

1 it you only get DNA from one person. Is that
2 possible?

3 A. Actually that might be a better question for
4 the DNA analyst. Sorry.

5 Q. Okay.

6 MR. MONCRIFFE: No further questions Your
7 Honor.

8 MS. FULLER: Nothing further Your Honor.

9 THE COURT: You may stand down.

10 THE WITNESS: Thank you.

11 MS. FULLER: State calls Clay Davis.

12 THE BAILIFF: Your Honor this witness has
13 not been previously sworn in.

14 THE COURT: Thank you.

15 (Witnesses Sworn).

16 **CLAY DAVIS,**

17 After having been duly sworn was called to the stand
18 and testified as follows:

19 DIRECT EXAMINATION.

20 BY MS. FULLER:

21 Q. Would you please state your name for the
22 jury?

23 A. My name is Clay Davis.

24 Q. Mr. Davis who are you employed by?

25 A. The Houston Forensic Science Center.

1 Q. And what is your job description with the
2 Houston Forensic Science Center?

3 A. I'm a forensic DNA analyst.

4 Q. Can you tell the jury about your educational
5 background?

6 A. I have a Bachelor's Degree from Louisiana
7 Tech University in biology and a Master's Degree in
8 forensic DNA and serology from the University of
9 Florida.

10 Q. All right. Have you received additional
11 training in DNA analysis?

12 A. Yes I have with Texas DPS, the FBI and
13 University of Nevada.

14 Q. And do you teach any courses in the area of
15 DNA?

16 A. I used to do a presentation for the cadet
17 class and then I do several presentation for high
18 schools and colleges.

19 Q. Have you written any articles regarding DNA
20 analysis?

21 A. Not in the forensic field, no. In the
22 research field, yes.

23 Q. And describe that. What do you mean in the
24 research field?

25 A. My previous job was I was a research

1 assistant at Baylor College of Medicine on the Human
2 Genome Project and my name was in four articles I
3 believe on sequence in the DNA in a human and several
4 other animals.

5 Q. Do you belong to any professional
6 organizations?

7 A. Yes I do.

8 Q. And which are those?

9 A. The Association of DNA Analysts and
10 Administrators, Southwestern Association of Forensic
11 Science.

12 Q. Have you testified as an expert in DNA
13 analysis before?

14 A. Yes I have.

15 Q. On few or many occasions?

16 A. Around 50, so many.

17 Q. And were you deemed to be an expert in the
18 courts of Harris County, Texas?

19 A. Yes I have.

20 Q. Can you tell the jury what DNA is?

21 A. DNA is the genetic material contained in all
22 nucleic cells. Half from your mother and half from
23 your father and unless identical twins DNA is unique
24 to you.

25 Q. How is DNA used in a forensic setting?

1 A. We tear parts of the DNA and we comb them and
2 so I'm not looking at the entire DNA. I'm looking at
3 certain regions of your DNA. Specifically 15 regions
4 that I'm going to compare from a known sample to let's
5 say a unknown sample.

6 Q. All right. So you can take DNA from an item
7 and compare that to a known sample of an individual.

8 A. Correct. Once we develop a DNA profile we
9 can do a comparison of the two.

10 Q. And then from that comparison can you tell
11 whether or not that known person's DNA is on that
12 piece of evidence?

13 A. We can tell if the presence is consistent
14 with the DNA profile or from the article or not
15 consistent or excluded.

16 Q. Okay. If somebody is deemed to be consistent
17 what does that mean?

18 A. It means their DNA can't be excluded or their
19 DNA is included on the item.

20 Q. All right. Do you assign through your
21 analysis a statistical number associated with that
22 result?

23 A. Yes I do.

24 Q. Does that make sense?

25 A. Yes.

1 Q. Okay. How do you come about that statistical
2 number and how do you come about this statistical
3 number?

4 A. We enter the DNA profile into a database and
5 the number is generated.

6 I can go into more in-depth of that if you need me
7 to.

8 Q. You might do that in a moment.

9 Once you -- what is the significance of the
10 statistic?

11 A. Instead of me just saying this individual is
12 included there's also a weight added to it so a one in
13 ten is not as great as a one in a million and so it
14 just adds weight to the inclusion of what I'm saying.

