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**Information about DNA Evidence
in Daniel Holtzclaw's Case
(to share with Media)**

I. MY BACKGROUND

I am a Harvard-trained biologist, a former Iowa State University genetics researcher, and a former Sexual Assault Response Team victim advocate.

At the time I learned about the Holtzclaw case, I was doing research at Iowa State University, where I worked for many years on projects involving DNA and genetic sequencing. I worked with DNA in a genetic engineering lab and later for a corn genetics project.

I earned my undergraduate degree from Harvard University, majoring in Biology with a minor degree in Visual and Environmental Sciences.

I have a Master of Science degree from Iowa State University, majoring in Botany with a minor degree in Biochemistry. My research involved gene cloning, sequencing, and using PCR to amplify DNA.

I volunteered and then worked as a victim advocate at Domestic Violence / Sexual Assault shelters, including as the victim advocate on a Sexual Assault Response Team (SART).

II. HOW I LEARNED ABOUT DANIEL'S CASE AND BECAME CONCERNED ABOUT THE DNA EVIDENCE

A. On January 21, 2016, the day of Daniel Holtzclaw's sentencing, I saw an online article about it. This was the first time I had ever heard of his case. Because the case involved DNA and allegations of sexual assault – two of my interests – and a shockingly long prison sentence, I wanted to learn more and began reading other articles.

B. I learned that the only forensic evidence was described as “skin cell DNA” matching one complainant, a 17-year-old teenager, and it was found on the fly of Mr. Holtzclaw's uniform pants. I wondered why Mr. Holtzclaw was convicted of sexually assaulting 8 women out of 13 whose allegations went to trial, when there was only forensic evidence from one individual. I also learned that there were other people who had made known false allegations against Daniel, so their allegations never went to trial.

C. I saw that non-intimate skin cell DNA transfer to the fly of Mr. Holtzclaw's uniform pants was a reasonable explanation, like his defense team said. Daniel questioned the teenager and was said to have searched through her purse and pat-searched her. These actions could have transferred her DNA to his hands, from which her DNA could have transferred to the fly of his uniform pants when he used the restroom.

I looked online and found that science articles available before the start of the Holtzclaw trial on Nov. 2, 2015, showed that non-intimate, indirect transfer of the teenager's skin cell DNA via Mr. Holtzclaw's hands to the fly of his uniform pants while using the restroom was a

reasonable explanation:

1. Sarah Jones and Kirsty Scott, *The transfer of DNA through non-intimate social contact*, in Conference Report by J. Hulme, *Science and Justice*, 50: 100-109 (2010). This study discovered that a woman's non-intimate skin cell DNA can transfer secondarily from her face and hands via a man's hands to his underpants and even genitals.

2. Janine Helmus et al., *DNA transfer – a neverending story: A study on scenarios involving a second person as carrier*, *Int J Legal Med*, 130: 121-125 (2016) – published online Oct. 27, 2015. Indirect tertiary transfer of a person's skin cell DNA can occur from a piece of cloth to a second individual's hands, and from that second individual's hands to another piece of cloth, resulting in a full DNA profile of the non-handler on the second cloth.

3. Cale et al., *Could Secondary DNA Transfer Falsely Place Someone at the Scene of a Crime*, *J. of Forensic Science*, 61: 196-203 (2016), published online Sept. 2015. This study found that if you shake hands with a second individual and then touch a knife, you can transfer the non-handler's DNA but not your own DNA to the touched object.

D. I noticed some news articles reported that DNA samples from the fly of Mr. Holtzclaw's uniform pants were a mixture from more than one person, but it wasn't clear to me how many samples were taken from the fly of the uniform pants, or what the results really were. The news articles were very clear, though, that the prosecution claimed Mr. Holtzclaw's DNA was not found on the fly of the uniform pants.

