Just Touch DNA and Sexual Assault Groping Cases.mp3

Introduction [00:00:05] Now this is recording, RTI International Center for Forensic Science presents Just Science.

Voiceover [00:00:19] Welcome to Just Science, a podcast for justice professionals and anyone interested in learning more about forensic science, innovative technology, current research, and actionable strategies to improve the criminal justice system. In episode two of our Research and Considerations for Sexual Assault Cases season, Just Science sat down with Dr. Julie Valentine, Associate Dean and Associate Professor at Brigham Young University in the College of Nursing and a certified sexual assault nurse forensic examiner, and Heather Mills, Forensic Scientist Manager at the Utah Bureau of Forensic Services, to discuss evidence collection in sexual assault groping cases. As touch DNA evidence collection continues to develop, sexual assault nurse examiners and forensic scientists are poised to improve the investigation of sexual assault groping cases. In their recently published article, "Evidence Collection and Analysis for Touch DNA in Groping and Sexual Assault Cases," Dr. Julie Valentine and Heather Mills explore the application of touch DNA evidence collection to sexual assault investigation, specifically associated with a groping case. Listen along as they discuss their article, the advent of touch DNA technology, and the importance of interdepartmental cooperation in this episode of Just Science. This season is funded by the National Institute of Justice's Forensic Technology Center of Excellence. Some content in this podcast may be considered sensitive and may evoke emotional responses or may not be appropriate for younger audiences. Here's your host, Tyler Raible.

Tyler Raible [00:01:46] Hello and welcome to Just Science. I'm your host, Tyler Raible with the Forensic Technology Center of Excellence, a program of the National Institute of Justice. Today, our guests are Dr. Julie Valentine, Associate Dean and Professor at Brigham Young University in the College of Nursing, and Heather Mills, Forensic Scientist Manager at Utah Bureau Forensic Services. Julie. Heather, welcome. It's great to see you today.

Julie Valentine [00:02:06] Thank you, Tyler.

Heather Mills [00:02:07] Thank you.

Tyler Raible [00:02:08] So let's start with a little background. Julie, Heather, can you give us a brief intro into how you started working in this field?

Julie Valentine [00:02:15] I started working in forensic nursing about 16 years ago. I actually started working with a pediatric team focused primarily on child abuse cases and child sexual abuse and then expanded to working more with adolescents and adults. So really, the spectrum of pediatric through elder abuse.

Heather Mills [00:02:37] And I have been employed in forensics for about ten and a half years. I actually decided midway through my bachelor's degree that I wanted to work in forensics. So I did the whole major shift and changed my major to biology and never looked back. And so after I got my bachelor's degree, I did some internships in forensics, decided to go get my master's degree in forensic biology. And then I ended up working in a genetics lab for a little bit. I did another internship and was able to get a job in a crime lab, and that's what I've been doing ever since.

Tyler Raible [00:03:11] How did the two of you begin working together? That's, I think, that's the real question right now is, you know, it makes sense how you got here, but how did this partnership come about?

Julie Valentine [00:03:19] Right. Well, the partnership should be throughout every region, area of the United States in that when you consider that forensic health care providers, forensic nurses, collect the evidence from patients, collect clothing, et cetera, and so need to have a very strong collaborative relationship with the forensic scientists who then take that collected evidence and analyze it. And we've been incredibly fortunate in our state for many years to have a very strong collaborative relationship and communication between our forensic science, our state crime lab, and the forensic providers within our community.

Heather Mills [00:04:12] Yeah, and I would just echo what Julie said. I think, you know, with all kinds of partnerships, it's important to spend the time to build the relationships. And that's really helpful when it comes to analyzing evidence. It's helpful to have the nurse's perspective on why she collected something. That can give us insight into how to best process that sample. These relationships are really important to build and create. That collaboration ultimately helps us do what is best for every piece of evidence.

Tyler Raible [00:04:43] It seems that this relationship, this partnership is very symbiotic then in that sense, right? Can you give an example of how the partnership between the forensic nursing team and the forensic scientist has maybe benefited a case or an experience within the process?