15 Q. Okay. And when you say one in 10 or 1 in a
16 million what is that comparison?

17 A. It is 1 and 10 people could also have this
18 DNA profile or one in a million could also have this
19 DNA profile.

20 Q. All right. So if the number gets bigger like
21 one in a million then that shows that you would have
22 to search for a million people out there and you would
23 not find somebody who had that same characteristic?

24 A. Correct. The larger the number the more rare
25 the DNA profile and so again one in a million you'll

1 probably likely have to search a million individuals
2 before you would see that DNA profile again other than
3 the person that it came from.

4 Q. Okay. So the higher the number the better
5 indicator that the person is associated, their DNA is
6 associated with that article?

7 A. The higher the number the more rare, yes.

8 Q. Okay. So I want to talk about the lab. The
9 Houston --

10 A. Forensic Science Center.

11 Q. Forensic Science Center. Is it accredited?

12 A. Yes it is.

13 Q. How long have ya'll been accredited?

14 A. We've been accredited through different
15 agencies since DNA has been. Accredited since June of
16 06 and other entities within the lab May of 05.

17 Q. Okay. And do you play a role in the
18 certification of your accreditation?

19 A. Yes I do.

20 Q. And what do you do?

21 A. They look at all aspects of the lab. They
22 look at my reports, how we handle evidence, how we
23 report, proper files out, maintenance of the lab,
24 instrument maintenance of the lab, security of the lab
25 so that we all end up looking at my individual case

1 folder to see how we're reporting DNA profiles or
2 writing reports and so most of the time my cases are
3 actually part of the batch that's actually there for
4 the accreditation board.

5 Q. Okay. And I want to talk about the process
6 that the lab goes through in order to obtain the DNA
7 profile. So you have somebody like Juli who swabs an
8 item of evidence. What happens then with that swab
9 that she submits for DNA?

10 A. So a portion of that swab is taken. It's
11 obviously placed in a tube. It's reagents and heat
12 added and we go through a process called extraction.
13 This is getting the DNA released and all of the other
14 stuff washed away.

15 Q. What's the next step?

16 A. Next step is quantification. I want to find
17 out how much DNA was actually extracted during that
18 first process because the next step is very precise
19 DNA I must add so I need to know what I'm starting
20 with.

21 Q. What's the next step?

22 A. Next step's amplification. What I'm doing
23 here is copying the DNA and only coping the 15 regions
24 that I'm looking at but making millions of copies of
25 those so they're more easily detected during the next

1 phase.

2 Q. All right sir. And what's that next phase?

3 A. The next phase is detection. This is
4 actually me detecting the DNA profile. If I would
5 have peaks or profile coming off and actually
6 developing a DNA profile.

7 Q. Now when -- you say you talked about 15
8 regions. Is that correct?

9 A. Correct.

10 Q. All right. Are those 15 regions -- well can
11 you describe what you're talking about with those
12 regions?

13 A. We look at 15 regions called short tandem
14 repeats. These are repeats within the DNA that repeat
15 over and over again and they're assigned a number
16 because of how many times they repeat.

17 Q. Okay. Now how long has DNA been in
18 existence?

19 A. In a forensic setting or ever?

20 Q. Let's start with ever, if you know and then
21 forensic setting.

22 A. Since we were all existed for one forensic
23 setting it's sort of in the eighties and then it has
24 progressed to the technology that we have now.

25 Q. All right. And as technology improves DNA

1 evolved. Is that fair to say?

2 A. As technology improves you know we have
3 better separation, better clarity of DNA profiles.

4 Q. But you're still testing the same locations
5 as they started testing forensically back in the
6 eighties?

7 A. No they've actually increased. I think they
8 started testing something like five in the eighties.
9 Five locations.

10 Q. Okay.

11 A. And then it's progressed up to I believe 12
12 and now they're up to 15 and then very soon we will go
13 up to 22.

14 Q. All right. Can you increase the regions that
15 you're looking at? What's the benefit of doing that?

16 A. The benefit that is that you decrease the
17 possibility of having advantageous match that's not
18 truly a match so someone that just shares a lot of DNA
19 with another individual you can now with more regions
20 individualize those individuals more.