E. I watched the video of Mr. Holtzclaw's televised verdict, available online, and saw that he mouthed to the jury that he didn't do it. I wondered whether he was innocent and whether I had just watched the conviction of an innocent man. I began googling Daniel Holtzclaw's name and seeing whether there was any information from people who might be questioning the verdict. Three days later, my search results for "Daniel Holtzclaw innocent" led to an article, "The Untold Story," published by the defense team's private investigator, Brian Bates, on Jan. 24, 2016. The article described numerous problems with the Holtzclaw investigation and the trial.

F. I saw there were routes by which DNA of several individuals could have transferred indirectly and innocently to the fly of Mr. Holtzclaw's uniform pants:

1. I learned that on the night when Mr. Holtzclaw stopped the teenager and searched through her belongings for drugs, she was with a woman and man whom he also questioned. This created a situation in which skin cell DNA from the teenager and a woman and man could have transferred to Mr. Holtzclaw's hands, and later to the fly of his uniform pants while using the restroom.

2. During the interrogation video, which Brian Bates posted online, you can see that both sex crimes detectives handled pens, then gave them to Mr. Holtzclaw to use, and he then touched his pants frequently during the interrogation. This created the possibility for DNA from both detectives to transfer to Mr. Holtzclaw's pants. **The male detective also placed his bare hand in the evidence bag before having Mr. Holtzclaw put both his uniform pants and belt in the evidence bag.**

3. It is known that DNA can transfer from one location to another on an item of evidence in an evidence bag, and from one evidence item to another item stored in the same bag. That is the reason the detectives should not have stored Mr. Holtzclaw's uniform pants AND belt in the same evidence bag (Goray *et al.* (2012) DNA transfer within forensic exhibit packaging: Potential for DNA

loss and relocation, *Forensic Science International: Genetics*, 6: 158-166). If the teenager's DNA was on the pant legs, some of that DNA could have transferred to the fly of the pants while they were jostled in the evidence bag. If DNA from the detectives was also present on the uniform pants, that could create a mixture of DNA from several individuals, including the teenager, that could transfer to the fly of the pants.

G. I contacted the Holtzclaw family at the end of January 2016 to offer support and ask if I could review the DNA documents to learn more about the DNA evidence. I was able to begin viewing the DNA documents in the spring of 2016.

III. WHAT THE DNA DOCUMENTS AND TRIAL PROCEEDINGS REVEALED

A. The forensic analyst observed nothing suspicious (no visible stains or deposits) on the fly of the uniform pants using a very bright light and a magnifying glass, although Mr. Holtzclaw was alleged to have raped or orally sodomized three females through the fly of his buckled pants less than 24 hours before the pants (and belt) were taken as evidence.

Mr. Holtzclaw was alleged to have raped the teenager A.G. for around 10 minutes on the night of June 17, 2014. Then, several hours later, early in the morning on June 18, 2014, he was alleged to have orally sodomized and then raped a second woman, K.L., for 20 – 30 minutes (he was acquitted of her allegations). Finally, he was alleged to have orally sodomized a third woman, J.L., at 2 a.m. on June 18, 2014. All of the alleged sexual assaults were said to have occurred through Mr. Holtzclaw's unzipped, buckled, dark navy uniform pants over the course of 5 hours, less than a day before the uniform pants and belt – and only the uniform pants and belt -- were taken as evidence on the afternoon of June 18, 2014.

B. The fly of the uniform pants was not tested for any body fluids. The pants were not even viewed with an Alternate Light Source to see if there were any latent (invisible) stains, the most basic forensic test. No saliva or vaginal fluid tests were completed. The State's forensic analyst testified that no presumptive tests for vaginal fluid exist, but this is incorrect. Presumptive tests for vaginal fluid do exist, but the prosecution did not use them. A positive result with a presumptive test for a body fluid tells you that a substance may have come from that body fluid, but more than one type of fluid can give that positive result. However, it is true that no commercially available confirmatory test for vaginal fluid exists, which would be a test that only gives a positive result with vaginal fluid.

