MR. SPRING: Good morning, sir.

WITNESS: Good morning.

MR. SPRING: Forgive me if some of these questions are basic, but DNA, obviously, you cannot see just with your eyes; is that right?

WITNESS: That's correct.

MR. SPRING: And DNA is found in every cell in your body except for red blood cells; is that correct?

WITNESS: That's also correct.

MR. SPRING: And so, it's found in your hair?

WITNESS: Correct.

MR. SPRING: It's found in your skin cells; correct?

WITNESS: Correct.

MR. SPRING: It's found in your saliva?

WITNESS: Correct.

MR. SPRING: It's found in other bodily fluids, again, except for the red blood cells; is that right?

WITNESS: Correct.

MR. SPRING: And DNA is very easy to leave behind once you've been somewhere, isn't it?

WITNESS: Correct.

MR. SPRING: And so each one of us who's in this courtroom right now likely has left behind DNA from where they've been sitting; correct?

WITNESS: Correct.

MR. SPRING: And if they've touched anything in the courtroom, they've likely left behind DNA where they've touched; correct?

WITNESS: Correct.

MR. SPRING: And anything that they've touched, so whether it be pens or the monitor, or anything else, it's likely that DNA has been left behind; correct?

WITNESS: Correct.

MR. SPRING: And so when somebody else comes along and touches that same area, they can pick up the DNA that was left behind; correct?

WITNESS: I'm not sure if they can actually pick up the DNA. I think they can only deposit it.

MR. SPRING: Well, suppose, for example, that right before I came up to this podium, the prosecutor was using this podium; is that right?

WITNESS: Uh-hum.

MR. SPRING: And she was here asking you questions and she was touching the podium; correct?

WITNESS: Correct.

MR. SPRING: And she was standing right over the podium; correct?

WITNESS: Uh-hum.

MR. SPRING: And so during her examination of you, it's likely that she left DNA on this podium; is that right?

WITNESS: That's correct.

MR. SPRING: And it could have been left in the form of hair stands; is that right?

WITNESS: That's correct.

MR. SPRING: It could have been left in the form of skin cells that came off of her skin; is that right?

WITNESS: That's correct.

MR. SPRING: I'm certainly not suggesting that the prosecutor was spitting, but had she been spitting, her DNA could be left behind in the form of saliva; is that right?

WITNESS: That's correct.

MR. SPRING: We can't know with the naked eye how much of her DNA the prosecutor left on this podium; is that right?

WITNESS: That is correct.

MR. SPRING: And she could have left a lot; she could have left a little.

WITNESS: Correct.

MR. SPRING: And you only need one cell to be able to test for DNA; correct?

WITNESS: I'm not sure of the quantity that you need.

MR. SPRING: And you can't tell again what the quantity is that someone leaves behind based on just looking at an object with the naked eye; is that right?

WITNESS: Yeah, you cannot.

MR. SPRING: So, after the prosecutor left this podium and sat down, I stood up, and now I'm touching the podium, and my suit jacket has touched the podium, and my tie probably has brushed up against the podium.

WITNESS: Uh-hum.

MR. SPRING: And it is possible if my clothes and my skin come into contact with whatever DNA the prosecutor left behind, it could become attached to my clothes; correct?

WITNESS: I'm not sure if it can become – I know it can be deposited; I'm not sure if it can be picked up or transferred.

MR. SPRING: It's possible, is it not, that DNA can be transferred from one object to another?

WITNESS: I'm not sure if it can be transferred.

MR. SPRING: Well, let me ask you this. Suppose during the course of her examination this morning, the prosecutor had left a strand of hair on the podium, and as I now stand here, the strand of hair becomes attached to my jacket. At that point, I would carry the DNA on my jacket from the strand of hair that was left behind by the prosecutor; is that right?

WITNESS: The DNA would still be in the hair; correct.

MR. SPRING: And after I finish in court today, if I go and throw my jacket on the car seat next to me, then the DNA could theoretically be transferred from my coat to the car seat; is that right?

