed it?

11 A It showed this degradation fit within the range  
12 of degradation that fit within the known sample.

13 Q That was the same type of range that you spoke  
14 of from which you made your determination that the hairs  
15 were microscopically alike; is that right?

16 A Yes, sir.

17 MR. ROBINSON: No further questions.

18 THE COURT: Thank you, detective.

19 (Thereupon the witness was excused.)

20 THE COURT: Any further witnesses, Mr.

21 Klein?

22 MR. KLEIN: No, your Honor. That's the  
23 People's case.

24 THE COURT: Ladies and gentlemen, I'm going  
25

1 my client is not being given a fair trial.

2 THE COURT: Denied.

3 (Thereupon the jury enters the courtroom.)

4 THE COURT: At this time, ladies and gentlemen,  
5 both of the defendants have rested their case.  
6 I am permitting the District Attorney to call  
7 a rebuttal witness. Mr. Klein.

8 MR. KLEIN: People call Detective Nicholas  
9 Petraco.

10 D E T E C T I V E N I C H O L A S P E T R A C O ,  
11 a witness called in rebuttal for the People,  
12 Shield number 1677, assigned to the New York  
13 City Police Crime Lab, having been first duly  
14 sworn, testified as follows:

15 DIRECT EXAMINATION

16 BY MR. KLEIN:

17 Q Detective Petraco, how long have you been a  
76 member of the New York City Police Department?  
18

19 A For 18 years.

20 Q How long have you been assigned to the Crime  
21 Laboratory?  
22

23 A For 13 years.

24 Q And presently what are your duties with the  
25 Crime Laboratory?

1           A     The examination of various types of trace evidence.  
2           For instance hair and fiber evidence, different types  
3           of partical matter, which is minimal, etc.

4           Q     How long have you been doing that examination  
5           with respect to hair?

6           A     For ten years.

7           Q     Can you describe for the jury what your training  
8           and experience is in that area?

9           A     I have degree in chemistry from John Jay College  
10          of Criminal Justice. I have a masters degree in forensic  
11          science from John Jay College of Criminal Justice. I  
12          have taken numerous courses in the examination of physical  
13          evidence and use of microscope. I have been a member  
14          of the New York Microscopical Society. I am a fellow.  
15          I have taken numerous courses and taught numerous courses  
16          there. I'm also a fellow, American Academy of Forensic  
17          Scientists. I am currently a member on the Committee  
18          on Forensic Hair Commission established by the FBI, researched  
19          the topic and published numerous papers on various types  
20          of physical evidence. Also contributed to several books.

21          Q     Do you know a Dr. Peter DeForest?

22          A     Yes, I do.

23          Q     Is he a colleague of yours at the John Jay College?

24          A     Yes, he is.  
25

1  
2 Q Did you study under him when you took your graduating  
3 degree?

4 A Yes, I did.

5 Q Now, did there come a time, Detective Petraco,  
6 in October of 1986 when you examined hair in this case  
7 at the Nassau County headquarters?

8 A Yes, there did.

9 Q And did you have occasion to examine the known  
10 hair of Theresa Fusco?

11 A Yes, I did.

12 Q And what other hair did you examine along with  
13 that?

14 A Some question hairs removed from a van.

15 MR. ROBINSON: Objection. He doesn't  
16 know where they came from.

17 MR. KLEIN: Dr. DeForest testified extensively

18 - -

19 THE COURT: Objection overruled.

20 Q Was that a Q-8 sample?

21 A Yes, it was marked "Q-8."

22 Q Are you familiar with the terminology of banding  
23 with respect to hair?

24 A Yes, I am.

25 Q What is that?



1 A Well, various forms of banding. One form of  
2 interest in this case, it just appears to be an air band  
3 near the root and in this case the question hair and also  
4 known hairs. Usually associated with postmortem situations.  
5

6 Q You noticed that in some of the hairs you examined  
7 in this case?

8 A Yes, I did.

9 Q Did you notice it in all of the known hairs  
10 of Theresa Fusco?

11 A No, I didn't.

12 Q Were there antigen hairs that you looked at  
13 that did not have that banding affect?

14 A Yes, there were.

15 Q After you did that observation in police headquarters  
16 what if anything else did you do with respect to that  
17 issue?

18 A Well, after examining the hairs at headquarters  
19 in Nassau County, I was asked to - -

20 MR. ROBINSON: Objection.

21 Q Just tell us what you did.

22 THE COURT: I will permit it.

23 A I was asked to see if this banding could be  
24 caused by a span of time as far as a person having been  
25 dead for a week or two weeks or a couple hours. So, I

1 went back to my lab and I looked at a few samples that  
2 we had at our lab in which I could document the actual  
3 time of death of the person and when the hair was removed  
4 from the individual and that's what I did.

5 Q Can you describe those cases that you examined?

6 A One case I just happened to have on my desk  
7 at the time which I was able to document the person was  
8 strangled and the hair was removed.

9 MR. ROBINSON: Objection, as to how he  
10 knows what.

11 MR. KLEIN: This is the same testimony  
12 that Dr. DeForest gave.

13 THE COURT: I will permit it. Overruled.

14 A The hair was removed from the individual about  
15 30 hours after the time of death. I examined that hair  
16 and saw that there was this air banding near the root  
17 that we associate with postmortem situations. Another  
18 sample of hair that my co-worker had on his desk in  
19 which the individual was deceased, hair had been removed  
20 from her head. The hair was removed about between ten  
21 and 12 hours after the time of her death and autopsy.  
22 I examined that hair and it also had this root banding  
23 in which we associate with postmortem situations. I noticed  
24 the Nassau County Police Lab have this finding and they  
25

1 proceeded to look at one hair sample that they had in  
2 which they could document that the hair was - -  
3

4 MR. ROBINSON: Objection.

5 THE COURT: Yes. Don't tell us what they  
6 did.

7 Q What did you do with respect to an additional  
8 hair sample?

9 A I was brought an additional hair sample and  
10 given a hair from that sample to look for the banding  
11 and indeed, it was banded and in each case I photographed  
12 the banding from these three question - - excuse me, these  
13 three known samples and also I photographed one of the  
14 Q-8 hairs and also one of the hairs that was documented  
15 as having come from Theresa Fusco.