C. The prosecutor stated incorrectly in his closing argument during the Holtzclaw trial that it was a “fact” that DNA from the teenager transferred in her vaginal fluids to the fly of the uniform pants. This speculation was not based on the evidence, which clearly shows no body fluid tests were completed and **no vaginal fluid was observed on the fly of Mr. Holtzclaw's uniform pants.** A DNA profile alone does not allow you to tell how or when DNA was deposited. The prosecutor was misleading the jury.

After the sentencing, the prosecutor gave a TV interview on Feb. 5, 2016, where he repeated his false claim that the teenager's skin cells transferred in her body fluids, when in fact this is not what the evidence showed because no body fluids were detected or identified.

Even though Mr. Holtzclaw's uniform pants were not tested for any body fluids, Prosecutor Gieger claimed incorrectly after the trial that "the skin cells were transferred through the body fluids of a 17-year-old girl after he raped her. That's what the evidence was. That's what the jury heard and

certainly that's what they convicted him of. They [the defense] tried to explain DNA from a 17-year-old girl that ends up inside his pants at the areas where his privates are. Quite frankly, their explanation was not believable because you can't explain that" (Erielle Reshef, KOKO 5 News, "Prosecutors who helped convict Daniel Holtzclaw speak," Feb. 5, 2016).

This quote is important because the prosecutor said to news reporter Erielle Reshef that the jurors were told there was body fluid and that is the reason they convicted Mr. Holtzclaw. This shows that the convictions were obtained based on false information. Ms. Reshef did not investigate to learn and report that Mr. Gieger's claim that body fluid was present was actually false.

Mr. Gieger's falsehood that the teenager's skin cells transferred through her body fluid, and his incorrect claim that DNA indirect transfer was not a valid explanation for finding DNA on the fly of the uniform pants, encouraged the widespread belief in Mr. Holtzclaw's guilt and the continued outpouring of hatred online toward Mr. Holtzclaw and his family.

D. Only the fly of the uniform pants was tested for DNA, and no other area of the pants was tested to serve as a control. Four DNA samples were obtained from the fly of the uniform pants by swabbing the whole length of the fly on four different stretches of fabric alongside the zipper, and all were mixtures of DNA from more than one person. The DNA is assumed to derive from epithelial (skin) cells, not semen, because of the DNA purification protocol used.

The first region of the pants that was swabbed for DNA was the outer, left-hand surface of the fly. At least 3 individuals, and possibly 4 or more due to the presence of 7 alleles at one locus, contributed DNA to the first sample. The second region was a flap of fabric inside the pants that is revealed when you unzip the zipper. At least 3 individuals contributed DNA to the second sample. The third and fourth stretches of fabric were inside to the left and right of the zipper, and each sample included DNA from at least 2 individuals.

DNA matching the teenager was found in the last three samples. The first sample had enough DNA from other individuals that there was no major contributor, although the genetic sequences (alleles) of the teenager were present.

E. THE FIRST DISCOVERY: Skin cell DNA from at least one male was found on the fly of the uniform pants in the first two samples.

1. The prosecution claimed that Mr. Holtzclaw's DNA was not found on the fly of the uniform pants because the forensic analyst excluded Daniel from contributing to the four samples. **Yet when I looked at the genetic testing results for the first two samples, right away I saw that they contained a Y chromosome.**

The presence of a Y chromosome shows that at least one of the contributors to those two samples was male. I asked Daniel's family if they were aware that there was male DNA on the fly of Daniel's pants. They were shocked. They had had no idea. I realized that important information had been overlooked by the defense and not clearly stated during the trial.

2. **The significance of finding male skin cell DNA on the fly of the uniform pants** is that it shows an individual's skin cell DNA can transfer to the fly of the uniform pants without any involvement of that individual's vaginal fluid because men don't make vaginal fluid. This meant that a non-sexual explanation, without any vaginal fluid, was also a reasonable explanation for the presence of skin cell DNA matching the female teenager.

F. THE SECOND DISCOVERY: When I looked at the DNA tests for the 3rd and 4th samples from the fly of the pants -- the samples from the inside of the fly that were taken almost a year after the first two samples -- I noticed a low level of male DNA was present in these samples.