WITNESS: The hair would be transferred to the car seat.

MR. SPRING: And suppose when I get home, instead of hanging up my jacket, I throw it on the bed. The prosecutor's DNA could be transferred from, again, the coat to the bed; is that right?

WITNESS: The hair would be transferred to the bed.

MR. SPRING: And the DNA is still present; is that right?

WITNESS: The DNA is present inside the hair, but you have to actually extract the DNA to get it out.

MR. SPRING: But the DNA is present, physically present, within the hair; correct?

WITNESS: Within the hair; correct.

MR. SPRING: And so, at this point the jacket's lying on my bed. My wife gets home, angrily sees that I haven't hung up my jacket, and so she decides to pick it up. If the hair gets transferred to my wife's suit, then the DNA would be present on my wife, physically; is that right?

WITNESS: The hair would be present on the wife's suit; correct.

MR. SPRING: And suppose my wife brings my suit jacket straight to the dry cleaner and the dry cleaner takes it and throws it into a pile of dirty clothes. If the hair is still on my suit jacket, then that hair containing the prosecutor's DNA could then be transferred to any of those other clothes lying in the pile; is that right?

WITNESS: That is correct.

MR. SPRING: And the DNA would be there; right?

WITNESS: The DNA would be within the hair.

MR. SPRING: And so, the prosecutor's DNA could travel from this courtroom to my car to my house to my wife's suit to the dry cleaner, without her ever going to any of those places, correct?

WITNESS: Within the hair, correct.

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MR. SPRING: What your testing generally cannot do is determine how DNA arrived at a particular location; is that true?

WITNESS: That's true.

MR. SPRING: And yesterday we talked with the DNA analyst who was in court and he educated all of us about what DNA transfer means. Are you familiar with that?

WITNESS: How DNA is transferred?

MR. SPRING: Yes.

WITNESS: Yes, I can render some opinions on that.

MR. SPRING: So, yesterday the example that was used was if a person leaves a strand of hair somewhere, and a second person comes by and the hair becomes attached to the second person's clothes, that strand of hair – which contains the first person's DNA – will travel on the second person's clothes, wherever the article of clothing ends up; correct?

WITNESS: That's possible.

MR. SPRING: And so in that hypothetical, although the person who created DNA may not go to a particular location, her DNA can travel there in the strand of hair that attaches itself to someone else's clothes; correct?

WITNESS: That's possible.

MR. SPRING: And that principle applies equally to bodily fluids; does it not?

WITNESS: It is possible.

MR. SPRING: And skin cells, for example, that are left places?

WITNESS: It is possible.

MR. SPRING: So, for example, if somebody is driving in his car and he sneezes, and saliva comes out of his mouth and lands on the steering wheel, you would expect his DNA to be on the steering wheel; is that right?

WITNESS: It's possible. It's a matter of whether there's enough to detect that amount of DNA.

MR. SPRING: It is possible, though, that the DNA will end up on the steering wheel; correct?

WITNESS: Correct.

MR. SPRING: And then if that person takes a napkin out of his glove compartment and wipes down the steering wheel, it is possible that the DNA will then be on the napkin; correct?

WITNESS: Correct.

MR. SPRING: And if that person then puts the napkin in his pocket, it's possible the DNA will then be on his clothes in the interior of his pocket; correct?

WITNESS: It is possible, but whether or not we can detect that amount of DNA is a separate issue.

MR. SPRING: Sure. But it's possible that the DNA is going to continue to travel; is that right?

WITNESS: It's possible, yes. It doesn't always happen to an amount that's detectible, but it's possible.

MR. SPRING: Sure. And so this applies, obviously, to hair; correct?

WITNESS: Hair can be transferred, yes.

MR. SPRING: And it applies to blood?

WITNESS: Yes.

MR. SPRING: And it applies to saliva?

WITNESS: In your hypotheticals, any sort of biological-containing DNA could transfer for the scenarios posted, so yes.

MR. SPRING: I'm showing you, ma'am, on the television screens a photograph that has been previously marked as Exhibit Thirteen. Are you able to see that clearly?