16 Q On this third case that you looked at from Nassau  
17 County, what was the estimated time of death there before  
18 the hair was removed?

19 MR. ROBINSON: Objection.

20 THE COURT: I'm sorry. May I hear the  
21 question read back?

22 (Question read back.)

23 MR. ROBINSON: It's hearsay.

24 THE COURT: Sustained.

25 MR. KLEIN: This is the same testimony

1 Dr. DeForest gave concerning the hair he examined.

2 MR. ROBINSON: No, it's not.

3 MR. KLEIN: He did not know he was telling  
4 us what - -

5 MR. ROBINSON: That's an improper question,  
6 Judge. He is then relying on something that  
7 he has no idea of.

8 MR. KLEIN: He is rebuttal to Dr. DeForest's  
9 testimony.

10 THE COURT: On that basis, I will permit  
11 it.

12 MR. ROBINSON: Exception.

13 Q What was the estimated time of the third case  
14 before the hair was removed?

15 A Between eight and 12 hours.

16 Q And you say you photographed these hairs?

17 A Yes, I did.

18 Q What else did you do with them, the photographs?

19 A I made a display out of these photographs.

20 q And the photographs that you took, were those  
21 fairly and accurately depicting what you had observed  
22 in those hairs under a microscope?

23 A Yes, I do.

24 MR. KLEIN: I ask that this be marked for  
25

1 identification, your Honor.

2 (Thereupon display marked People's Exhibit  
3 41 for identification.)  
4

5 Q Detective, is that the exhibit that you were  
6 making reference to?

7 A Yes, it is.

8 Q Can you describe for us what the various photographs  
9 are?

10 A There is one photograph that is marked eight  
11 to 12 hours in which the photograph of the hair removed  
12 from a deceased between eight and 12 hours after their  
13 death.

14 Q Is that the Nassau County case that you were  
15 referring to?

16 A Yes, it is.

17 THE COURT: You base that eight to 12 hours,  
18 detective, based on what you were told by the  
19 Nassau County Police?

20 A Yes.

21 MR. ROBINSON: I again object.

22 THE COURT: I'm going to permit it. The  
23 jury understands that the detective doesn't  
24 know this of his own personal knowledge, but  
25 that he was told that this hair was removed

1 from the body from eight to 12 hours. Go  
2 ahead.  
3

4 A The one on the middle, on the top was marked  
5 10 to 12 hours. Hair was removed from a person who was  
6 deceased between the time of death and time of autopsy  
7 was between 10 and 12 hours and again, I observed the  
8 banding and photographed it. The next one on the right  
9 is on the top right, is a hair that I have marked 30 hours  
10 and it's hair from an individual who was deceased and  
11 between the time of death and autopsy was approximately  
12 30 hours. Again, I was observing the banding, and photographed  
13 it. Two bottom hairs, one is marked Q-8. This is the  
14 hair that was told to me was removed from the van in which  
15 I observed banding and again I photographed that. And  
16 one marked "KN-1, which is a known hair from Theresa Fusco,  
17 her head. This hair was being given to me as being removed  
18 from her and I observed the banding and I also photographed  
19 the hair.

20 Q Did you put any arrows on them?

21 A Yes. I put a letter B where the banding is  
22 and also an arrow to indicate where the banding is.

23 MR. KLEIN: I offer that in evidence, your  
24 Honor.

25 MR. ROBINSON: May I have a voir dire?

1  
2 VOIR DIRE

3 BY MR. ROBINSON:

4 Q Detective Petraco, you received a slide, already  
5 mounted slide, from Nassau County?

6 A Yes, I did, sir.

7 Q And you were told by whom that this came from  
8 a body eight to 12 hours old?

9 A Detective Fraas.

10 Q You had no knowledge of that whatsoever, right?

11 A No personal knowledge, no, sir.

12 Q And the one that was 10 to 12 hours, you had  
13 no personal knowledge of that either, do you?

14 A No, I didn't remove the hair from the individual.

15 Q And the 30 hour one, have you got personal knowledge  
16 of that one?

17 A No, sir.

18 Q You also have no knowledge of the K or the Q  
19 samples that you photographed here, right?

20 A No, sir.

21 Q In fact, the Q sample doesn't incorporate a  
22 full picture of the banding. In fact, it cuts off part  
23 of the banding, does it not?

24 A It's as much as I could get in? It is most  
25 of the banding.

1 Q You show most of the bottom lower portion of  
2 the root, you cut the banding in half?

3 A That's as much as I could get in the banding.  
4 The B is in the approximately the middle area of the banding.  
5

6 Q  
7 The banding continues off the screen, doesn't it?

8 A Maybe slightly, but not - -

9 MR. ROBINSON: I would object, your Honor.

10 THE COURT: Overruled.

11 (Thereupon display marked People's Exhibit  
12 41 in evidence.)

13 MR. KLEIN: May I show that to the jury,  
14 Judge?

15 THE COURT: Yes..

16 FURTHER DIRECT EXAMINATION

17 BY MR. KLEIN:

18 Q You testified the B refers to the banding area?

19 A Approximately the middle.

20 THE COURT: This exhibit, ladies and gentlemen  
21 is in evidence along with all the other exhibits.  
22 You may have them in the jury room if you ask  
23 for them.

24 (Thereupon jury views People's Exhibit  
25 41 in evidence.)



1  
2 MR. KLEIN: Thank you, detective, I have  
3 no further questions.

## 4 CROSS-EXAMINATION

5 BY MR. ROBINSON:

6 Q Detective Petraco, you work for the Police Department  
7 is that right?

8 A Yes, I do.

9 Q That's the New York City Police Department,  
10 right?

11 A Yes, sir.

12 Q How much are you being paid for today's services?

13 A Just my normal fee from the Detective Division  
14 and New York City Police Lab.

15 Q How much do you receive for that, yearly for  
16 that?

17 A Approximately \$40,000. a year.

18 Q And the entire time you were working on all  
19 these samples and taking these photographs, you were working  
20 on the Police Department's time?