Julie Valentine [00:04:57] Absolutely. I think that a strong partnership benefits every patient, every survivor that we provide care to in that the forensic nurses in our state, with this strong communication and collaboration they have with our forensic scientists, they're up to speed about knowing what happens in the lab once that evidence gets submitted. And that helps to inform our process of collecting evidence and packaging the evidence. It doesn't just boil down to one case. It really affects all cases, all survivors, all victims that we improve victim and survivor care when we work to develop a strong collaborative relationship.

Heather Mills [00:05:46] Yes, and from a laboratory perspective, I think us having an understanding of how a nurse is collecting a sample can help us know how to process that sample. The nurses are really our liaison with the victims. We don't have that connection from a laboratory perspective. And so working with them helps make sure we all have the best information moving forward.

Tyler Raible [00:06:10] It seems like the focus, then, is really on making sure that the survivor, the victim, has every possible resource at their disposal to make sure their case gets processed smoothly, evidence is collected properly, and all of that stuff that goes into this larger scope. And before we get into the thick of today's topic, I was hoping that you two could give our listeners a brief introduction, an overview of touch DNA, of its importance, how it works, how it's collected.

Julie Valentine [00:06:34] Sure, I can talk a little bit about the collection side and a little bit of background. So quite simply, touch DNA is just the DNA that we find in skin cells. And that DNA, we have learned, can be shed on a variety of surfaces and there's some things that impact if we see more DNA from skin cells than others. So one of those things is actually the shedder or the person whose DNA it comes from. There have been a number of studies that have shown that some people are just higher shedders than others.

Specifically, men are generally greater shedders than women, and men in about 18 to 45 seem to have higher shedding around in there. We also know that if somebody sweats or they have dry hands, they're more likely to leave skin cells. And then it also matters about the length of time that someone is touched and the type of touch. So if there's any kind of movement or friction, you can imagine that's going to leave behind more skin cells. And then what they're touching, if something is smooth, non-porous, it's less likely to leave skin cells behind compared to something that has a rougher texture. So we often see more skin cells being deposited on clothing possibly than on skin. So when we are as nurses looking at collecting touch DNA, we ask the victim or survivor about where they were touched and that type of touch, how long it was. And as they are telling us about the history of the assault, we then are starting to think about where's areas that we might find touch DNA in those cases where it really would be meaningful.

Heather Mills [00:08:29] The same thing, from the lab perspective, when the nurse asked those questions, that's very helpful for us because we are looking to target specific locations. If you just swabbed an entire item, you might have a lot of people who have handled that item over the life of that item. And that's going to give us what we would call a complex mixture, something that we couldn't say anything about. But when a nurse can have that ability to ask for a specific location, that's helping us target a specific area, giving us a better chance of getting something that we can interpret on the DNA interpretation side.

Tyler Raible [00:09:06] That all makes perfect sense. And we'll get to the article in a second, but one thing that I noticed when I was reading through it was the different factors that go into it, go into shedding, go into collection. And some of them make a lot of sense - that a porous material will collect maybe a little better than like glass. You'll be able to find something on lace better than you would on marble. And in the vein of these factors, were there any discoveries in your research that kind of surprised you? Some of them make sense, you know, like holding on harder, you have a better chance of shedding some cells. But were there any that were surprising, maybe counterintuitive?

Julie Valentine [00:09:36] I think that our research findings really reflect what other studies have shown. And those studies have been more like a mock assault or kind of a laboratory controlled experiment. And what is unique about this research and this study that we did is that we're actually looking at data in practice. So in actual cases, are we able to develop a meaningful DNA probative profile from touch? And the answer was yes. So I would not say necessarily that there was anything surprising. The really great aha moment was, yes, what they've been able to do in laboratories to do these mock experiments, we are finding this absolutely translates to practice. And this is what the information that we really need to spread to a multitude of multidisciplinary partners.

Tyler Raible [00:10:39] Marvelous. Perfect. That actually segues great into the topic of today. We've already hinted at the recently published article titled "Evidence Collection and Analysis for Touch DNA in Groping and Sexual Assault Cases," published in the Journal of Forensic Nursing. I got to read it this morning. I thought it was wonderful. As somebody who is not a DNA person, I was able to follow along, which really speaks to how well it's written, if nothing else. But can you tell us a little bit about the article? We've covered the DNA collection, but maybe a little bit more about maybe its application or even just the process of writing it.

