Hill.

THE BAILIFF: The witness needs to be sworn in, Judge.

(Whereupon the witness is sworn by the Court.)

PRISCILLA HILL,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. WAKEFIELD:

Q. Good morning.

A. Good morning.

Q. Please introduce yourself to the jury.

A. My name is Priscilla Hill.

Q. Tell the jury what you do for a living.

A. I'm a criminalist for the Houston Police Department Crime Laboratory.

Q. Explain to the jury what a criminalist for the police lab does.

A. Well, I work in the biology section. And, essentially, with the biology section there are two different departments, screening and DNA analysis. What we do is we get items of evidence in question that are with criminal cases and we screen them for biological -- the presence of biological fluid. If they're identified, then they go on to DNA analysis, which we develop a DNA

profile, perform comparisons, and analyze the results.

Q. So, are you a specialist as a criminalist in analyzing DNA?

A. I'm an expert in the field of forensic DNA analysis.

Q. Got it. Explain to the jury how one becomes an expert in analyzing forensic DNA analysis.

A. I have a bachelor's of science degree from Baylor University in forensic science and a master's of science in forensic DNA analysis from the University of Central Lancashire. I also received vigorous training from HPD once I was hired in both screening and DNA analysis.

Q. Now, when you were going through those -- your master's and your bachelor's, what kinds of degrees -- how do these degrees relate to your job?

A. Well, forensic science is a very general, I guess, science. There are many disciplines within that you can specialize in. So, I specifically wanted to do a biology-based department, which is forensic DNA, forensic biology. And, so, I specialized in classes like biochemistry, biology courses, criminal justice courses, psychology courses so that I would have -- those are all under the prerequisites for forensic DNA analysis, as well as population statistics.

Q. All right. After getting your education, how long have you been with the HPD crime lab?

A. Almost seven years now.

Q. During your seven years that you've been with HPD crime lab, what positions have you held?

A. I went in as a criminalist and I first was trained to do screening, which is the -- our first, I guess, department that the evidence goes into. We screen evidence for the presence of biological material. I was signed off on that and did case work. And then I began my training for DNA analysis. That's the second step within the department. And the training modules were similar. I got signed off on that. And I'm currently a DNA analyst.

More specifically now we have more of an assembly-line process. So, I solely write reports, analyze the DNA and write reports now and not so much doing lab work as I used to be.

Q. When -- you had mentioned that you had been doing this for seven years?

A. Yes, sir.

Q. How many times have you testified, ballpark?

A. I think almost 25 times or so.

Q. Every time as an expert?

A. Yes.

Q. All right. Now, let's step back and I want you

to explain to the jury what DNA is.

A. DNA is our basic genetic code within our body. It's what makes us live and breathe. We get half from our mother and half from our father. It's determined at conception and it does not change throughout our lifetime. We have -- 99.97 percent of our DNA is the same and that's what allows us to be walking around, living, and breathing. It's the .03 percent that varies from person to person. And that's the part of the genome that we are interested in as forensic scientists.

Q. Explain how that little small portion of DNA can be used in a forensic setting.

A. Well, what -- when we develop a DNA profile, it is a profile that contains 16 different places within the genome that has been researched as these have been the places that we look at for forensics. These are the places that we vary from person to person, except for identical twins. They will be the same for the forensic profile. They do not code for anything. They do not -- for health reasons do not let you know, oh, you have cancer, or anything like that. This is strictly non-coding. For those reasons, it's variations, though, within the population that they do differ.

Q. Now, if you have a sample of DNA from a known suspect, are you able to compare that DNA to something

that may be found at a crime scene?

A. Yes.

Q. Explain to the jury how that it works.

A. When evidence has been identified to be positive for biological fluid -- at HPD, we look for blood and semen and we develop a profile from that. We also need knowns, which is a known reference from somebody else. I can develop a profile from evidence, but -- and the big question is who is it? I'm not able to say anything unless I have a known reference to compare it to. And that's what we do. When we develop evidentiary profiles, we then compare them to references and say if they are consistent or not consistent with each other.

Q. Whenever you are doing this particular process, is there like a scientific process you're using here?

A. Yes.

Q. Explain to the jury how that works.

A. It's a four-step process. This is a process that is used throughout laboratories around the nation and even around the world.