21 Q. Okay. All right. So does one person's DNA
22 differ from another?

23 A. Yes unless you're an identical twin your DNA
24 is different from another individual.

25 Q. Does your DNA change over your lifetime?

1 A. It does not. Your DNA is the same from
2 conception to death and DNA throughout your body is
3 the same whether it's blood, saliva, semen or skin
4 then your DNA is the same throughout.

5 Q. All right. Can you tell us what touched DNA
6 is?

7 A. Touched DNA is something that you touch or
8 hold or wear so it's the inside of your shoes, it's
9 you grabbing a door knob, touching a table, your
10 toothbrush handle. It's something that you touch.

11 Q. Okay. And are you able to get somebody's DNA
12 from touched DNA?

13 A. Depending on the amount of DNA deposited,
14 yes. You know that can vary but usually depending on
15 how long the person held the item was there a rubbing
16 motion, is it held for two minutes, is it held for
17 20 minutes; it all depends on you know that
18 individual. Are they a heavy shedder of skin cells or
19 light shedder of skin cells, all of those have to come
20 into play.

21 Q. So I want to turn your attention to some DNA
22 that you tested in this case. It is incident number
23 078723411. Did you analyze the DNA in that case?

24 A. Yes I did.

25 Q. And what was it specifically that you were

1 testing or analyzing?

2 A. I tested two items. Item 2.1.1 portion of
3 swab from doo rag. Item 2.2.1 portion of swab from
4 doo rag.

5 Q. Okay..

6 MS. FULLER: May I approach Your Honor?

7 THE COURT: You may.

8 Q. (By Ms. Fuller) I want to show you what's
9 been marked as No. 52. Is State's Exhibit 52 is that
10 familiar to you?

11 A. Yes. It is a copy of my report dated July 24,
12 2015.

13 Q. Okay. And in this report State's Exhibit 52
14 does it contain your DNA analysis?

15 A. Yes it does.

16 Q. Okay. Is it a fair and accurate copy of your
17 most recent report?

18 A. Yes.

19 Q. With the exception of your signature on that
20 one?

21 A. Correct.

22 Q. Okay. You have the original with your file?

23 A. I do.

24 Q. Okay. And am I missing any portion that
25 would be relevant to this discussion?

1 A. No. I think you have it all.

2 MS. FULLER: At this time State moves to
3 admit State's Exhibit 52 and tender to Defense counsel
4 for inspection.

5 MR. MONCRIFFE: We have no objections
6 Your Honor to State's 52.

7 THE COURT: State's 52 is admitted.

8 Q. (By Ms. Fuller) Mr. Davis when you received
9 the portions of these swabs and the process of
10 extracting and amplifying and copying the DNA was done
11 does that then come to you for you to analyze all that
12 data?

13 A. Yes it does.

14 Q. Okay. And can you tell us what you did and
15 what your results were for your analysis?

16 A. First take the unknown profiles from the
17 evidence and determine if it's a usable profile. Is
18 this profile eligible to be interpreted, then we move
19 on to the actual interpretation or comparison phase
20 and that's taking a known sample and comparing an
21 individual to that evidence profile.

22 Q. Okay. So I want to start first with the doo
23 rag, the samples that you got from the doo rag. Were
24 you able to obtain a DNA profile from those swabs?

25 A. Yes I was.

1 Q. Okay. Now was it a single source or a
2 mixture of DNA?

3 A. It was a single source profile on both and
4 both of them had an additional minor number or allele
5 associated with the profile.

6 Q. What does that mean?

7 A. It means it could be another individual. It
8 also could be like an elevated baseline but we
9 recognized it and so we report it out that there is an
10 additional number there, that it could be another
11 individual but the majority of the profile is one
12 individual.