WITNESS: Yes.

MR. SPRING: I'd like to pose you a hypothetical about this photograph, so please take a look at the photograph. As you can see on the right side of the picture, there is a shower. Can you see that?

WITNESS: Yes.

MR. SPRING: And can you see on the left side of the photograph is a toilet?

WITNESS: Yes.

MR. SPRING: And can you see between the shower and the toilet, there is a towel on the floor.

WITNESS: Yes.

MR. SPRING: I'm going to give you a number of facts for this hypothetical. I would like you to suppose that some morning, a man goes into this bathroom and takes a shower. I'd like you to further suppose that after his shower, he gets out, and he stands on that towel that's on the floor. Are you following me so far?

WITNESS: Yes.

MR. SPRING: I'd like you to suppose that he takes another towel and he dries himself off completely from head to toe, and so he wipes from his hair, all the way down to his feet while he's standing on the towel. Finally, I'd like you to suppose that the man then walks out of the bathroom and gets dressed in some other location. Based on that hypothetical, it is possible that he would deposit DNA onto the towel he was standing on; is that right?

WITNESS: Yes.

MR. SPRING: And that could be in the form of hair; correct?

WITNESS: Yes.

MR. SPRING: It could be in the form of skin cells?

WITNESS: Yes.

MR. SPRING: It could be in the form of bodily fluids if there were any bodily fluids that came off of his body; is that right?

WITNESS: Yes.

MR. SPRING: I'd like to continue with the hypothetical. I'd like you to suppose that later in that morning, somebody else comes into the bathroom, and between the time that the man got out and dried himself off and the time that this second person comes into the bathroom, no-one was in there. So, the man gets out of the shower, dries himself off, and leaves. A short time later, somebody else comes into the bathroom. I'd like you to suppose that the second person who comes into the bathroom pulls down her pants and underwear, sits on the toilet, goes to the bathroom, stands up, pulls up her pants and underwear, and then leaves the bathroom. Do you understand those facts of the hypothetical?

WITNESS: I believe so.

MR. SPRING: If, when the second person pulled down her pants and underwear, the underwear came in contact with the towel on the floor, it is possible for the DNA that was left behind by the man who had showered to be transferred onto the underwear of that individual who had gone to the bathroom.

WITNESS: There's many variables that affect that answer.

MR. SPRING: I'm simply asking you if it's possible.

WITNESS: That DNA is transferred onto that item from the towel?

MR. SPRING: Yes.

WITNESS: It's possible.

MR. SPRING: You wrote a report in this case, didn't you?

WITNESS: A supplemental report, yes, which primarily incorporated the DNA analyst's work with some updates.

MR. SPRING: And in your report, you conceded that DNA in some cases may have no probative value; is that right?

WITNESS: That is possible in our additional comments, yes.

MR. SPRING: And that's in comment number eight under the additional comments?

WITNESS: Yes.

MR. SPRING: And what you mean by that is if DNA has been indirectly transferred, then perhaps it may not have probative value; is that right?

WITNESS: That is a condition of that statement, yes.

MR. SPRING: Who's Jane Smith?

WITNESS: She's the DNA analyst who performed the analysis in this case which I technically reviewed.

MR. SPRING: Does she still work for the lab?

WITNESS: She does not.

MR. SPRING: Where does she work now, if you know?

WITNESS: I actually don't know the name of her company, but she's in Massachusetts, I believe.

MR. SPRING: Do you know whether or not she was asked to leave the state lab?

WITNESS: Yes.

MR. SPRING: And was she?

WITNESS: No.

MR. SPRING: Do you know whether or not she passed all of her proficiency exams?

WITNESS: Yes.

MR. SPRING: And did she?

WITNESS: Yes.

MR. SPRING: She did the first report in this case; is that right?

WITNESS: Correct.

MR. SPRING: And then as a technical reviewer, you reviewed all of her work and wrote a follow up supplemental report; correct?

WITNESS: Correct.