The police forensic analyst had testified during the trial that the 3rd and 4th DNA samples came just from females and there was no evidence of male DNA because no male DNA was detected in the genetic test called STR (Short Tandem Repeat) Testing.

Yet when I looked at the actual data for the DNA quantitation step – when the amount of DNA in each sample was determined – I saw that the data sheet very clearly showed a low level quantity of male DNA was present in the 3rd and 4th samples.

The forensic analyst herself had initialed this data sheet clearly showing that male DNA was present. The quantity of male DNA was low enough that some or all of the alleles were not detected during standard STR genetic testing.

G. THE THIRD DISCOVERY: The State claimed that Mr. Holtzclaw was excluded as a contributor to all four DNA samples from the fly of the uniform pants, but this conclusion is not correct. An Australian DNA consultant whom I contacted and who graciously volunteered her time to review the DNA documents explained to me that the data are inconclusive as to whether Mr. Holtzclaw could be a contributor to the four DNA samples or not.

This is important because the claim that Mr. Holtzclaw's DNA was not found on the fly of the uniform pants played a huge part in the State's argument that vaginal fluid best explained the female DNA.

Whether or not this male DNA includes DNA from Mr. Holtzclaw is inconclusive because when dealing with low levels of DNA – and especially with mixtures of DNA from at least 3 people – there is the possibility that some of the alleles won't be detected.

However, the first sample (from the outside of the fly) appears likely to include DNA from an unknown male who is *not* Mr. Holtzclaw because this sample had a strong Y chromosome signal yet was missing some of the alleles matching Mr. Holtzclaw's DNA profile.

One reason that Mr. Holtzclaw could not be excluded as a potential contributor to the 3rd and 4th DNA samples, from the inside of the fly, is that **no additional genetic tests were completed to learn if the Y chromosome found during quantitation of the DNA in the 3rd and 4th samples could have derived from Mr. Holtzclaw.** Therefore, the police forensic analyst was incorrect when she claimed that Mr. Holtzclaw could be excluded as a contributor.

H. THE FOURTH DISCOVERY: The prosecution presented a flawed argument that whether or not Mr. Holtzclaw's DNA was found on the fly of the uniform pants would let you infer if the teenager's DNA was likely to have transferred in her vaginal fluid.

The prosecution argued that if Mr. Holtzclaw had simply transferred the teenager's DNA from her purse to his fingers to the fly of his uniform pants, then you would expect to find his DNA on the fly of his pants where he had touched them; therefore, not finding his DNA would mean the teenager's DNA was more likely to have derived from vaginal fluid. **This argument is flawed.**

1. Even if it could be shown that Mr. Holtzclaw's DNA was not on the fly of his uniform pants, a lack of his DNA would *not* mean that female DNA came from vaginal fluid.

When we touch an object, we can leave behind someone else's DNA but not our own, so failing to find Holtzclaw's DNA would not mean he did not touch the fly of his uniform pants. This is clear in the scientific literature (Cale *et al.*, 2016). Furthermore, even if his skin cell DNA is on the fly of the uniform pants, this would not prove whether it came from his fingers or some other part of his body, such as genitals. Therefore, whether or not Mr. Holtzclaw's DNA was present would not prove that he had, or had not, touched the pants with his hands and so allowed no inferences about how the DNA matching the female could have transferred to the fly of his uniform pants.

2. The State was incorrect when it claimed that Mr. Holtzclaw was excluded from contributing to the samples, as already explained. This means that even if it were true that a lack of Mr. Holtzclaw's DNA meant the teenager's DNA were more likely to have transferred in her vaginal fluid, it was actually incorrect to say that Mr. Holtzclaw's DNA was not present on the fly of the pants. Therefore, even if the State's incorrect reasoning were used, it was wrong for the prosecution to conclude that DNA matching the teenager was more likely to have transferred in her vaginal fluid rather than innocently from her belongings or her skin via Mr. Holtzclaw's fingers after he searched her belongings and pat-searched her.