13 Q. All right. So if you're looking at 15
14 different locations you received markers at each of
15 those 15 spots?

16 A. Correct.

17 Q. Okay. And then you received basically an
18 additional marker?

19 A. At one of the locations.

20 Q. At one of the locations. Okay; so if it was a
21 mixture what does a mixture mean?

22 A. Mixture indicates that more than one
23 individual deposited the DNA and so even though I saw
24 one extra number or extra allele at another location
25 it's not enough to indicate that it's a mixture. Our

1 lab has a policy of we need to see at least two places
2 so we can determine whether it's a mixture or not.

3 Q. All right. And since you only saw one
4 location your result was that it was a single source
5 profile?

6 A. We deemed it a full male DNA profile with an
7 additional minor allele.

8 Q. Now you said that it was a full male profile.

9 A. Correct.

10 Q. Okay. Does that mean that you received
11 information that was sufficient at each of those
12 15 points to say that it's a full profile?

13 Am I making sense?

14 A. I received information at all 15 points to
15 say yes that it was a full profile.

16 Q. Okay. Now, I'm going to --

17 May I approach?

18 THE COURT: You may.

19 MS. FULLER: State's Exhibit 37, which I
20 believe has already been entered.

21 THE COURT: Yes, 37.

22 Q. (By Ms. Fuller) State's Exhibit 37 was a
23 buccal swab. At some point were you asked to compare
24 or analyze the buccal swab?

25 A. Yes I was.

1 Q. And were you able to obtain a profile on this
2 buccal swab?

3 A. Yes I did.

4 Q. State's Exhibit 37. Alright; and was that
5 also a male profile?

6 A. Yes it was.

7 Q. All right. In fact it was Michael Jerome
8 Clark's buccal swab. Is that correct?

9 A. Yes. I have Michael Clark.

10 Q. All right. Now, at this point you've got a
11 full male profile that you have found on the doo rag
12 and you've got a known sample of somebody's DNA.

13 What is your next step?

14 A. To do the comparison of those so we go
15 location by location and see if the evidence sample is
16 consistent with the known sample at each location.

17 Q. Okay. And when you compare the DNA swabs from
18 the doo rag which would be State's Exhibit, I believe
19 53, the contents of 53 to the known sample of Michael
20 Clark what were your findings?

21 A. So for Item 2.1.1 portion of swab from doo
22 rag Michael Clark cannot be excluded as a possible
23 contributor to this DNA profile from this item. The
24 probability that a randomly chosen unrelated
25 individual would be included as a possible contributor

1 is approximately one in 1.5 sextillion for Caucasians,
2 1 and 430 quintillion for African Americans and one in
3 150 sextillion for Southwest Hispanic.

4 Q. All right. Now why do you breakdown the
5 statistical analysis by race?

6 A. Those are the most common within this area of
7 the United States and so we just break those down.

8 Q. All right. And when you're testing something
9 in the lab do you know whether or not a known sample
10 is a Black male or Caucasian or a Hispanic, Southwest
11 Hispanic?

12 A. No. And that's why we report all three. I
13 have no idea what the race of the individual is.

14 Q. All right. So if you know the race of the
15 individual you would then -- I'm going to show State's
16 Exhibit 52. You would then focus in on -- let's see
17 you were reading from 2.1.1.

18 A. Yes.

19 Q. We know that Michael Clark is African
20 American then the statistics for him would be one in
21 430 quintillion?

22 A. It is 100 in 430 quintillion for African
23 Americans.

24 Q. All right. So how big is quintillion?

25 A. 18 zeroes.

1 Q. 18 zeroes. And for million how many zeroes
2 with million?

3 A. Six.

4 Q. Six; all right.

5 So quintillion is a substantially larger number
6 than million?

7 A. Yes.

8 Q. Okay. And that's just talking about one
9 quintillion, correct?

10 A. Correct.

11 Q. So then when you add in the 430 quintillion
12 you would add 18 zeroes to the 430?

13 A. Correct.

14 Q. Okay. That's a fairly big number.

15 A. That is a big number.

16 Q. What would that mean in terms of finding
17 somebody else out there who had that DNA?

18 A. It means you would likely have to test 430
19 quintillion individuals before you would see this DNA
20 profile again.

21 Q. Okay. Now, based on that information what are
22 you able to report in terms of the likelihood that
23 it's Michael Clark?