21 A Yes. With their permission.

22 Q That was at the request of Mr. Klein; is that  
23 correct?

24 A Originally and with the Nassau County Police  
25 Department.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Q And that was Detective Fraas also requested that?

A He was involved, yes, sir.

Q In fact, Detective Fraas first contacted you a month ago about the whole situation?

A Approximately a month.

Q He informed you that Dr. DeForest had given your name as somebody to check on this phenomenon because he knew nothing about it when he contacted you initially; is that right?

A Yes, I believe so.

Q In fact, you have read no papers on this issue?

A I have seen papers.

Q You know about a paper that was issued in Canada?

A I have heard about one but not this phenomenon. I just heard that it contained some information about root degradation.

Q In fact, you have heard that there are five stages of this degradation of the hair; is that right?

A No, I haven't.

Q Have you heard about the fact that it first starts with florescence? Are you familiar with Florescence?

A Of hair roots?

Q Yes.

1 A I haven't observed it myself, no, sir.

2 Q You haven't observed florsence of hair roots  
3 yourself?

4 A No, I have not.

5 Q Have you observed vacuoles under the skin, under  
6 the scalp level forming initially before you see this  
7 banding?

8 A No, I have not, sir.

9 Q You know what vacuoles are, of course, right?

10 A yes.

11 Q They are small, little portions also that are  
12 just small sort of bubbles, right?

13 A Air spaces or bubbles.

14 Q Air spaces. That's what those bandings are,  
15 air spaces?

16 A I believe that's what they are.

17 Q Have you cut the hair and done a cross-section  
18 on them?

19 A No.

20 Q Have you made any comparison analysis on Q-8  
21 samples and known samples?

22 A Yes, I did.

23 Q Did you do a full comparison on it?

24 A Enough to convince me that were similar  
25

1  
2 microscopically.

3 Q As a matter of fact, that's about as much as  
4 you can do with hair, say that they are similar?

5 A Yes.

6 Q Because hair is an inexact science at best,  
7 right?

8 A No, it's fairly exacting. It's just that hair  
9 itself varies greatly.

10 Q And that's true of the known samples that came  
11 from Theresa Fusco's head also, they varied greatly, did  
12 they not?

13 A They varied in physical characteristics as most  
14 samples from a given source vary.

15 Q There were 20 samples in slides that were mounted  
16 up in the corpse of Theresa Fusco?

17 A Yes, sir.

18 Q Did you review all 20 of them?

19 A Yes, I did.

20 Q Did you know that there are different types  
21 of hairs? There are antigens which are growing hairs  
22 and catagen hairs which have stopped growing?

23 A Yes.

24 Q And you didn't see any of these phenomenon in  
25 the catagen hairs or telogen hairs?

1 A I believe I did see some banding in some catagen  
2 hairs.

3 Q Which ones?

4 A In - - I wasn't certain whether it was or not.  
5 I can say I even probably didn't see it. I'm not certain  
6 it was banding. It may have been a beginning stage of  
7 it if there is a stage of it.

8 Q Which hair is that?

9 A I believe K-1.

10 Q How about K-11?

11 A It was a telogen hair, I have in my notes.

12 Q You don't show any banding there?

13 A No.

14 Q In fact, you say the color was clean or clear,  
15 right?

16 A It looks clean, right.

17 Q In fact, didn't you find growing hairs in the  
18 antigen hair that didn't have this banding effect?

19 A Yes, I did.

20 Q In fact, you found a cross-section of effects  
21 in those 20 slides; is that right?

22 A That is what we normally do in a hair comparison,  
23 you look at a range of the hair that is known in the sample.

24 Q Tht's because you compare it by the range, it's  
25

1 a range of characteristics that you base your determination  
2 on, is that right?

3 A Yes.

4 Q In this case, you not only found some of those  
5 growing hairs as antigen hairs that didn't show the banding  
6 effect at all?

7 A Yes.

8 Q You also found some that had the effect of  
9 being tremendously advanced, right?

10 A No, it had the effect - - I don't know if the  
11 effect is advanced effect or if there are degrees of this  
12 particular condition.

13 Q You don't know that?

14 A I don't know that.

15 Q Well, didn't you see various stages of that  
16 effect even in your samples right here?

17 MR. KLEIN: I object to the form.

18 THE COURT: I will permit it.

19 A I saw various degrees of it. But, I don't  
20 know that they are in fact degrees of it. It might be  
21 something that happens to a given hair. Some of it doesn't  
22 happen. The condition doesn't happen to some hairs.  
23 It happens to some hairs to a certain degree. It hasn't  
24 been researched to my knowledge. It hasn't been reported  
25

1 in the literature to my knowledge. We really don't know  
2 if there is or is not a degree to this condition.  
3

4 Q You have been doing this for approximately eight  
5 to 10 years.

6 A Ten years.

7 Q Your teacher at school, at John Jay, when you  
8 took your masters was Dr. DeForest?

9 A Yes, sir.

10 Q You know for a fact that Dr. DeForest has indicated  
11 that this is a progressive effect?

12 A He doesn't know for certain. He hasn't researched  
13 it to my knowledge. We have often discussed researching  
14 the phenomenon just to see what actually causes it. We  
15 believe it is caused by postmortem conditions. But, we  
16 don't know that for certain though.

17 Q Are you familiar with the Canadian study where  
18 it says that it is in fact progressive and that there  
19 are five stages of progression?

20 A Dr. DeForest mentioned it to me last night.  
21 He didn't tell me about it. He said there is an article  
22 out. He said he would get me a copy. It was not exactly  
23 published. It's a prepublished article that he must have  
24 received from someone in Canada. He didn't tell me the  
25 details of the article. He did mention florescence but

1 I don't know what that means.

2 Q You don't know what that means?

3 A I know what florescence means. But, I don't  
4 know what it means with respect to postmortem observations.

5 Q Didn't Dr. DeForest tell you that florescence  
6 is the very first stage before you would see these vacuoles?

7 A No.

8 Q Didn't he tell you that there was a second stage,  
9 elongated vacuole area pockets would start to form. They  
10 would start to form together into a second and third stage.  
11 Did he tell you that?