The first step is called extraction. And what that's doing is simply extracting the DNA in its purest form from the substrate in question.

The second step is called quantification. We need a certain amount for our analysis to be successful. So, we

are able to see in that sample how much we have of DNA that we are working with.

The third step is called amplification. What that is doing is actually targeting the 16 places that we are looking for and making multiple copies so that we have enough to visualize.

The fourth step then is putting the sample on the genetic analyzer, the analysis portion. This is enabling me to see the DNA analysis in a profile visual form. It separates these DNA fragments with size and color. So, I'm able to visualize it. And that's what I use to do my comparisons.

Q. All right. Now, when something comes to you and is a known sample, what is generally the substance that comes to you?

A. It can be in the form of a buccal swab, which is a swab from the cheek, or blood as well, whether a blood tube and we would create a bloodstain card, or it will come as a bloodstain card already.

Q. Buccal swabs are usually what's contained in these boxes here?

A. They are like that or sometimes in just swab sleeves.

Q. Like a baggie?

A. Yes, a small paper sleeve.

Q. Were you tasked to do an analysis involving this case here?
A. Yes.
Q. Okay. Now, when you were tasked to do an analysis, did you have known samples from subjects?
A. Yes.
Q. All right. And did you also have biological material that had been collected for you to analyze?
A. Yes, we had -- well, swabs were collected in this case.
Q. Okay. Can you explain to the jury what was the biological material that you were tasked to analyze?
A. We had swabs from a vehicle. Would you like me to go through each item?
Q. Yes.
A. Okay.
Q. You prepared that report for this examination?
A. Yes.
Q. Is that report one that you made personally for the purpose of testifying or for the purpose of doing an analysis of this DNA?
A. It is.
Q. Is this a report that you have, that's State's Exhibit 93?
A. Yes.

Q. Do you recognize this as being your work?
A. Yes.
Q. All right. Is it a fair and accurate representation of what you made for the purposes of this DNA analysis?
A. Yes.
MR. WAKEFIELD: At this time, I offer State's Exhibit 93 into evidence.
(State's Exhibit No. 93 offered.)
MR. ANDERSON: No objection.
THE COURT: It will be admitted.
(Whereupon State's Exhibit No. 93 is admitted into evidence.)
Q. (By Mr. Wakefield) Now, on the report, you indicate what you did -- or what you found and did during the course of your examination?
A. Yes. This is the DNA report. So, this reflects the DNA portion of the analysis.
Q. Okay. Now, explain to the jury -- we see things -- it says "evidence" and it says, "Portions of known buccal swabs, Craig Coleman; portions of known buccal swabs, Greg Coleman; portions of known buccal swabs, Dominique Withoff," and then one for John Thomas.
Whenever you see that, what does that mean?
A. That means that the laboratory received known

references from these individuals. And in this particular case, the screener portion, we don't need the whole swab or the whole -- sometimes it's usually two swabs that come per person. We don't need all of that. So, the screener just portions a small cutting from those swabs, and that was taken on to DNA.

Q. And then the other things that are listed there, it looks like it says, "Interior front pass. side door handle, gear shift selector knob, steering wheel, interior driver side door handle, and back plate of cell phone on dry floor rubber." What are those things?

A. Those would be the evidentiary swabs that were received.

Q. Now --

A. Or portions of. Sorry.

Q. Okay. I guess my next question is, when you are doing this analysis, are you actually looking at both of these items, or are you looking at little swabs that have been taken from each one, or little portions of it?

A. Portions for the DNA part. The swabs were actually received from the screener and they do visualize the swabs. Depending on what is requested in the case will depend on how we perform our analysis.

Q. Why is it that you don't do the analysis on the entire quantity that you are given?

A. Well, for one, we like to preserve. We never consume without discussion first. We always try to take, at the most, half of the available sample so that we can go back, if need be, whether it be retesting or anything like that. Also, we don't need a huge amount of sample either. As long as the DNA quality and quantity is sufficient, we can get good results. So, it just depends on the item and how much we need to take.