MR. SPRING: And fair to say that some of your conclusions with respect to the numbers were different from Jane Smith's; is that right?

WITNESS: Yes, they were updated, yes.

MR. SPRING: They were different.

WITNESS: Yes.

MR. SPRING: May I approach the witness?

COURT: You may.

MR. SPRING: Now, I'm showing you a copy of your supplemental report. Do you recognize that?

WITNESS: Yes.

MR. SPRING: And on the back page here, that's your signature; correct?

WITNESS: Correct.

MR. SPRING: And it's dated June thirteenth, 2013?

WITNESS: Yes.

MR. SPRING: And this is the report you wrote related to this case; is that right?

WITNESS: Correct.

MR. SPRING: I'm directing your attention to page eleven of thirteen under conclusions. Do you have a copy of that?

WITNESS: I do.

MR. SPRING: So, under the conclusions section, the first paragraph deals with the defendant. Do you see that paragraph?

WITNESS: I do.

MR. SPRING: The final sentence of that paragraph deals with the probability of a randomly-selected unrelated individual having contributed DNA to the sample that was found in the alleged victim's underwear; is that right?

WITNESS: Yes.

MR. SPRING: What do you mean by randomly-selected unrelated individuals?

WITNESS: The statistic is done on the evidence, and it's the frequency at which we would expect to see this profile, based on the databases of frequencies we reference. It's the frequency at which we would expect to see the profile in the general population, in general randomly-selected unrelated population.

MR. SPRING: What do you mean by randomly? What does that phrase mean?

WITNESS: Because the databases are collected from randomly, two unrelated individuals. So, that's the condition of the statement, is that the databases that are utilized, have that condition on them. So, our expectations using those frequency databases is of the general population.

MR. SPRING: And so the calculations that you used assumed that this was a randomly-selected unrelated individual; correct?

WITNESS: No. It assumes it's a condition of the evidence. So, it actually – the statistic doesn't have to do with the comparison to the known. It's a statistic on the evidence itself, the expectation we have of seeing this profile, or the profiles if it's a mixture, in the general population.

MR. SPRING: It's fair to say when you're analyzing DNA of people who are related, you use a different equation; is that right?

WITNESS: We actually do not perform the statistical analysis in-house if there's an issue of relatedness between – in the evidence and between the individuals submitted for comparison. So, we do offer that analysis to be done outside of our laboratory.

MR. SPRING: And so if you determine that people are biologically related, what do you do? Do you send it out to another lab?

WITNESS: If there's an apparent inclusion to those related individuals, we will offer that statistical analysis to be done externally.

MR. SPRING: Did you do that in this case?

WITNESS: It was not necessary to do it in this case.

MR. SPRING: I'm not asking you if it was necessary; I asked if you did it.

WITNESS: No, I did not do it.

MR. SPRING: Did you conclude during your review of the documents in this case, that there was a biological relationship between the defendant and members of the alleged victim's family members?

WITNESS: I inquired about that to make sure our statistic was appropriate, and my understanding, he's a non-biological uncle.

MR. SPRING: Well, did you look at the DNA to confirm that?

WITNESS: That's not –- wasn't necessary, based on the information given.

MR. SPRING: Well, let me show you the data, and you can explain this to us. I'm showing you pages from your report, and I'm going to put these up on the television monitor in a minute. I just want to let you know what I'm going to show you. First, I'm going to show you the known saliva standard for the alleged victim and her father. Do you recognize these two sheets?

WITNESS: They appear to be the tables that were generated as part of our report.

MR. SPRING: And these are the pages that were included in your report; correct?

WITNESS: Yes, I believe so. I can just confirm that quickly. (Witness examines document.) Would you mind sliding the top profile down a bit so I can verify the date? (Mr. Spring complies.) Yes.

MR. SPRING: I'm going to slide it back up so we can see all the data. So, when you're presented with two profiles like this, you are able to determine, are you not, whether or not people are biologically related.