12 A No.

13 Q Did he tell you after the formation of those  
14 small air pockets that they would then group together  
15 until you get this banding effect?

16 A He did not.

17 Q Did he tell you that they would then progress  
18 to the point where in some point in time where the banding  
19 effect would go all the way across the hair and the hair  
20 would break off?

21 A He did not.

22 Q Did you ever see an effect happen where the  
23 hair would break off after this banding effect had occurred  
24 for a substantial period of time?  
25



1  
2 A I have seen hairs from skeletal situations where  
3 there is no root end. Exactly what causes that, I don't  
4 know.

5 Q Now, isn't it a fact that certain hairs may  
6 be more susceptible to this type of intrusion in this  
7 banding or this banding fashion?

8 A I believe so.

9 Q Do you know what I mean by intrusion?

10 A I believe so. But I haven't done any study  
11 and I don't know of any study that states that as a fact.  
12 I haven't done any study myself on that phenomenon.

13 Q You are indicating you are an expert in hair;  
14 is that correct?

15 A Yes, I am.

16 Q Now, given your experience, you maintain a collection  
17 of hair samples?

18 A Yes, I do.

19 Q How do you get those hair samples?

20 A From various cases which I work on. If the  
21 case is not needed as evidence, I will take out a few  
22 standards and put them in my file. If they show a particular  
23 condition or particular color more for whatever reason  
24 I want to see a particular morphology, whether it's a  
25 color, root shape or something, I will keep one or two

1 hairs.

2 Q How many do you keep right now?

3 A Over the course of time, I have collected a  
4 couple of hundred different hairs.

5 Q Isn't it a fact that you are not legally allowed  
6 to do that, detective?

7 A It's part of my file at work.

8 Q Detective Fraas indicated he couldn't keep any  
9 of those. They were all evidence and had to go back in  
10 the file.

11 MR. KLEIN: Objection, Judge. Different  
12 Police Department.

13 THE COURT: I will permit him to answer.

14 Q You can do that?

15 A I will keep these. They are available for evidence.  
16 They are all marked with case numbers on them. In fact,  
17 if I ever have to go back to that file to use that as  
18 evidence, I do have that hair and I can document that  
19 as the fact that it is hair from the case. I don't know  
20 that it's illegal.

21 Q You never cross referenced it with the file  
22 so that they know where to look for it?

23 A It's in my notes.

24 Q You don't indicate that though, you have never  
25

1 cross-referenced with this file, the files of those cases,  
2 have you?

3 A I put it in my notes.

4 Q Those notes?

5 A I put those notes in the file which indicates  
6 where that hair is.

7 Q Even still, with 200 slides, that's still not  
8 sufficient for you, is it? You still have to gather more,  
9 right?

10 A I would like to gather as much as I can. But,  
11 there are certain conditions as to gathering these types  
12 of material.

13 Q Did you look at both of the Q-8 samples, by  
14 the way?

15 A Yes, I did.

16 Q You looked at all the known samples; is that  
17 right?

18 A Yes, I did.

19 Q Now, can you place a scale of one to ten on  
20 the amount of decomposition - - do you know what I mean  
21 by a scale of one to ten with regard to the amount of  
22 decomposition?

23 MR. KLEIN: Objection to the form of the  
24 question. There is no question that that's  
25

1 decomposition.

2 THE COURT: Well, I will permit the question.

3 A Can I put a scale of one to ten on it?

4 Q Yes.

5 A Degree of banding?

6 Q Let me ask you this: You found hairs that didn't  
7 show this banding effect at all; is that correct?

8 A Yes.

9 Q Would that be correct in calling that a zero?

10 A Including a scale of one to ten, that would  
11 be zero.

12 Q And the hair was broken off?

13 A If I knew that was due to banding?

14 Q Yes.

15 A That would be a ten. I don't give hairs numbers  
16 of scales. In fact, I never do.

17 Q Try it. If you had samples of the Q-8 samples,  
18 where would you place them on the scale?

19 MR. KLEIN: Objection.

20 A I wouldn't have any idea where to place them  
21 on a number scale.

22 Q This Q-8 sample was cut off in the banding?

23 A It's not cut off in the center. I showed as  
24 much as I could in that photograph. There might have  
25

1  
2 been a little bit of banding cuff on the top. The B is  
3 placed in approximately the center of the banding.

4 Q Isn't that continuing off the photograph?

5 A Yes, slightly.

6 Q In fact, isn't that the important aspect of  
7 the whole photograph?

8 A I wanted to show that it was in fact the root  
9 condition, the antigen root and it did have banding.

10 Q That's a lot more advanced, the Q-8 depicted  
11 in this photograph is more advanced in the KN-1 that you  
12 have next to it?

13 MR. KLEIN: Objection.

14 THE COURT: Sustained.

15 Q Given your degree of scientific ability, is  
16 not longer, the banding in the Q-8 sample than the one  
17 in the K sample?

18 A Not to any degree that I could say it's more  
19 advanced or anything like that.

20 MR. ROBINSON: May I have a ruler please?

21 (Handed.)

22 Q Before you start to see an actual banding there,  
23 isn't it a fact that you will see the small, little vacuoles  
24 starting?

25 A I have seen some hair with vacuoles on there.

1  
2 A I don't know that that in fact causes the banding  
3 or it's a precursor of banding.

4 Q You don't know that?

5 A I don't know that.

6 Q But that's what you believe, isn't it?

7 MR. KLEIN: Objection to what he believes,  
8 Judge.

9 THE COURT: Well, with any degree of scientific  
10 certainty, sir, can you say that?

11 THE WITNESS: That's just what I think,  
12 sir. That's all I can answer. I haven't done  
13 any research.

14 THE COURT: This is only your opinion?

15 THE WITNESS: My own observations, my own  
16 opinion.

17 THE COURT: Is that opinion based on your  
18 experience, training and research as an expert?

19 THE WITNESS: Of course, yes.

20 THE COURT: I will permit it.

21 A Yes, I believe that that will eventually form  
22 into a band. Whether that band forms in a few minutes,  
23 few hours, few days, well, I don't know. That's why we  
24 went back and looked at some hairs that we can do some  
25 degree of document as to the time of day and the hair

1 was removed. That's what research is all about. Documenting  
2 the phenomenon, not I think something happened two years  
3 ago and I want to look at it now.  
4

5 Q I couldn't agree with you more now. Let me  
6 ask you this: Is it not correct that the temperature  
7 in which the corpse would be in would have an affect upon  
8 decomposition of the corpse?