24 A. I don't understand.

25 Q. You said that he can't be excluded?

1 A. Correct.

2 Q. So you are able to say he can't be excluded
3 and it would take testing 430 quintillion people to
4 find that DNA potentially again?

5 A. Correct.

6 Q. Okay. Now you also tested -- that was just
7 2.1.1 was a portion of the swab from which -- do you
8 know from which side of the doo rag inside or outside?

9 A. No I do not.

10 Q. Okay. But it was one of those two?

11 A. Correct.

12 Q. All right. So then you also tested 2.2.1 and
13 what were your results on that one?

14 A. Michael Clark cannot be excluded as a
15 possible contributor from this profile, from this.
16 The probabilities that are randomly chose individual
17 included is approximately 1 and 25 quintillion for
18 Caucasians, 1 and 29 quintillion for African Americans
19 and 1 and 1.2 sextillion for Southwest Hispanics.

20 Q. All right. So again quintillion we would add
21 18 zeroes to the back of that 29.

22 A. Correct.

23 Q. Now the back of your DNA report contains this
24 chart. What is this chart? It's really difficult to
25 see I know from far away but if you would just tell me

1 what we're looking at in the chart.

2 Q. These are the 15 locations that make up a DNA
3 profile. The first box is just the name of the sample
4 and in this case it's Item 5.1. This is the known
5 swab, buccal swab from Michael Clark. Along the top
6 are the locations that I'm looking at. They're in
7 bold and then below those are the actual DNA profile,
8 the numbers that you see is actually the counting of
9 the repeats. So the first box is 12, 13. It's 12
10 repeats and 13 repeats of that location. Because you
11 get one number from your mom and one number from your
12 dad.

13 Q. So that's why you have the two figures.

14 A. Correct?

15 Q. Okay. And once you've established the DNA
16 profile for each of these locations you then took
17 these numbers and compared them to the numbers that
18 you obtained for those swabs from the doo rag?

19 A. Correct.

20 Q. Okay. And then you would compare the two to
21 see whether there was a match at those two locations?

22 A. Yes. We would compare each location to see
23 if it's consistent, yes.

24 MS. FULLER: May I have just a moment
25 Your Honor?

1 THE COURT: You pass him?

2 MS. FULLER: No. Can I just have a
3 moment? I just need to --

4 THE COURT: Sure.

5 Q. (By Ms. Fuller) Applying the method to the
6 results that you obtained what is the probability that
7 the sample that that doo rag, the DNA profile would
8 belong to somebody else?

9 A. There's not a probability that we calculate.
10 It goes six -- it's more of a -- again you would --
11 it's one and for Caucasians on the first 11 point five
12 sextillion 1.5 sextillion individuals in the Caucasian
13 before you see that DNA profile again.

14 Q. Based on the probability, the statistics that
15 you're seeing can you say with scientific certainty
16 whether or not that doo rag came from Michael Clark?

17 A. No I can not.

18 Q. And why is that?

19 A. Our lab at one point had a policy of saying
20 if the number was over a certain point of same
21 scientific certainty but we've taken that out because
22 we're generating more DNA profiles. And again we
23 haven't tested everyone in the world and so it's -- we
24 don't say match for the same reason because we haven't
25 tested everyone so we don't say for scientific

1 certainty, no.

2 Q. So again you just go back to the statistics
3 and say in order to find --

4 MR. MONCRIFFE: Judge, object to the
5 leading nature of the question.

6 Q. (By Ms. Fuller) Back to the statistics.
7 That's how you determine the probability of it being
8 Michael Clark?

9 A. That's how I determine how rare this
10 individual profile is.

11 Q. Okay.

12 MS. FULLER: Pass the witness.

13 MR. MONCRIFFE: May I proceed Your Honor?

14 THE COURT: Yes, sir.

15 **CROSS EXAMINATION.**

16 BY MR. MONCRIFFE:

17 Q. Good afternoon Mr. Davis. How are you sir?

18 A. Good afternoon.

19 Q. Juror members are each sitting in chairs.
20 There will always be DNA from the chairs. They're
21 sitting here matching back to them.