I. THE FIFTH DISCOVERY: The quantity of DNA in each of the four samples from the fly of Mr. Holtzclaw's uniform pants was small. Samples 1 through 4 had DNA quantities of approximately 40 ng (at a concentration of 0.79 ng/ μ L), 23 ng (at 0.46 ng/ μ L), 11 ng (at 0.22 ng/ μ L), and 13 ng (at 0.26 ng/ μ L), respectively, assuming a 50 μ L volume of DNA in each sample. Because 167 cells contain 1 ng of DNA, these DNA quantities from the fly of the pants are equivalent to DNA from a theoretical minimum of 6,700 cells in the sample from the outside of the fly, which included DNA from at least three (and possibly four) individuals, down to 1,900 cells in a sample from the inside of the fly, which contained DNA from at least 2 individuals.

However, it should be clarified that the State's forensic analyst never looked for nor identified any cells; she simply purified DNA from swabs of the fly of the pants. Although she testified that the DNA came from epithelial (skin) cells, she had no way of knowing whether the DNA came from epithelial cells vs. blood or muscle cells because she did not detect nor identify any cells. The DNA is assumed *not* to have derived from sperm cells because of the DNA purification protocol she used.

While the DNA quantity in a sample does not tell you how much DNA was present on the exhibit or how the DNA transferred to the exhibit, it would have been important for the jury to hear the tiny quantities of DNA that were actually purified from the uniform pants.

To give you an idea of how small the quantities of DNA in the samples from the fly of the uniform pants were, I observed that investigators swabbed Mr. Holtzclaw's patrol car and found the rear passenger door interior pull handle had 43 ng (at 0.86 ng/ μ L) of non-semen DNA from a single unknown male. That was more DNA than was found in each sample from the fly of the uniform pants.

IV. I SHARED AND VERIFIED MY CONCERNS BY CONSULTING WITH DNA EXPERTS FROM AROUND THE GLOBE.

A. They agreed that Prosecutor Gieger made an unsupported, unscientific claim that it was a "fact" that the teenager's DNA came from her vaginal fluid and transferred during rape.

B. They agreed that non-intimate DNA indirect transfer was a reasonable explanation for finding DNA matching the teenager on the fly of the uniform pants.

C. They said that Mr. Holtzclaw could NOT be excluded as a contributor to the DNA samples, and instead the data were inconclusive. They agreed the police forensic analyst made an incorrect statement that Mr. Holtzclaw could be excluded from all four DNA samples.

D. They agreed that the investigation included the possibility of DNA contamination of the uniform pants before and after the time of the allegations, including after police confiscated the uniform pants and did not handle them correctly. For example, DNA within the evidence bag can transfer from one part of an exhibit to another region, or to another exhibit in the same evidence bag...which is the reason that the uniform pants and belt should have been packaged separately.

V. THE IMPACT OF THE INCORRECT DNA ANALYSIS ON THE INVESTIGATION, THE ENTIRE TRIAL, AND THE VERDICT

A. The prosecution assumed incorrectly that only sexual contact would leave a female DNA profile on the fly of Holtzclaw's uniform pants, and this flawed assumption -- which ignored the realities of innocent non-intimate DNA transfer -- then drove the entire investigation.

The prosecution's incorrect assumption can be observed by looking at the transcript of a Motion Hearing (held on Oct. 2, 2014) during which the prosecutor said it was an "undeniable fact" that "there is at least one more woman out there, because we have her DNA, that he has had sexual contact with."

During the trial, the prosecution revealed that their hunt for this unidentified female led them to contact more and more women in search of her. It was testified that detectives looked back through 6 months of Holtzclaw's police records, focusing on questioning more than forty African-American women with criminal histories and warrants. After detectives found 9 women who made allegations, they still had not obtained a DNA match. Detectives then finally did what they should have done as a first step: they looked backwards in time at the women Holtzclaw stopped right before he encountered Ms. Ligons on June 18, 2014. This led detectives to contact the 17-year-old teenager whom Holtzclaw stopped on June 17, 2014. When detectives learned that the teenager's DNA matched the DNA profile on the fly of the uniform pants, they stated that they ended the hunt for accusers.