9 A On decomposition, I think that's true.

10 Q What is the normal temperature that corpses  
11 are held in the morgue?

12 A I don't know. I believe around 40.

13 Q Like a refrigerator?

14 A Just above freezing.

15 Q About a frigerator's temperature?

16 A I would say around a refrigerator.

17 Q Were you aware that the temperature was approximately  
18 40 degrees throughout the period of time that this particular  
19 corpse was supposed to have been exposed?

20 MR. KLEIN: Objection.

21 THE COURT: Sustained.

22 Q I ask you to take a look at this local climatology  
23 data, about three columns from the left. Will you look  
24 at the 10th of November on towards the end of the month?

25 A November, '84. Yes.

1 MR. ROBINSON: May I approach?

2 THE COURT: He has it.

3 A I think I have it.

4 Q Do you know the first two days are averaging  
5 in the Sixties and thereafter it's all in the fourties  
6 and some in the thirties, right?

7 A For November?

8 Q Yes.

9 A It says average, the 10th of the month.

10 Q No, the 11th?

11 A The 11th, it says 61, 50, 41, 47, 48, 51, 51,  
12 43, 45, 38, 33, so forth.

13 Q Thank you. Now, you have had experience viewing  
14 corpses in your job; is that right?

15 A Occasionally, yes.

16 Q And exposure to sunlight also places a factor  
17 in the type of deterioration that you may see in hair  
18 or the corpse itself, is that right?

19 A Well, it's exposure in general has an affect  
20 on corpses for decomposition in effect.

21 Q And if it is in direct sunlight, it would have  
22 an even greater impact on the decomposition?

23 A I believe so.

24 Q And if it was not in sunlight, it would have  
25



1 less of an impact, is that fair to say?

2 A Depending on the temperature, I believe so.

3 Q Given these temperatures we have just shown  
4 you?

5 A As compared to what their affect would have  
6 on decomposition?

7 Q Yes.

8 A 60, 50, 40, I would assume that some sort of  
9 decomposition would take place and it might be slowed  
10 up if it got a little colder one day and got hotter the  
11 next day, it might progress. I don't claim to be an expert  
12 in decomposition or the examination of postmortem effects.  
13 I don't claim to be that.

14 Q Aren't part of postmortem affects the postmortem  
15 effect of hair as you testified to today?

16 A in the case of hair and case of, as to how  
17 decomposition takes place, I don't claim to be an expert  
18 in that. I don't claim to have a great deal of knowledge.  
19 All I can tell you is what I observed in hair in postmortem  
20 observations and that is what I have told you.

21 Q Getting back to this exhibit that you put in,  
22 now isn't it fair to say that in your known sample the  
23 banding is approximately four inches and the Q-8  
24 sample is approximately five or more?  
25

1  
2 A To be a little more exacting, the scale on  
3 the display - -

4 Q I am asking about the scale on that ruler on  
5 inches based on those photographs based on the magnification?

6 A These are a real scale that you can measure  
7 things on a microscopic level, that's why I put it in.

8 Q Can't you also use a normal household ruler  
9 to take a measurement on those photographs that are there?

10 A Not for accuracy.

11 Q I direct you to take the ruler - -

12 MR. KLEIN: He doesn't have to direct him.  
13 He is here to answer questions.

14 THE COURT: Your scale would be a more  
15 accurate measurement?

16 THE WITNESS: Yes.

17 THE COURT: Aren't you looking for an approx-  
18 imation?

19 MR. ROBINSON: I'm looking for a measurement  
20 on a regular ruler on the length of those two  
21 samples in - - as depicted on these photographs.  
22 I don't care if it's one millimeter or two millimete-  
23 Can you do that?

24 A Yes. The Q-8 one is approximately four and  
25 most of the banding is included in the picture. Most

1 of the dark area you see above that is not included as  
2 pigment. The hair was fairly dark hair.  
3

4 Q That's what your telling us?

5 A Yes. It's approximately four inches. The banding  
6 in the known, which was found somewhat after is approximately  
7 four inches.

8 Q Detective Petraco, that's not accurate, is it?  
9 You are trying to mislead the jury. Don't do that.

10 THE COURT: You have gotten an answer from  
11 him.

12 A You asked me for an answer. That's the way  
13 I measure it. I measure it from this portion of the band  
14 to this portion of the band and that's four inches.

15 Q Take this red pencil and mark the area that  
16 you are measuring from. Show us exactly the four inches  
17 you are measuring on both photographs?

18 A (Indicating.)

19 MR. ROBINSON: May I see it? (Handed.)

20 Q Now, you have cut off the four inches on Q-8  
21 before the photograph stops, is that correct?

22 A That's where the photograph ends. There is  
23 some pigment, very dark pigmented hair and also there  
24 is a little bit of banding above that photograph.

25 Q In fact, there are vacuoles above the area that

1 you cut that photograph off on, aren't there?

2 A A few vacuoles, yes. Some banding.

3 Q There is a continuation of the banding beyond  
4 where you cut that photograph off, aren't there?

5 A Slightly.

6 Q Slightly. You have slanted your testimony here,  
7 detective, haven't you?

8 A No, I have not.

9 Q In order to obtain a result that you like; isn't  
10 that correct?

11 A No, sir.

12 Q You told us that you were asked by this District  
13 Attorney to look for something for how long this was going  
14 to be two weeks, four weeks, or two hours?

15 A I was asked to try to put a time to the banding.

16 Q In fact, you came up with these three samples  
17 of hairs that you just happened to have on your desk,  
18 is that right?

19 A That is the absolute truth. Yes. The two hairs  
20

21 --  
22 Q Truth?