WITNESS: We don't do that as a course of our analysis. If that information is given to us or that's a concern to us that there is a relationship, then we will again consider that in our statistical analysis. We can still render an opinion of inclusion or exclusion of that profile to the evidence sample.

MR. SPRING: I suppose that's my question. Based on your training and experience, if you look at two profiles like this, can you determine whether or not it's likely that people are biologically related?

WITNESS: I would go as far as an immediate relative; a parent, whether it's possible that, say, a profile could have come from –- there's two sets of parents, but that's not my expertise.

MR. SPRING: Well, let me ask you this. In looking at this profile, let me tell you that evidence has been presented in this case that the top row of data belongs to the alleged victim's father and the bottom row of data belongs to the alleged victim. Do you see that?

WITNESS: Yes.

MR. SPRING: And are you able to say from looking at this document and evaluating the data whether the sample analyzed on the top row belongs to the father of the person who contributed the sample analyzed on the bottom row?

WITNESS: Do you mind if I stand and look at it?

MR. SPRING: No. Actually, there's a pointer to your right, if you'd like to use that too.

WITNESS: Okay. So, we have the alleged victim and her biological father in this scenario. Is that…

MR. SPRING: Yes.

WITNESS: So, my expectation would be that the alleged victim, in each of her locations, would have a number that is in her father's profile, based on that genetics we talked about yesterday. So, if we look at the first location that we test, she is an 11, 15. His first location is 11, 13, so yes, there's an eleven represented, so it's possible there. You have to go through the entire profile to have that confidence that this could be a father. And it looks like at the next location 21, she has a 29 and he does as well. In seven, she has an eight, and he has an eight as well. CSF, she has a 12 and he has a 12. Fifty-three, she has a 15 and he has a 15 as well. 01, she has a 9.3 and he has a 9.3 as well. So yes, so far it's possible that she is the daughter of this person. At D16, she has a 12, 11 and he is having a 12 as well. At D2, she has a twenty, and he has as well. And it looks like if you go across the entire profile, that in fact she has an allele that's represented in her father's profile. So it is possible that person who contributed the bottom sample is the biological daughter of the person contributed the top sample.

MR. SPRING: In fact, they share 19 of the 30 numbers in this profile that you're looking at; is that right?

WITNESS: Let me see. Do you want me to count them?

MR. SPRING: Well, I can represent to you that they share 19 of 30. If you'd like to count on your own, I'm happy to give you the opportunity to do that. (Witness examines document.)

WITNESS: Well, 15 definitively from him.

MR. SPRING: And the parent gives, a biological father and mother, gives exactly half of his or her DNA to a child; is that right?

WITNESS: Correct.

MR. SPRING: And so, the alleged victim would have at least 15 of the 30 same numbers in this case; correct?

WITNESS: Yes, at least one representation at each location, yes.

MR. SPRING: Let me show you now the profile of the alleged victim's biological brother. So, now we're looking at the alleged victim's profile on the top and her biological brother's profile on the bottom. Do you see that?

WITNESS: Yes.

MR. SPRING: Biological siblings share about half of their DNA; is that right?

WITNESS: Yes, that's possible. Again, they also receive a contribution from their mother and their father, so it may not be – it won't be necessarily the same profile as their sibling, and to my knowledge, I haven't observed any siblings having the same DNA profile to the extent at which we test, his is fifteen locations; just identical twins. So, they both, as you're suggesting, share some genetic information because they are from the same two parents.

MR. SPRING: And so when you go through these two, and I'm going to point on the screen – if you look through here, – for example, let's look at D8. That's 1179. You can see that the alleged victim has an eleven out of fifteen and her brother has the same one, correct?

WITNESS: Correct;

MR. SPRING: The next category, they don't share anything; correct?

WITNESS: Correct.

MR. SPRING: The next one over, they share a twelve.

WITNESS: Correct.

MR. SPRING: The next one over, they don't share anything.

WITNESS: Correct.

MR. SPRING: The next one over, they share fifteens?

WITNESS: Correct.