22 A. I can see some, yes. Others no.

23 Q. And could you explain that to me?

24 A. Absolutely.

25 Q. Yes, sir.

1 Let's say the individual back row, second person
2 she's wearing a long sleeve shirt. Not much of her
3 actual skin is touching the chair. Would I expect to
4 find her DNA on the arm of that chair?

5 A. Perhaps not.

6 Q. Okay. First person, second, second position
7 first row short sleeve shirt. If he puts his arms on
8 the arm of that chair would I expect to find his DNA?

9 A. Yes.

10 Q. All right. So two people can sit in the same
11 chair DNA will come from one and not from the other
12 possibly?

13 A. Possibly, yes.

14 Q. I want to take onto clothing. Can two people
15 wear the same article of clothing, one leaves DNA the
16 other one does not?

17 A. I believe they both leave DNA. Now whether I
18 can detect the DNA or enough DNA is detectable is a
19 different question okay.

20 I mean I can elaborate more.

21 Q. Go head. Go head.

22 A. Let's say you have a baseball hat.

23 A. Uh-huh.

24 Q. Say it's my hat.

25 A. Yes, sir.

1 Q. And I wear it everyday.

2 A. Right.

3 Q. Let's say the prosecution takes the hat and
4 she wears it. Obviously I have shorter hair than she
5 does. The hat is going to fit lower on mine, fit me
6 better. She takes the hair. She has more hair on her
7 head. It may not come in contact with as much skin as
8 it does for me. Does she wear the hat --

9 A. Yes she did deposit DNA, probably. Is it a
10 level that I can detect it? Maybe, maybe not.

11 Q. All right. Thank you.

12 You were saying in your profile analysis that there
13 was an individual you said could be another
14 individual. Could you explain what you meant by that?

15 A. So on both of the profiles that we developed
16 there was an additional minor number or allele like you
17 see on the chart. There's an additional number in one
18 of the boxes on both of the locations.

19 Q. Okay.

20 A. I don't know.

21 Q. What does that mean; can you explain to me?

22 A. I don't draw conclusions on that one
23 individual number because I don't know what it is.

24 Q. All right. Is it another person, it's
25 possible. Is it an artifact that we often see in DNA

1 analysis, it's possible. I don't draw conclusions on
2 that number because it's one number. I would never
3 make an exclusion or inclusion on one number that I
4 would see in a DNA profile.

5 Q. So Mr. Davis the skull cap or doo rag
6 possibly could have been worn by two people?

7 A. Possibly, yes.

8 MR. MONCRIFFE: No further questions Your
9 Honor.

10 **RE-DIRECT EXAMINATION.**

11 BY MS. FULLER:

12 Q. In order to say that you have a full profile
13 how many locations would you have to have present?

14 A. A full profile requires all of them.

15 Q. Okay. And so if you just have one location
16 out of 15 it doesn't -- does that give you enough
17 information to really make any kind of conclusion?

18 A. No. That's why we don't make conclusions
19 with -- let's just say I had a profile with one number
20 in it there would be no conclusions on that.

21 Q. So if that doo rag came back and you tested
22 it for DNA and it was only one location present could
23 you test that to a full known male profile?

24 A. No I could not.

25 Q. Because you would only have one location on

1 the doo rag but you would have 15 locations on the
2 known profile?

3 A. Correct.

4 Q. Okay. And so if the case was reversed you
5 wouldn't be able to make any conclusions all based on
6 that one location on the doo rag?

7 A. If it was just one location period.

8 Q. Right.

9 A. Correct.

10 MS. FULLER: Pass the witness.

11 **RE-CROSS EXAMINATION**

12 BY MR. MONCRIFFE:

13 Q. And Mr. Davis you can't exclude more than one
14 person having worn that doo rag can you?

15 A. Had I received another sample of a known
16 individual I could exclude them or include them but I
17 only received one known sample to compare it to.

18 MR. MONCRIFFE: All right. No further
19 questions Your Honor.

20 MS. FULLER: Nothing from the State.

21 THE COURT: You may stand down.

22 MS. FULLER: Your Honor, at this time the
23 State of Texas rest.

24 (State Rest)

25 THE COURT: Approach please.