23 A Truth. The two hairs just happened to be on  
24 the desk.

25 Q What about this one?

1 A That wasn't there.

2 Q That was the shortest one, the eight to 12 hours,  
3 that wasn't on your desk?  
4

5 A No, it wasn't.

6 Q In fact, isn't that catogen hairs?

7 A No, they are antigen hairs.

8 Q In fact, this was such an important issue to  
9 you that you spent a lot of time going over this?

10 A Every case is important to me.

11 Q That's not what I asked you. This case is more  
12 important?

13 A No, not more than any other case I worked on  
14 in the last 13 years.

15 Q You said you were on special assignment on this  
16 particular case, weren't you?

17 A No. I was asked to look at it as I am often  
18 asked to look at different exhibits on different locations.  
19 I sometimes work in federal cases. Most of my work is  
20 in city cases.

21 Q You haven't worked for defense cases?

22 A I have worked on defenses cases and testified  
23 for defense cases.

24 Q When?

25 A I have been called by defense attorneys to

1 testify in cases right out of my own office.

2 Q When?

3 A You want to get a list, I will get a list.

4 Q When was the last time?

5 A Was- - I can't document when it was. But, I  
6 have indeed done that.

7 Q Let me ask you this: This ten to 12 hour one  
8 that you have here, I notice there is a darkening that  
9 continues along the medulla, is that the medulla?

10 A I believe that is the medulla.

11 Q That isn't the end of the root, is it?

12 A That is the end of the root.

13 Q You do not know for a fact when that hair started  
14 to decompose, do you?

15 A No. It could be an hour and a half.

16 Q It could be 25 hours after?

17 A Well, I have it from ten to 12, so it couldn't  
18 be. The hair was removed from ten to 12 hours.

19 Q How do you know that?

20 A I was told that.

21 Q By whom?

22 A In that case, when I called up and got the autopsy  
23 report.

24 Q You called up, got an autopsy report. When  
25

1 was the body killed?

2 A The person I can give you a date and time.

3 Q Yes. I would like data. That's the middle hair.  
4 The person was struck by a vehicle at three a.m. on 10/19/86.  
5

6 Q Who told you that?

7 A This was what we received from the DA's office  
8 who gave us the autopsy information. My partner received  
9 it.

10 Q New York City DA's office?

11 A Yes. My partner received the information and  
12 gave it to me. It was his case. The autopsy was approximatel  
13 two o'clock in the afternoon on 10/19/86. That's what  
14 we were told.

15 Q You don't know whether this particular hair  
16 was more susceptible or less susceptible to this banding,  
17 do you?

18 A No, I do not.

19 Q You do not know on the 30 hour one, whether  
20 it was more susceptible to banding or not banding.

21 A All I know, it was 30 hours old.

22 q Did you look at the hairs from 30 hours, were  
23 they all banded?

24 A Some I looked at had banding and even some of  
25 them didn't have banding as in the case of Theresa Fusco.

1  
2 Q But one thing you do know is the hairs from  
3 Theresa Fusco were exposed for three and a half weeks?

4 A That's what I was told.

5 Q And the ring of banding was consistent with  
6 the Q-8 sample; is that right?

7 A All I know is that there were some hairs that  
8 had banding in Theresa Fusco's hair standard and there  
9 were some hairs that didn't have banding. In fact, they  
10 looked similar. They looked similar in all the cases  
11 to me. The banding looks similar. That's why I photographed  
12 each and every one. If you want to say to a degree, I  
13 don't know if there is - - does exist a degree in this  
14 particular phenomenon. They do look consistent. The  
15 exact size may vary slightly. To my eye, I don't know  
16 if that is important or not important. I don't know.  
17 That's why we need more research in this area. For me  
18 to come to the stand and say I know for a fact what this  
19 caused, but I cannot say that. Whether there is a degree  
20 to some situation or not, I don't know whether there is  
21 or isn't. There might very well be. Again, that's why  
22 people are trying to research this. I have not researched  
23 this only for this limited study.

24 Q That was only for the purpose of coming onto  
25 this stand today and rebutting what Dr. DeForest already



1 told Charles Fraas when he first saw those hairs; isn't  
2 that right?

3 A Yes, sir.

4 Q That was your intent from the very outset of  
5 the investigation?

6 A It was not.

7 Q Please allow me - - to rebut Dr. DeForest?

8 A It was not. In fact, I was asked by Dr. DeForest  
9 to originally get involved in the case because he thought  
10 I would agree with him because I received a phone call  
11 from him before I received a phone call from Mr. Fraas.

12 Q One of the reasons you do not agree with him  
13 at this point because it's Dr. DeForest - -

14 A No, I do not. He's a very good friend of mine.  
15 I don't agree with him. If I found that it did take a  
16 week for this to occur, I would testify on the stand to  
17 that fact. That's what I do, I report objectively, not  
18 inobjectively.

19 Q I don't want a dissertation at this time.

20 THE COURT: No sense in colloquy. Just  
21 answer questions.

22 Q That's why you cut off this Q-8 here?

23 A I did not intentionally cut off anything.

24 Q You did intelligently take the photograph --  
25

1 A I tried to get the whole root into the photograph.  
2 I had a limited size photograph to utilize.  
3

4 Q The root wasn't important, the banding was?

5 A Yes, the root was important as well as the banding  
6 because I wanted to show the root end and the banding  
7 does exist in each case and that's what I did.

8 Q There is no question in anyone's mind because  
9 the root is there?

10 A Now there isn't because the root is there.

11 Q You show the root in K-1?

12 A Yes, I was able to fit it in.

13 Q But the root is shown in Q-8, but you didn't  
14 show the rest of the banding sample?

15 A Most of the sample is there. The B is in the  
16 middle of the banding.

17 Q Now, are you familiar with the characteristic  
18 of debris on hair?

19 A Debris, you mean like dirt fibers?

20 Q Damage to the hair?

21 A There are various types of damage to the hair  
22 as far as dust, hair from a living person.

23 Q Actual damage to hair, broken hair?

24 A Yes, I am.

25 Q You have seen that, right?

1  
2 Q And is that consistent with being exposed in  
3 a working environment?