The prosecution's assumption that sexual contact led to the DNA on the fly of Holtzclaw's uniform pants appears to have been based on the errors of the State's forensic analyst, Ms. Elaine Taylor, who concluded erroneously that the supposed lack of Holtzclaw's DNA made a non-intimate DNA transfer scenario unreasonable.

When I read the State of Oklahoma's witness list, I saw that Ms. Taylor's planned trial testimony was to give her unscientific opinion that for the teenager's DNA "to be transferred to the pants, it most likely was contained in some type of body fluid – including vaginal secretions or saliva," and the defense's assertion that the teenager's DNA "was found inside his pants as a result of contact DNA transfer is not reasonable, and perhaps not even possible – in support of this conclusion and opinion, she will testify that def.'s own DNA was not even found on his pants."

B. Research shows that juries weigh DNA evidence very heavily; therefore, the DNA analysis errors in the Holtzclaw case would be expected to impact the entire trial by making the jury more likely to believe all the allegations.

C. The actual impact of the DNA evidence errors on the verdict is shown by the statements of the two jurors who have spoken to the press.

One juror said in a news interview that “the DNA evidence was very crucial.” KOKO 5 News, *Only on KOCO 5: Juror Speaks about Daniel Holtzclaw Trial*, YOUTUBE (Dec. 18, 2015), <https://www.youtube.com/watch?v=XzOK3xZQqxQ>.

A second juror said that a number of jurors were ready to set Holtzclaw free because they didn't believe some of the accusers, and it was DNA evidence on the inside of Holtzclaw's pants and testimony involving the teenager's allegations that helped get the deliberations moving. Susan Welsh *et al.*, *How the Daniel Holtzclaw Jury Decided to Send the Ex-Oklahoma City Police Officer to Prison for 263 Years*, ABC News (May 20, 2016), <http://abcnews.go.com/US/daniel-holtzclaw-jury-decided-send-oklahoma-city-police/story?id=38549442>.

This juror also indicated in a Crime Watch Daily interview that the jury thought the DNA was in vaginal fluid because that's what they were told during the trial. This demonstrates that the jury was misled by the prosecutor's false claim that the teenager's DNA transferred in vaginal fluid. The juror said, “Well, I mean, I'm not a DNA expert. They told us it was DNA from the vaginal fluid from a 17-year-old. The DNA people are pretty boring to be honest with you.” *Crime Watch Daily Investigates the Case of Daniel Holtzclaw* (Telepictures Productions television broadcast Apr. 28, 2017), https://www.youtube.com/watch?v=JEt32Z_kz6o.

VI. MY HOPES FOR THE FUTURE OF MR. HOLTZCLAW'S CASE

A. I hope that the police forensic analyst, detectives, and prosecutors who were involved in the investigation, trial, and conviction of Daniel Holtzclaw will admit their errors and take steps to correct them.

I hope they will acknowledge that they did not represent the DNA evidence accurately, and that they weren't aware that science shows non-intimate DNA indirect transfer is a reasonable explanation for the DNA found on the fly of Mr. Holtzclaw's uniform pants.

I hope that the prosecutor will acknowledge there was no evidence of vaginal fluid on the uniform pants and so he was wrong to state in his closing argument that the teenager's DNA transferred in her vaginal fluid.

Admitting to errors is an admirable choice because only by learning from our mistakes can we correct the ramifications of our errors and prevent them from ever happening again.

B. I hope the media will tell the whole story of Mr. Holtzclaw's case and also correct the misinformation that has been spread.

For example, the TV One network made numerous false claims in a “Justice by Any Means” show about Daniel's case. TV One claimed vaginal fluid was found on Daniel's uniform pants, which is false. TV One claimed that Daniel's DNA was found on the teenager's panties, which is false, since detectives didn't even have her underpants to test. TV One claimed that detectives acquired and tested the panties from all the complainants, which is also false.