Julie Valentine [00:11:08] So the article has a few different components. One is just giving a literature review about the background of touch DNA. We then talk about national

guidelines about collecting touch DNA, and those really didn't come out until 2017 when touch DNA was recognized as important by the National Best Practices document that was published by the National Institute of Justice. So we give a background information, and then we share a case study. And this was really a revolutionary case study. It was a case that happened about a decade ago in Utah where a victim was victimized in a very aggressive fondling assault case and the nurse was called in to collect evidence and from the victim's mouth as she bit the suspect's finger, but the victim had been given food. And so really we wouldn't get any evidence there. And so the only option left for the nurse was to collect swabs to see can we get anything from touch DNA? And the answer was yes. And we actually developed a meaningful STR and Y-STR DNA profile. So the case study is described, and then next, we have been developing a collaborative database following sexual assault cases in Utah from 2010, an ongoing database that we also look at the DNA findings. And so we looked at those cases that are fondling cases. And then we talk about the multidisciplinary impact of the ability to develop touch DNA in fondling cases. And maybe I'll let Heather talk about this application, and not just fondling cases, but in other cases and other sexual assault cases.

Heather Mills [00:13:00] Yeah, and I think it's really revolutionary in that we're able to do more with less. And I think that that's, that's one of the main messages, is that historically, labs have required a body fluid. We're looking for blood or seminal fluid, maybe even saliva. But as DNA technology improves and gets more sensitive and more specific, we're able to do more with a lot less. And that opens up a wide variety of cases that we can look at evidence that maybe wasn't processed way back when. We've had the opportunity to go back and look at cold cases and look at evidence that was collected and retest that and see what we can do with things that were collected and saved but were never able to be processed due to limitations in technology. So I think it's opened up a wide variety of things that we can look at and test in cases that way back when would have been considered not testable.

Tyler Raible [00:13:56] I agree the science has evolved just dramatically, and it's fascinating to see a) what it can do and b) the immediate impact it's having. In the case study that you referenced in the introduction of the article, I think you mentioned that this particular offender had made three attempts or something like that leading up to this one. So then with this article, how do you see, how do you see it assisting agencies or maybe even improving the criminal justice system in terms of improving the response to sexual assault, to evidence collection?

Julie Valentine [00:14:27] Well, with this article, we are hoping to enhance the educational component with multidisciplinary partners about the application of touch DNA in groping sexual assault cases and also other sexual assault cases. I had a case where a victim was attacked by two men. One man held her down on her shoulders and upper body while she was raped by another man. So I was able to collect DNA from the upper portion of her body for the suspect that participated in this violent rape, as well as for the other suspect. So being able to share that this is another tool in the toolbox, right, for investigation and for prosecution. And then I also want to point out that it also is important to pull in our victim advocates with this as well, because sometimes people may think about, oh, it's a groping sexual assault. It wasn't a completed rape and discount the trauma that affects the individuals. But we want to see these individuals. We want to provide trauma informed care to them. And we also want them to have resources for healing emotionally as well. So when we look at the importance of involving forensic health care providers, forensic nurses in these cases, it's also involving those resources and sharing this across the spectrum with our multidisciplinary partners. So a big part of this is

saying, yes, we can collect this DNA, let's educate across our multidisciplinary partners so that we can provide adequate care for these survivors.

Heather Mills [00:16:14] And I think along with that, I don't know that there should really be any limitations on what you should or shouldn't collect. There's always the opportunity to collect something, and especially when it comes to, like Julie mentioned, with groping cases. But this also applies to children's cases. And a lot of time children's cases are groping or digital penetration kind of cases where we are looking for touch DNA. There's not always a body fluid there. Maybe they've bathed or showered or done something that historically maybe would have removed DNA, but now it's not really a limitation and we can go after some of those more difficult samples and those more difficult cases and see results.