4 A We are talking about dust on the floor?

5 Q No, not dust, damage?

6 A We are talking about hair from the floor?

7 Q Yes.

8 A Yes. Hair in any location, if it's shed and  
9 there were many years or many days or many weeks, most  
10 of the time, it takes several months to several years  
11 to happen, but it does eventually break down and get ground  
12 down and start to splinter and to fray and also has debris  
13 on it and dust from the location in which it is.

14 Q Would five and a half months be sufficient time  
15 to obtain that type of damage that you are speaking of?

16 MR. KLEIN: Objection.

17 Q If you know?

18 THE COURT: I will permit it.

19 A It depends on how much traffic there is in the  
20 particular location.

21 Q And if you find - -

22 MR. ROBINSON: Judge, I'm going to have  
23 to approach at this point, if I may?

24 THE COURT: Step down.

25 (Thereupon a discussion ensued at the bench

1 not within hearing of court reporter or jury.)

2 (Thereupon a discussion ensued at the bench  
3 not within hearing of jury.)

4 THE COURT: Mr. Robinson?

5 MR. ROBINSON: I would like to have a  
6 continuance at this time in order to bring the  
7 slides that were shown and that are in evidence  
8 to the stand. The issue was raised now, is  
9 the issue of damaged hair. It was not indicated  
10 that damage could be damage in a van after a  
11 few days, a few months, a few years, depending  
12 on the traffic. If these hairs, Q-8 sample  
13 hairs. I want to ask him further questions  
14 in that area. I feel I should have the opportunity  
15 to show him the slides. I was caught by surprise  
16 today. I was not aware that Detective Petraco  
17 was coming in today. We finished direct yesterday  
18 afternoon of Halstead. I anticipated being  
19 done by 12:30. Halstead's cross was done by  
20 11:30. I don't have my research with me. I  
21 don't have my notes on hair sample stuff with  
22 me. I'm trying to do the best I can because  
23 I indicated to you before he put this witness  
24 on that I was going to have a problem in going  
25

1 too long. I may be bringing my own surrebuttal  
2 witnesses in anyway and I would ask the opportunity  
3 to present this witness with these slides to  
4 ask him questions about it. I still haven't  
5 touched on the issue of the slides of this particular  
6 photograph yet. That's one of the things I  
7 also intend to do is show these particular slides  
8 to this man.

9 THE COURT: Mr. Klein?

10 MR. KLEIN: The man has come in on rebuttal  
11 on one particular issue and banding, where Dr.  
12 DeForest testified. That's what we are getting  
13 into, totally extraneous discussions now. Beyond  
14 the scope of direct examination. I object to  
15 it.

16 THE COURT: Mr. Famighetti?

17 MR. FAMIGHETTI: I have no part in this  
18 discussion.

19 THE COURT: Application for continuance  
20 denied.

21 MR. ROBINSON: Denied?

22 THE COURT: Denied.

23 MR. ROBINSON: I want to show him the issue  
24 of Q-8 slides.  
25

THE COURT: I'm denying it.

MR. ROBINSON: You are stopping my cross-examination of this man?

THE COURT: You may continue right now.

(The following ensued in open court.)

Q Now, if hair were in a van for five, five and a half months, would that normally in your experience, be sufficient time to have damage occur to it?

A It's possible, yes.

Q And if you find other hair in the area of the Q-8 sample that you photographed here in this display that had damage to it, would you then - - withdrawn.

Did you look at all four samples, Q-8 samples?

A I looked at a lot of questioned hairs.

Q Did you make any notes on it?

A Just that I was just interested in looking at it, particularly banding, because that's what I was asked to look at. I have just vague notes that I think I have something in my notes about it. I just have down that "Q's from the debris looked formal for dust. That means they had been breaking and they looked aged from being in dust.

Q Did you see in the Q-8 samples not the two that were supposed to have been a match, but the other

1                   two?

2                   A     Yes. They looked like they were being consistent  
3                   in a dust sample.

4                   Q     Did you see them broken?

5                   A     I believe there were some fractures. I didn't  
6                   make exacting notes on each one of the question hairs.  
7                   The only one I made exacting notes were the two Q-8 with  
8                   the banding.

9                   Q     Did you see any broken, fractured hairs in the  
10                  two Q-8 samples that you saw with the banding?

11                  A     I saw some break, crushing on the tip, could  
12                  be a split end or crushed slightly.

13                  Q     You didn't see the main body of the hair; is  
14                  that right?

15                  A     Just to the tip.

16                  Q     And that's not unusual even for a hair that  
17                  is on the head?

18                  A     No, that is not.

19                  Q     On a live person?

20                  A     Yes.

21                  Q     In fact, the two Q-8s really don't show anything  
22                  consistent, any characteristics consistent with lying  
23                  in a van for any length of time, did it?

24                  A     They do not show the characteristics of being  
25

1 dust.

2 Q Or damaged, right?

3 MR. KLEIN: He didn't finish his answer.

4 A They just - -

5 THE COURT: Have you finished your answer?

6 A They simply don't show the characteristic of  
7 dust which would be - - they have debris on them and they  
8 also have this splitting and cracking from mechanical  
9 damage, things like this.

10 Q They don't have that?

11 A No, not to any given degree.

12 Q The other two did though, right?

13 A Yes. Most of the questioned hairs in the sample  
14 did have that type of situation.

15 Q Let me ask you this: When the hair leaves the  
16 body of a deceased individual, the banding will not continue  
17 to increase; is that right?

18 A I don't believe so, but I don't know for certain.

19 Q Well, when you say you don't believe so, what  
20 do you base it on?

21 A Just my own observation. I really don't usually  
22 - - to my knowledge, the decomposition or banding or things  
23 like that, that we associate with postmortem, do not continue  
24 when they leave the body. I don't know for a fact that  
25



1  
2 it's a true statement. It's what I believe from my own  
3 opinions, from my own knowledge.