MR. SPRING: And so if you go through there, they share eighteen of thirty numbers; is that right? And again, I know you haven't had the opportunity to count this ahead of time. I'm representing to you that they share eighteen of thirty. If they share eighteen of thirty numbers, you would expect and you could conclude that they are biologically related; correct?

WITNESS: That is not my field of expertise. I don't do that sort of assessment, and therefore, calculation.

MR. SPRING: So, if two people are sharing more than fifty percent of their DNA, you as a DNA analyst can't conclude whether or not those people are biologically related?

WITNESS: I have never done that. I would certainly, – you know, if that's an issue of the case or presented as an issue of the case, we could investigate that further for either party. We do offer that in a report that further calculations can be made if requested. That report's given to all parties in this case.

MR. SPRING: Well, your lab is responsible for doing the analysis; right?

WITNESS: And we did our analysis. We did our comparison of the standards in this case to the evidence.

MR. SPRING: And as you said, if there is a determination that there's a biological relationship between the parties, you would send that out to another lab in order for further analysis; is that right?

WITNESS: My information is that this is a non-biological uncle.

MR. SPRING: I didn't ask what your information was. If you believe there is a biological relationship, you would then send that data out to another lab; correct?

WITNESS: If that's requested, and it depends on the evidence item, and if there's an inclusion of that related person to the evidence sample.

MR. SPRING: Well, you have the evidence in front of you. Are there people at your lab who can determine from looking at this evidence whether or not people are related?

WITNESS: It's not part of our routine analysis of forensics, comparing evidence to a sample. We're comparing one standard to an evidence sample to determine their inclusion or exclusion or inclusiveness, what have you. So, what I offered is that I would be confident, because it's not something I do routinely, and I would be confident as I was to be able to feel as if someone – your biological child, that closeness of a relationship. But

beyond that, I don't know enough. I would stop there. It's not my area of expertise. It is comparing a standard to the evidence, and that doesn't change based on relatedness whether someone's included or excluded in an evidence profile. It would not change that opinion.

MR. SPRING: When you receive DNA and you're doing these statistical analyses, is it not common practice for the lab to look at the different profiles to try to figure out if they're biologically related?

WITNESS: We go – if there is a direct – like I said, a biological mother, father, that closeness of relationship that we can observe that I feel confident in doing as I just did with you, then we would flag – we'd consult the different parties in the case and say, "Is there a relationship here?" And so, we gather that information if there is that relatedness. And in this case, our information is that the defendant is not a biologically related uncle.

MR. SPRING: Where did you get that information from?

WITNESS: From – I believe it was consultation with the investigator and attorney in the case.

MR. SPRING: So, it's fair to say that even though you have the defendant's DNA and you have the DNA of the alleged victim, her father, and her brother, your lab did not look to see whether or not they are all biologically related?

WITNESS: I can say that I know the alleged victim's brother and father are paternally related because their YSTR profile is the same. The defendant's is not that profile, so he's not paternally –that's a word, related to the alleged victim's family. So, I can give you that opinion.

MR. SPRING: My question is, you received this case and the investigators and the prosecutor told you that the defendant was not biologically related to the alleged victim's family; is that right?

WITNESS: Correct. He is – my understanding is that he is – the sister is the biologically related – his wife is the biologically related party to the alleged victim in this case, not – the uncle is married to that sister, therefore not in that direct biological line. That is my information; therefore, we did not pursue a different type of statistical analysis on the defendant's inclusion in this evidence.

MR. SPRING: And nobody at the lab actually looked at the data to try to determine whether or not the defendant was biologically related to the alleged victim's family; is that right?

WITNESS: It was observed, as I just said. The YSTR profile is inconsistent with that.

MR. SPRING: Well, let me show you the defendant's profile along with the alleged victim's biological father's profile. Do you see that?

WITNESS: Yeah. So, there are some consistencies, but there are some non-consistencies in the profile.

MR. SPRING: Of the thirteen points, fourteen are the same; is that right?

WITNESS: They're not the same profile at fourteen points. I don't know what the question is.