Similarly, an Oklahoma news station broadcast the prosecutor's claim that the evidence showed the teenager's DNA came from vaginal fluid, which was false, yet the station did not challenge his

claim. I'm glad that a few Oklahoma journalists are now working to reveal how they, and the public, were misled about the Holtzclaw case.

C. I hope the public will read and learn more about Daniel Holtzclaw's case to understand how they were misled by the incorrect assumption that "DNA equals guilty."

I hope people will recognize that our society has major conflicts we need to heal – for example, racial tension and legitimate fear of police abuse of power – that appear to have led to an assumption of guilt long before Mr. Holtzclaw's trial began. Furthermore, lack of awareness of the very real phenomenon of touch DNA transfer led both the prosecution and the public to assume that finding DNA on the fly of Mr. Holtzclaw's uniform pants equated with guilt. It is a tragedy that our society's noble goals of ending racism, sexism, and police abuse of power have led to the prosecution, persecution, and conviction of an innocent man.

D. Last but not least, I hope that Daniel Holtzclaw will be granted a new trial. It is 100% clear to me as that justice was not served in Daniel Holtzclaw's trial for many reasons. One of the most important is that the prosecution made incorrect statements about the DNA evidence. The government should not be allowed to mislead the jury in order to obtain a conviction.

VII. SUMMARY OF MAJOR ERRORS MADE BY THE STATE'S FORENSIC ANALYST, MS. ELAINE TAYLOR

A. Ms. Taylor erred by not testing the uniform pants for body fluids, not even by using an Alternate Light Source, a standard method for detecting body fluids because it causes body fluids such as saliva and vaginal fluid to fluoresce. You cannot use a DNA profile alone to determine how or when DNA transferred, especially since skin cell DNA can transfer indirectly and without any sexual contact. Therefore, it is crucial to test for body fluids when a suspect and accuser are known to have been in non-intimate contact.

B. Ms. Taylor did not test any other areas of the uniform pants for DNA other than the fly (she did not use other areas of the pants as controls). Finding DNA matching the teenager at other locations on the pants would have supported the conclusion that its presence on the fly of the uniform pants was not incriminating. Finding skin cell DNA elsewhere on the uniform pants would support the defense argument that Mr. Holtzclaw was transferring DNA via his hands, rather than the prosecution's argument that the DNA was deposited on the fly during and after vaginal rape through the unzipped fly of the buckled pants, as the teenager alleged.

C. Ms. Taylor erred by testifying that there was no male DNA in the two samples from inside the fly of Daniel's uniform pants. During the trial, the prosecutor then used the false claim that male DNA was absent on the inside of the fly to argue incorrectly that the female DNA matching the teenager A.G. in the samples was likely to have derived from vaginal fluid rather than through innocent skin cell DNA transfer on Daniel's hands (when touching the fly) because otherwise you would expect to find his DNA on the fly of the pants.

Daniel's trial attorney failed to challenge the claim that there was no male DNA on the inside of the fly because the defense DNA expert did not tell Daniel's attorney about it, causing Daniel to receive ineffective assistance of trial counsel. Trial defense counsel's failure to challenge the State's misrepresentation of the DNA evidence deprived Daniel of a fair trial by making the DNA evidence appear incriminating when it was not.

The DNA quantification data page that Ms. Taylor herself initialed showed both DNA samples from inside the fly of the pants contained a low level of male DNA.

The defense could have and should have used the male DNA as evidence that an individual's DNA could transfer to the fly of the pants without the involvement of that individual's vaginal fluid, since males don't make vaginal fluid.

The defense could have and should have also used the unknown male DNA as evidence challenging the prosecutor's erroneous support for the presence of vaginal fluid based on Ms. Taylor's false claim that male DNA was absent.

The defense could have and should have raised the possibility that some of that male DNA might have derived from Det. Rocky Gregory (Ms. Taylor's son-in-law) when he thrust his bare hand in the evidence bag before Mr. Holtzclaw placed his uniform pants and belt in the bag.