4 Q You don't have any knowledge whatsoever from  
5 this eight to 12 hour hair, is that right?

6 A Only what I was told, sir.

7 Q Let me ask you this: We note the samples that  
8 are known, the K samples came from the head of Theresa  
9 Fusco?

10 A That's what I was told.

11 Q Those hairs have been exposed for approximately  
12 three and a half weeks, is that what you were told?

13 A That's what I was told.

14 Q Those don't have any damage to them, do they?  
15 They don't have any fractures to them.

16 A No, they do not.

17 Q They don't have any dust to them as if they  
18 were laying in the van, right?

19 A They don't look like what you see in dust samples.

20 Q In fact, they looked consistent with the two  
21 Q-8 samples that were a match?

22 A Yes, sir.

23 Q They also look consistent with the banding effect;  
24 is that right?

25 A Yes. There was banding in the two Q-8s and

1 also in the know. No question about that.

2 Q And the characteristic, the range of characteristics  
3 in this banding that were found in the two Q-8 samples  
4 that were matched with was consistent with the range that  
5 was found in the known samples found from Theresa Fusco's  
6 head?

7 A Yes.

8 Q So, regardless of whether or not these three  
9 items have banding in them in less than three days, you  
10 can't really draw any real conclusion, can you? You  
11 just say the affect does happen in those particular hairs?

12 A All I can say is I saw banding in hairs that  
13 were removed from people.

14 Q And those are the times that you already testified  
15 to?

16 A That's what I'm saying.

17 Q You can't draw - -

18 A That's all I'm saying. That's my conclusion.  
19 What it's caused by, I don't know.

20 Q And you can also conclude that the range of  
21 characteristics of the banding in the known samples, the  
22 20 slides that came from Theresa Fusco's head are consistent  
23 with the range of banding found in the two Q-8 samples,  
24 right?  
25

1 A Yes, the banding does exist.

2 Q The range is about the same?

3 A I don't know that there is a range. All I'm  
4 saying is the banding does exist. There is banding existing  
5 in the known samples. To a varying degree. The banding  
6 was in each known sample I looked at. Some had more and  
7 some had less. Same with Theresa Fusco. And the two  
8 Q-8s looked the same as the same banding as in each situation.

9 Q The two Q-8 banding, they weren't exactly alike?  
10 One was - -

11 A One was slightly more than the other.

12 Q  
13 The one shown in this particular photograph was the one  
14 with more banding, right?

15 A I believe it has the least banding.

16 Q Then the one that you didn't show had an even  
17 longer area?

18 A No. It just had a wider area, not longer.  
19 Slightly wider.

20 Q Does this cover the entire hair?

21 A Slightly wider.

22 Q Isn't this almost to the outer area - -

23 A It depends on the thickness of hair too. The  
24 hair varies in thickness. The shaft thickness of the  
25

1 hairs.

2  
3 Q The known hair goes right out to the edge of  
4 the - - what do they call that, the scales?

5 A The cuticle area.

6 Q Doesn't the same thing happen in this?

7 A It happens in most of them. But, the hair was  
8 I believe slightly thicker. So, the banding was slightly  
9 wider.

10 Q And isn't it your opinion that this banding  
11 occurs because there is an intrusion into the hair, somehow  
12 chemically, that actually eats the interior of the hair  
13 and an airway or vacuole occurs?

14 A I don't know.

15 Q Is that what occurred?

16 A I think it's air. I don't know what the mechanism  
17 is. I haven't the slightest idea. There could be several  
18 factors that have to be researched. I don't know.

19 Q In fact, this whole area has to be researched?

20 A yes, sir.

21 Q But, that doesn't stop you from rendering opinions  
22 about it?

23 A Only as to what I have seen in my own work.

24 Q Had you ever seen a mixup in the lab as far  
25 as hairs go?

1 MR. KLEIN: Objection.

2 THE COURT: Sustained.

3 Q Have you ever seen a lab technician mix up known  
4 and question samples?

5 MR. KLEIN: Objection.

6 THE COURT: Sustained.

7 Q Did you ever see all samples being mounted in  
8 slides at the same time?

9 MR. KLEIN: Objection.

10 THE COURT: Sustained.

11 Q If I were to show you slides of the Q-8 samples  
12 that don't have damage and show you slides of Q-8 samples  
13 that do have damage, would you be able to render an opinion  
14 that they are different types of hairs?

15 MR. KLEIN: Objection.

16 THE COURT: Sustained.

17 Q Would you be able to render an opinion as to  
18 whether or not the Q-8 samples that were matched really  
19 did not lie in that van for any period of time?

20 MR. KLEIN: Objection.

21 THE COURT: Sustained.

22 Q Based upon other hairs that had been taken from  
23 the precise area as the two Q-8 samples that were a match  
24 that had damage and these didn't have damage - -  
25

MR. KLEIN: Objection.

THE COURT: Did you understand the question?

THE WITNESS: No, I don't.

THE COURT: Objection sustained.

Q If I were to show you slides to show damage such as fractures and other types of debris on the hairs that came from the Q-8 area could you then determine how long those hairs had been there?

A No, I could not.

Q Could you by looking at other Q-8 samples that didn't have fractures and didn't have debris on them, could you at least render an opinion that they had not been there as long?

A No I could not.

Q Now, the body itself, did you see that the body itself was not that decomposed?

A I saw some photographs. The body didn't look that decomposed to me.

Q You had some experience in that area to some degree?

A Yes.

Q In fact, that decomposition would be a function of those factors that we spoke of before, temperature, light exposure to air, things of that nature?

1 A I believe so.

2 Q This body was in remarkably good shape for being  
3 exposed for three and a half weeks?

4 A From the photographs, I would say yes, sir.

5 Q Isn't it just as likely that the banding effect  
6 that you refer to coming within 30 hours or less could  
7 have been retarded by the very decomposition that did  
8 not occur in this body?

9 A I don't know that it occurs because of decomposition.  
10 It's just banding. I don't know what causes it.

11 Q If it were caused by decomposition, if you could  
12 show eventually that decomposition is a function of this  
13 postmortem characteristic, would that retardation of the  
14 decomposition play a role?

15 MR. KLEIN: Objection.

16 THE COURT: Sustained.

17 Q In your opinion?

18 MR. KLEIN: Speculative.

19 THE COURT: Sustained.

20 MR. ROBINSON: I have no further questions.

21 MR. KLEIN: None.

22 THE COURT: Thank you.

23 (Thereupon the witness was excused.)

24 MR. ROBINSON: I would like to make a record.  
25