Tyler Raible [00:16:54] Heather, I appreciate that you brought up the opportunity to test more things. Right. One of the parts of the report, the article, that I found fascinating were the, near the end where you had the charts of, you know, what was tested, how many contributors they had found on it. I thought that was illuminating. Right, to see that in a normal day to day situation, you might have hugged somebody and now, you know, they have some trace cells. So as I was reading the article and in the vein of this conversation surrounding collaboration, one of the things that stood out to me was this examination form. So, Julie, can you tell me a little bit about the sexual assault examination form?

Julie Valentine [00:17:30] Yes. So after we discovered the findings, the DNA findings from this case study that we referenced in the article, we got together with our forensic scientists for a couple of meetings and developed a State of Utah Sexual Assault Touch DNA form where it goes through and gives very clear directions on collecting touch DNA and documentation for touch DNA. And we did this so that law enforcement could do this if they did not call in a forensic examiner, even though we do always want them to contact advocacy. But again, so that there's that communication piece between the forensic nurses and the forensic scientists. So this state form is available through supplemental digital content through the article. And the other thing that we also did is we modified our state sexual assault examination form so that when we collect swabs on the skin, we note if we are collecting for saliva, are we collecting seminal fluid, are we looking at collecting for touch DNA? And then there's a section on that form of notes that the forensic nurse or forensic examiner can provide information such as how long they were grabbed on their arm and why they collected touch DNA there, or if there was a lot of kissing on the neck or something, why they collected for saliva there. So, again, it just improves that communication and collaboration between the disciplines.

Tyler Raible [00:19:12] So aside from that, are there any other parts of the article that you think are worthy to highlight in this episode of the podcast?

Julie Valentine [00:19:20] You know, we have a motto - when in doubt, collect. We have sometimes a window, a collection time when we could potentially get something meaningful that could be beneficial to a case. Our biggest hurdle in collecting this touch DNA is actually not having the survivors or victims come in for evidence collection. And so a key feature, again, is that educational component and shifting to who we see should be brought in to have evidence collected and to receive services.

Tyler Raible [00:19:57] Excellent. And Julie, you've brought us up a little earlier - and I want to, I want to kind of run down this rabbit hole a little bit - the thought of education. Obviously, it's better if everybody has access to this information, especially when you're

talking about multidisciplinary teams. Are there any educational opportunities, training sessions? Is there a plan of attack for getting this out in people's hands?

Julie Valentine [00:20:17] We've done two webinars, and we've done three videos on this. So continuing to promote that information. We are looking at also developing a little bit more structured guidelines, especially for law enforcement regarding, because those are often the first line of defense, right? That's who somebody initially reaches out to - educating there as well as I talked about all the different community partners. But then I think the education needs to go further. It needs to go into general society. Many people know if they were raped, that they can receive care, but they may not realize I can still receive care and maybe I was groped or fondled or sexual abuse or maybe I showered. No, we still want people to come in to receive care. So I think it goes beyond the importance of educating just multidisciplinary partners to really educating the general public.

Tyler Raible [00:21:20] Julie, thank you for bringing up these resources. We'll make sure that we include links to the webinars and the video series on our landing page for this episode. And that actually kind of brings me to my next point. I know that there was a video series highlighting the content of the article that was recently released. What are the benefits of watching the video series maybe separate from or in addition to reading the article?

Julie Valentine [00:21:40] Well, everybody learns differently, right? Some people want to have printed material, like you, Tyler, I think you said you'd rather read an article. Some people would prefer to have printed material to read and highlight. Some people prefer to have audio video content. And so we've kind of looked at across the spectrum on this education. We did pull in a little bit more information, I think, especially on the third video, Heather provided more information, and the second webinar, there's more information specifically for forensic scientists. So each video and each webinar has a little additional information. The article was written specifically for forensic nurses, although it can be applied to our multidisciplinary partners as well.

Tyler Raible [00:22:31] Kind of like casting a wider net, right, like you want to make sure that whoever needs the information, there isn't any kind of barrier. So since the article has been released and the video series has been out, and this technique has kind of been in rotation, has there been a tangible impact in the field of sexual assault response?