MR. SPRING: Well, when you go through these…

WITNESS: Are you talking about consistencies?

MR. SPRING: Yes.

WITNESS: They both share an eleven at the first location; they both share twenty-nine at the second location; the third location, they both share a nine; at CSI, they do not share a consistency. At D3 they do not share a consistency. At one, they do share a consistency.

MR. SPRING: They share both on that one.

WITNESS: Okay. And at D13, they share a consistency; At D16, they share a consistency; two, they share a consistency; nineteen, they show a consistency; and D18 they do not share a consistency; D5, they share a consistency…

MR. SPRING: They share fourteen out of thirty consistencies; correct?

WITNESS: If you believe that the consistencies are such that they have the same information at a location…

MR. SPRING: The defendant and the alleged victim's father are related, aren't they, biologically?

WITNESS: I don't know that. I cannot render that opinion. I know that they do not – through YSTR's, I can tell you that they do not have the same paternal genetic profile.

MR. SPRING: From looking at those profiles, you can't rule out that they are biologically related, can you?

PROSECUTOR: Objection.

COURT: Sustained.

MR. SPRING: In any event, you did not send this case file out to an independent lab for examination, did you?

WITNESS: No.

MR. SPRING: May I approach the witness?

COURT: You may.

MR. SPRING: I'm showing you your report. I'm going to direct you to this page right here. I'm also going to put it up on the monitor. Explain to the ladies and gentlemen of the jury, if you would, what this sheet indicates.

WITNESS: This is the result of the YSTR analysis performed on the swabbing and scrapings of the interior crotch of the underpants in this case. So, it's the profile obtained from that item for YSTR's.

MR. SPRING: And so, in this analysis, this is only going to show profiles of males; is that right?

WITNESS: Correct.

MR. SPRING: And that's because females don't have a Y chromosome; correct?

WITNESS: Correct.

MR. SPRING: And so, I'm going to ask you to look at the chart. On the bottom right, there's a red category. Do you see that?

WITNESS: Yes.

MR. SPRING: I'm going to ask you to look at this figure right here. What is the title of that box?

WITNESS: Y data, H4 of YGATA

MR. SPRING: And what is that?

WITNESS: That's a YSTR location that was tested in this technology.

MR. SPRING: And I can see here that there's an asterisks, and then thirteen, and then asterisks. What does that mean?

WITNESS: A The asterisks in the table represent a peak that's below our reporting threshold. So, that is a potential allele. We don't confirm that allele designation until it reaches our minimum threshold of detection.

MR. SPRING: And you can determine, however, there's male DNA; correct?

WITNESS: I'm sorry, what was the question?

MR. SPRING: You can determine that these were all male samples; correct?

WITNESS: These are all male…

MR. SPRING: As opposed to female.

WITNESS: This only represents male DNA. That's this profile.

MR. SPRING: And that box indicates that there are at least three profiles in that box; is that right?

WITNESS: There is an indication of more than –- there's an indication –- there's at least two male profiles represented in this profile. In order to have confidence that there are more than two males represented in this data, we have to observe the occurrence of that third profile at least two locations.

MR. SPRING: So, you can conclude that there are at least two male profiles here, but there could be more; is that right?

WITNESS: A Correct. There's an indication. However, in order to have confidence in a third contribution there, we need to see more data and that profile from a third contribution.

MR. SPRING: It's fair to say, you have no idea who that other male DNA belongs to; correct?

WITNESS: The minor profile, there's not enough information there to utilize it in a comparison.

MR. SPRING: And so my question is, you don't know who that is; correct?

WITNESS: Correct.

MR. SPRING: And you don't know how that DNA got into the underwear; is that right?

WITNESS: That's true.

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MR. SPRING: Ma'am, you testified on redirect examination about the hypothetical that I posed to you with respect to the shower in the bathroom. Do you remember that?

WITNESS: Yes.

MR. SPRING: And you testified that in the event that there was DNA transfer in the scenario I gave you, you would expect perhaps to see the transferred DNA on the outside of the underpants; correct?