D. Ms. Taylor erred by testifying that Mr. Holtzclaw was not a contributor to any of the DNA samples from the fly of the uniform pants, when the data were actually inconclusive. The prosecutor then used the false claim that Mr. Holtzclaw's DNA was absent to support the argument that the teenager's DNA transferred in vaginal fluid because otherwise – argued the prosecutor -- you would expect to find Daniel's DNA on the fly of his pants where his fingers touched while innocently transferring female DNA.

First, as mentioned above, the DNA quantification data page that Ms. Taylor initialed showed that both DNA samples from inside the fly contained a low level of male DNA. That male DNA may have derived from Mr. Holtzclaw.

Second, the DNA samples from the fly of the pants contained alleles from at least three people (in the two exterior samples) and at least two people (in the two interior samples) without the detection of all of their alleles. This creates the possibility that Mr. Holtzclaw's DNA was present but at a low level such that some of his DNA's alleles were not detected during standard STR testing. Proof that Mr. Holtzclaw's DNA could be on the fly of the pants would have dismantled the prosecutor's argument during the trial that the lack of his DNA supported the conclusion that the teenager A.G.'s DNA transferred in her vaginal fluid.

Ms. Taylor concluded Mr. Holtzclaw's DNA was absent in all four DNA samples without doing proper tests to rule him out as a contributor. Her conclusion was unsupported speculation that she presented to the jury as if it were the truth.

Ms. Taylor did not send the DNA samples to another lab for Y chromosome testing (Y-STR testing) to learn whether the alleles matched alleles found on Mr. Holtzclaw's Y chromosome, which would make him a potential contributor. This finding would have supported the defense scenario that the touch of Mr. Holtzclaw's fingers innocently transferred DNA matching the female teenager.

Y-chromosome testing would also have quickly determined the minimum number of male contributors. If there were more than two male contributors, meaning at least one of them was not Mr. Holtzclaw, then this result would have provided support for the defense argument that another individual's DNA could transfer innocently to the fly of the pants without the involvement of that individual's vaginal fluid. This result would have proved that the prosecution was wrong to leap to the conclusion that vaginal fluid was involved DNA transfer from the teenager.

E. Ms. Taylor used her incorrect conclusion that Mr. Holtzclaw was not a contributor to the DNA samples to argue, also incorrectly, that it was a very good possibility that the DNA matching the teenager came from her body fluids, such as vaginal fluid, rather than from skin cell DNA that transferred innocently via Mr. Holtzclaw's hands.

In coming to this incorrect opinion in favor of the presence of vaginal fluid, Ms. Taylor ignored that there wasn't any visible evidence of vaginal fluid.

Ms. Taylor also did not appear to realize that even if it could somehow be determined that Mr. Holtzclaw's DNA wasn't on the fly of his uniform pants, studies show that people's hands can transfer someone else's DNA but not their own DNA to an object they touch. A lack of Mr. Holtzclaw's DNA would not mean vaginal fluid was likely to be involved. Being unable to detect his DNA on the fly of the uniform pants also would not mean that he hadn't touched the fly, transferring the teenager's DNA from her belongings or after pat-searching her.

F. Ms. Taylor testified outside the bounds of her expertise as a DNA expert when she testified about the medical issue of how a woman's age impacts her production of vaginal fluid, inappropriately bolstering the prosecution's argument that the teenager's DNA was more likely to have transferred in vaginal fluid rather than through non-intimate indirect DNA transfer.

Ms. Taylor testified outside the bounds of her expertise as a DNA expert when she told the jury, "A young woman of her [the 17-year-old teenager's] age would be very likely to have quite a bit of lubrication. And that lubrication could transfer cells if in fact that is what occurred" (Tr. 4065). During the trial, the prosecution used this medical claim outside the expertise of the DNA expert to bolster the argument that DNA transfer in vaginal fluid was likely.

All of these errors by the State's forensic analyst misled the jury about the DNA evidence and encouraged the wrongful conviction of Daniel Holtzclaw.