Julie Valentine [00:22:50] That's a little bit hard to measure right now. The impact, I know I have received many emails from really forensic scientists or forensic nurses internationally, globally. So this is not just a US topic. There's interest in multiple countries about this, and really what we're finding in practice. As this is somewhat of a new idea in using this touch DNA analysis, evidence collection analysis, in sexual assault cases, I think we will see this grow. So I don't know if I can absolutely say, oh, we've already seen this. I will tell you in Utah, yes, we have already seen we have law enforcement agencies that consistently contact us to care for these patients. But I will also tell you that law enforcement, they change frequently who the SVU detective is in an agency. So we can't just consider it as, oh, we've already done the training with this one agency - checkmark, they're done, right. This has to be a continued, sustained effort to really, the goal is, the ultimate goal is to decrease sexual violence in our communities. And so this is a continual effort. This isn't a one and done. So this article is not going to check all the boxes. This really needs all our multidisciplinary partners taking this information, staying with this information, and transforming how they collect evidence in their sexual assault cases.

Tyler Raible [00:24:28] I really appreciate the idea that the work is never really done, which is a, it's a terrifying concept. But knowing that there are so many incredible people out there, you know, fighting the good fight, so to speak, is really encouraging. And we've talked about this a little bit, about the relationship between the SANEs, the lab, law enforcement, advocacy. And that seems like the ideal situation, right, is that symbiotic relationship between all these groups. But in my experience, that might not always be the case. So if there's a nurse examiner who were to use this technique, right, but they don't have the established relationship with the laboratory or with the law enforcement, what should they do? Do you have any suggestions?

Julie Valentine [00:25:07] Well, Heather might be best to answer this one. I mean, my thinking would be, one, try to develop improved relationship between the forensic nurses or forensic health care providers and the crime lab, because that really benefits survivors and it benefits cases. But in this case that we reference in the article, this case study, where this was a completely different idea to collect touch DNA, but it was the only option available to the nurse at that time. She called the next day and talked to the crime lab, a forensic scientist that she knew and said, hey, you're going to get this kit brought in. And this is why I collected and this is how I did it. So I would say reach out and reach out and continue to reach out, bring everyone to the table. But if you have a unique situation and unique case, contact the forensic scientists at your crime lab.

Heather Mills [00:26:05] Yes, I would second that. And additionally, I mean, if you feel like you are on your own, ultimately collect the evidence. And from a crime lab perspective, we're always hammering on document, document, document - write down what you did, write down your thought process. We can always go back to those notes and see what was done and do something. And I think that's, that's one of the the biggest messages from a lab perspective is that there's always something that we can try or do as long as the evidence was collected. And then bouncing off what Julie said, reach out. And same thing, in the case study, the forensic scientist was able to discuss the questions that they had once they opened the evidence. Sometimes you don't know what questions you have until you open up the evidence and look at what's there. And then questions come up about how should I best process this evidence? And having the person who collected it as a resource is extremely valuable when you're handling that evidence. Like I said, in these touch and groping cases, we're trying to target a specific instance or a specific individual. And so we need that additional information. And building those relationships is really key to doing what's best for the evidence and the people involved in the situation.

Tyler Raible [00:27:24] It seems like it's a, like a when in doubt, reach out, kind of scenario. Right? And I think that is paramount to success. The more people you have working on the same problem - obviously, you know, more heads are better than one - the level of ingenuity that was displayed in this case study, right, that's kind of the ideal situation of everybody working together. Yeah, no, it's brilliant. I love it. As we're all aware, we are, at the time of this recording, over a year into the pandemic. And there's a lot of, a lot of talk about the- all the negative things that are associated with Covid-19. But as far as supporting survivors of sexual assault, is there something that the pandemic has brought to light, maybe like a silver lining, that's been positive from the SANE perspective, from the crime lab perspective, from just sexual assault response in general?

Julie Valentine [00:28:13] I think the silver lining has been that multidisciplinary partners will do whatever is necessary to support survivors. And we have had, you know, creative use of therapies, a creative use of advocacy meeting online. We have never faced a

problem with the ability to collect sexual assault kits. We did have backup plans in place if we were unable to go into the hospital. But I think the silver lining was really seeing everybody come together and say we're still going to make sure that every single survivor has what they need at that time. And so I think it really helped to build that collaboration to some degree.