WITNESS: That's possible, yes.

MR. SPRING: Isn't it true that in this case there was an animal hair that was found on the interior of the subject underpants?

WITNESS: I don't know where it was recovered from. Again, that underwear is packaged – once it's recovered, it's packaged as its entirety in the – so there could be transfer within that bag. So, I don't know that that animal hair was originally on the exterior or interior of that item. I am aware that a hair was recovered, and I don't know if it was recovered from that underpants.

MR. SPRING: Well, it was represented in the criminalistics report that it was on the interior of the underwear; correct?

WITNESS: I'm not sure, but that's fine if it was.

MR. SPRING: You testified on direct examination that you reviewed the entire case file prior to you doing your calculations; is that right?

WITNESS: DNA case file; correct.

MR. SPRING: And that includes the criminalistics report, doesn't it?

WITNESS: The report, yes.

MR. SPRING: May I approach the witness?

COURT: You may.

MR. SPRING: Do you recognize this document?

WITNESS: Yes.

MR. SPRING: And what is it?

WITNESS: It is the criminalist's report.

MR. SPRING: And this report indicates, does it not, that one animal hair measuring approximately two inches ranging from light brown to very dark brown was observed on the rear interior of the underpants; correct?

WITNESS: It does, yes.

MR. SPRING: How did it get there?

WITNESS: I don't have knowledge how it got there.

MR. SPRING: There's no test to perform to determine how it got there, is there?

WITNESS: Correct.

MR. SPRING: You were testifying on re-cross again about the DNA YSTR profile. Do you recall that?

WITNESS: Yes.

MR. SPRING: And was it your testimony that based on your analysis, you could exclude the alleged victim's brother and father from being possible contributors?

WITNESS: No.

MR. SPRING: So, you cannot include or exclude them from those minor profiles; is that right?

WITNESS: Correct.

MR. SPRING: So, both of those individuals could have been the basis of the substance that was in the underwear; is that right?

WITNESS: I didn't do that comparison, so I don't have an opinion on inclusion or exclusion. It's inconclusive for comparison, the minor profile.

MR. SPRING: And you testified, I believe, on redirect that whether or not the defendant is biologically related to the alleged victim's family would not have changed your conclusion, but it would have changed the numbers; is that correct?

WITNESS: Correct.

MR. SPRING: So, the numbers that you provided to the prosecutor and to the defense team would have been different if the defendant was related to the alleged victim's family; correct?

WITNESS: It would still be an inclusion, but the statistical analysis may be a bit different, yes. So, the inclusion – the significance of inclusion statistic would be a different statistical analysis, so it would be different, but still an inclusion.

MR. SPRING: But the actual statistics and the actual figures that you provided would have been wrong; correct?

PROSECUTOR: Objection.

COURT: Overruled. If she can.

MR. SPRING: Would they be wrong?

WITNESS: They wouldn't be wrong, but the relatedness statistic would be more accurate to the significance of that inclusion.

MR. SPRING: So, the new statistic would be different than the statistic you came up with?

WITNESS: Yes.

MR. SPRING: And it's your testimony that your statistic would not be wrong?

WITNESS: Because they would all be in the realm of a similar significance of inclusion. We're not talking about a major difference in…

MR. SPRING: No, no. We're talking about any difference. There would be some difference, would there not?

WITNESS: There would be some difference, yes.

MR. SPRING: And it is your testimony that still your statistic would not be wrong; is that correct?

WITNESS: It would not – if you're saying it's biologically related, there would be a more appropriate statistic. Would ours be wrong, – the inclusion in STR's is a combined probability of inclusion, so it's – regardless of the standards to which are being compared, it's a statistic done on the evidence sample whether or not a profile in the general population could be included in that. I don't think that statistic is wrong. I think that the community

wouldn’t reject that. I believe that they would support considering relatedness. That’s my opinion.

MR. SPRING: So, it would be different, but not wrong?

WITNESS: Correct.

MR. SPRING: Thank you. Nothing further.