Q. All right. When you analyzed all of these and compared them to the first one, Item 4.1 -- when you say 4.1, it says, "Portion of known buccal swab, Craig Coleman." It says, "The same full single-source male DNA profile came from these items." Looks like it says here, "4.1, Greg Coleman; and 5.1, known buccal swab of Greg Coleman." What does that mean?

A. That means that the reference sample from Craig and Greg produced the same -- the actual same profile.

Q. How is that possible?

A. With identical twins.

Q. Now, moving on. On Item 14.1.1, according to the top here, it's appears to be the swab that was taken from the interior front passenger side door handle. What were your findings?

A. 14.1.1, no DNA profile was obtained.

Q. Now, what does that mean?

A. We did not get a result. Unfortunately, sometimes it happens if there's not any DNA at all to retrieve or if there's just not enough. We do need a certain amount to get a result. And sometimes there's just not enough DNA there to visualize.

Q. All right. The next one, 14.2.1, that is the gear shift, selector knob. Swab was taken from the gear shift, selector, correct?

A. Yes.

Q. All right. And what were the results from that analysis?

A. A partial male DNA profile was obtained, but insufficient data did not permit interpretation of that particular item.

Q. Explain to the jury what that means.

A. We received partial data and it wasn't enough to make a conclusion.

Q. Now, when you say it wasn't enough to make a conclusion, can you say whether or not the DNA that you found is not on that swab?

A. No. We did obtain some results, but it was very partial. And, unfortunately, the results are so weak that we can't make a conclusion on it.

Q. Let me see if I understand this correctly. If you are looking at two DNAs, two DNA samples, one is a

known subject and one is what you are analyzing, is there a way you can say for sure this person's DNA is not on this object?

A. Yes. If we have -- if we have evidence that produces a very full profile, whether it be a single-source -- that means coming from one contributor -- or even a mixture, and we have a known reference, we can exclude or include from that. Even sometimes with partial data, but -- if we have enough, we can then make a conclusion. Then there gets to a point where we're getting some data, but it's just too weak to make a conclusion on. And at that point, we do not -- we're not able to do anything.

Q. Okay. The next one, 14.3.1, beginning, it says it's a partial mixture of DNA from at least two individuals was obtained from this item.

When you say a partial mixture of DNA from two individuals, how do you know that?

A. I'm able to see when we receive a profile if it is a mixture of more than one contributor. I know that within the DNA profile what a single-source should look like. And when there's more information there, then I know that more than one contributor could have donated to that sample.

Q. Okay. And then here it says, "Insufficient

data does not permit interpretation of this partial DNA mixture."

Now, again, when you have a mixture like that, is it that you can say that these people are not there or just you can't tell if it is or is not?

A. No, I cannot make any conclusion to exclusion or an inclusion, unfortunately.

Q. Okay. The last one I've got is 15.1.1. Portions of the swab from the back plate of the cell phone. It reads, "A partial mixture of DNA from at least two individuals, at least one of whom is male, was obtained from this item, but insufficient data does not permit interpretation of this partial DNA."

What does that mean?

A. Again, I was able to tell that it was a mixture, and I was able to tell that at least one contributor was male because one of the targets that we analyze is amelogenin, the sex gene. So, for females, an XX would show up, or an X. Males have a Y. They are XY. When a Y is present, then I know at least one contributor was male.

Q. Now, the back page, we're looking at a lot of graphs. I'd like to go through that as painlessly as I can. We will start with an example of a known -- portion of a known buccal swab, John Thomas.

A. Okay.

Q. As we go through, there are these graphs with a bunch of numbers on them. Explain what those numbers are.

A. Okay. Actually, if you could move up to the top, it would -- maybe I could start there.

Q. Okay.

A. That D8 -- there's a D8S1179, and along that line there are all these columns with D21, D7, CFS. Those are the names of the locations that we are targeting for the profile.

Q. Okay.

A. So, within each box then, if we go down to the item that you were discussing previously, the known buccal swab, which is the last box -- sorry. I didn't realize I could do that.

Q. You can point and it will put an arrow, if you want to do it. If you touch it to erase, do the top right-hand corner. Just tap it a couple of times.