Heather Mills [00:29:02] Yeah. And from a science perspective, the pandemic really allowed us to explore other avenues for still achieving our goals and still pushing towards doing the things that we need to do in a timely manner. You know, during the pandemic here in Utah, we were able to catch up on our backlog of sexual assaults. That wasn't stopped by the pandemic. And I think that we had to employ a lot of creative solutions, like Julie said, to still pushing forward and reaching those goals. But I think, you know, having difficult times or difficult situations really brings out the best in people. And we've seen that with a lot of our scientists and the things that we've been able to accomplish in the midst of a pandemic, I think is really telling for the passion that people have for the work and for finding answers. And I think that it's been a very valuable thing from a leadership perspective.

Tyler Raible [00:29:55] I love so much about both of those answers. The first part being that everybody is so passionate. Heather, you're absolutely correct. That's the best word. Working through the backlog, you know, when everything is going just falling apart elsewhere is remarkable. It's inspiring to see everybody coming together to make sure that even in the worst situations, victims and survivors are still being cared for. So what's next for each of you? Is there anything coming up that you're excited about, any future projects, events, resources that might be coming out that you want to share with the audience?

Julie Valentine [00:30:24] Oh, we have so much that we're excited about, Tyler. We've really been doing a lot in Utah. We have a collaborative database that I work with our state crime lab, and we have data, about 280 variables on sexual assault cases in Utah from 2010 ongoing. So we have about eight thousand cases. So that's a whole lot of data. So we've got a number of research studies that we are looking at, everything from DNA to a dating app facilitated sexual assaults to our findings of male sexual assault victims' DNA, and also demographic information. We're also really excited. We have a grant through the National Institute of Justice that is looking at developing a machine learning model to help guide forensic scientists on evidence to analyze in sexual assault cases. We're looking at this to help both with the outcomes on these cases, DNA outcomes, but also to improve workflow for the forensic scientists. So we're looking a lot right now at our DNA findings from these multitude of cases.

Tyler Raible [00:31:46] So Heather, from a lab perspective, what's the future, what are we looking towards? What are we moving towards?

Heather Mills [00:31:52] What we're looking towards is new technology - we're validating what's called next generation sequencing right now. That's going to be helpful on these cases that have low amounts of DNA, cold cases. It's going to be able to give us more information on less. So from a lab perspective, that's kind of where we're going and what we're looking towards. It's a little ways off, but it's coming, and it's coming faster than we think it will. And it's going to be super helpful for cases with low amounts of DNA.

Tyler Raible [00:32:23] Are there any final thoughts that either of you'd like to share with our listeners before we wrap up today's episode?

Julie Valentine [00:32:28] I think my final thoughts would be the importance of communication. And I referenced before the National Institute of Justice publication came out in 2017 - National Best Practices for Sexual Assault Kits: A Multidisciplinary Approach - and in there, over and over, it talks about the importance of coming together, every discipline coming together, and that importance of collaboration and communication. And our ultimate goal for all of us is to create safer and healthier communities by reducing sexual violence. We can't get there unless we work together.

Heather Mills [00:33:07] And I think my final piece is just that DNA technology is constantly evolving. It's becoming more sensitive and more specific. And I think the thing that we always say at the lab is if you don't collect it, it could never be tested. So when in doubt, always collect, you never know what the future holds.

Tyler Raible [00:33:27] I'd like to thank Julie and Heather for sitting down with Just Science to discuss their article, "Evidence Collection Analysis for Touch DNA in Groping and Sexual Assault Cases." Thank you so much for being here. It's been absolutely marvelous to talk to you today.

Heather Mills [00:33:37] Thank you for having us.

Julie Valentine [00:33:38] Thank you, Tyler.

Tyler Raible [00:33:39] For those interested, we're going to include a link to the article of today's discussion on the page for this episode. So make sure to go check it out if you're interested in learning more. If you enjoyed today's conversation, be sure to like and follow Just Science on your podcast platform of choice. For more information on today's topic and resources in the forensic field, visit forensiccoe.org. I'm Tyler Raible, and this has been another episode of Just Science.

Voiceover [00:34:03] Next week, Just Science sits down with a multidisciplinary team of experts to discuss trauma informed, victim centered interviewing. Opinions or points of views expressed in this podcast represent the consensus of the authors and do not necessarily represent the official position or policies of its funding.