A. Okay. So, this along the bottom row is the profile for John Thomas. And what that is, is you see numbers. For example, at D8, which is one location, he's an 11, 14. We call these alleles. These are repeats within this particular location that he has. So, the 11, 14, one was donated from mom and one was donated from dad. You can actually go across the line and everything is the

same way. So, D21, he's a 27, 28. At CFS, if you notice, there's just a sole 12. That means mother and father donated both a 12. So, it's just denoted with one number.

For a single-person profile, you will have no more than two alleles at each location. And, so, that's how we know that that particular profile is a single-source. That's a full profile for someone.

Q. So, this down here, these four -- and we're looking at the -- it say there's a DNA of Craig Coleman, Greg Coleman, Dominique Withoff, and John Thomas. These four graphs we are looking at here, are these all full-profile DNAs?

A. Yes, those are -- they are individual full profiles.

Q. So, whenever you've got an individual full profile, it's going to have -- really, it will have two numbers each, unless they have two of the same numbers at that location?

A. Correct, and then it's denoted with one.

Q. Got it. So, that is what a full profile looks like?

A. Yes.

Q. Now, if you go towards the top five spaces here, are these the results from the swabs that were taken from the scene? Is that what they are that you are

analyzing?

A. Yes, those are the evidentiary samples.

Q. For example, right here at the top, this is, "Portion of interior front passenger side door handle." It says "NR." A lot of them say "NR." What does that mean?

A. That means no results. We did not get anything from that particular location.

Q. Okay. Now, one of the ones you found a mixture on was the steering wheel, right?

A. Yes.

Q. Correct me if I'm wrong, but these are three alleles that were discovered on that -- in this location on that steering wheel; is that right?

A. Yes.

Q. Now -- 11, 13 and 14. Now, of the people that were swabbed, specifically these three, Craig, Dominique, and Thomas, are those alleles present?

A. They are represented, yes.

Q. Okay. Scoot down a little more. And this one is the same steering wheel. There are two alleles. They are 15 and 16, correct?

A. Correct.

Q. And all of these, are 15 and 16 present?

A. There's a 15, 16 at -- well, three individuals

have a 15, 16 at that particular location. The problem is the carat that's denoted on the 15, 16 of the evidentiary sample.

Q. What does that mean?

A. What that means is at our laboratory we have what we call -- we have analytical threshold and stochastic threshold. And what that means is when we look at the profile, the profile has to pass a certain threshold so that we are confident in our result. When data passes an analytical threshold, we are saying they are true alleles, which is denoted with this carat, the 15, 16, 17. We're saying it's true, but between the analytical and stochastic threshold, they are in that middle range. We don't know if we have the full data. We don't know if we're missing some. So, because of that, we cannot make any conclusions.

Once it passes -- once data passes the stochastic threshold, we can be more confident and make a conclusion giving a comparison.

Q. Now, this is a perfect example of what we're talking about. So, here in this one, they are all arrows, but they all have 15, 16, 17. This is from a mixture on the cell phone, correct?

A. Correct.

Q. Now, from what I'm looking at, 15, 16 are

present on all these individuals except for the one of John Thomas. And that is where 17 comes from. That's not where it comes from, but that allele is present as well; is that correct?

A. That allele happens to be present as well.

Q. And as we go forward, most of these -- as we're looking at it, most of these mixtures have those little arrows on them; is that correct?

A. Yes. I believe all of them. Well, there's actually one allele at D19 on the cell phone cover --

Q. Okay.

A. -- that does not. And that means that that 13 passed our stochastic threshold.

Q. Got it. Now, after looking at this document, obviously, to people like me that's Chinese, but my question is: At the end of it all, were some of the DNA that you found on these ones that were taken from the swabs at the scene, are some of the alleles consistent with those profiles, Dominique, John Thomas, and Greg Coleman?

A. Some of them are consistent, but that's all. There's just not -- there's no -- there's not enough information to make a conclusion on it.

Q. And correct me if I'm wrong, there's not enough information to say it's not consistent either?

A. Exactly.

Q. I guess my question is: Is it possible that DNA could have been left by these three individuals?

A. It is possible; and it's possible it could be from somebody else.

MR. WAKEFIELD: Pass the witness.

CROSS-EXAMINATION

BY MR. ANDERSON:

Q. Ms. Hill, I take it because of the precise nature of your specialty, at least in terms of what you are called upon to decide, you want to be precise and accurate in your analysis and in the conclusions that you make?

A. Yes, sir.

Q. You don't do any speculation in terms of whose DNA is present or not present on an item of evidence if you don't have sufficient information to do so?

A. Correct.

Q. And you wouldn't expect anyone else to do any type of speculation as far as DNA evidence, would you?

A. No, sir.

Q. Now, based upon all of the work that you did in this case, you have no way of identifying whose DNA is present on the swabs that was presented, do you?

A. Correct.

Q. Okay. It could be anyone in the world as far as the DNA being on those particular items submitted, correct?

A. Yes.

Q. Now, in terms of making a comparison in terms of doing your analysis, you have to actually have some item of evidence in order to do the work that you do?

A. Yes.

Q. Now, as far as your responsibility, as far as your job as a criminalist, have you had occasions to do DNA testing on what's known as rape kits or sexual assault kits?

A. Yes, sir.

Q. Do you find in those type of kits swabs that may be taken from different areas or items of evidence which may be collected during the process of preparing what they call a rape kit or sexual assault kit, correct?

A. Uh-huh.

Q. Yes?

A. Yes.

Q. It's also in that same regard there are occasions where you are called upon to examine possible areas of DNA that may come from clothing that may be associated with a sexual assault that may be presented along with the sexual assault kit or rape kit, correct?

A. Yes. We get a variety of different items of evidence.

Q. Okay. That is, I guess, some of the work that the Houston Police Department, the crime lab, you perform as far as your DNA analysis, correct?

A. Yes. Well, that's mainly all the work, evidentiary items and comparing that with known references. We will also do paternity testing.

Q. In order to make an accurate analysis of the DNA evidence, the timing of the receipt of that evidence or the collection of evidence is important?

A. Yes, sir.

Q. The closer to the event, the better in terms of the collection of the evidence for purposes of doing DNA testing, correct?

A. Yes. Ideally, yes.

Q. All right. That's to make sure that nothing has happened to that evidence that would contaminate it or interfere with the DNA analysis?

A. Correct. There's a lot -- the elements can be against us. And, yes, obviously, contamination is always -- we don't know really what happens to that item before it gets to us.

Q. Now, as far as this case is concerned -- and I'm going to, I guess, ask you to let us know because it's

not anything found in your report. Did you receive a sexual assault kit or rape kit that was associated with this case in order to make any type of analysis of the known DNA samples that you had?

A. No, I do not believe a sexual assault kit was received by the laboratory.

Q. Did you receive any items of clothing or evidence from any items of clothing associated with this case in order to try and make a DNA comparison or analysis?

A. Yes. Some clothing was submitted to the laboratory under this case.

Q. And what happened to the clothing?

A. The clothing was screened and a presumptive test for the presence of semen was negative on both items of clothing. There were two, dress and panties.

Q. Was there any other -- was a search made for any other evidence that may be of DNA value?

A. I'm sorry?

Q. Blood, skin, some other --

A. Well, specifically at HPD, we look for -- we have tests that can identify blood and semen. The presumptive test, which is our first line of testing for semen, was negative. This test is highly sensitive, but not specific. We use this to see if the possibility of

semen is present. If it's negative, then we know it's not and we can go on to something else. So, this happened to be negative. Had the screener seen anything that would have flagged her to test for blood, she would have done so. In this instance, I don't believe she did.

Q. Had there been, I guess, any evidence screened and seen by the screener that may have been of any value to you as your responsibility, as your job, that's something that would have been analyzed, or at least some effort to make a comparison?

A. Correct. Unless contact is requested, we don't actually have a test to screen for contact. Those items are just portioned and go on directly for DNA.

Q. Thank you, ma'am.

THE COURT: Is that it?

MR. ANDERSON: That's all I have.

MR. WAKEFIELD: Nothing further, Judge.

THE COURT: You may step aside. Thank you.

MR. WAKEFIELD: The State calls Juan Newton.

THE BAILIFF: This witness needs to be sworn in, Judge.

(Whereupon the witness is sworn by the Court.)