Just Embracing Imperfection in Forensic Science

Introduction [00:00:10] Welcome to Just Science 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 three of our Resilient Leadership mini season. Just Science sat down with Jody Wolf, Crime Lab Administrator for the Phoenix Police Department, Tim Scanlon, President of Forensic Analysis Consulting and Training LLC, and Mikayla Martin, Forensic Scientist at RTI International, to highlight the impact of human factors on forensic DNA interpretation. Human Factors Research is a discipline that examines concepts like undue influence, employee wellness and human error, which impact the decisions that forensic science practitioners make on a daily basis. The National Institute of Standards and Technology and the National Institute of Justice Expert Working Group on Human factors and forensic DNA Interpretation is dedicated to exploring a systems based approach for addressing human factors where employees can embrace and learn from their mistakes. Listen along as Jody, Tim and Mikayla describe the human factors that commonly affect forensic DNA interpretation, the importance of creating a positive error working culture, and how leaders can cultivate an environment of trust and accountability. This episode 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, Ben Swanholm.

Ben [00:01:35] Hello and welcome to Just Science. I'm your host, Ben Swanholm with the Forensic Technology Center of Excellence, a program of the National Institute of Justice. We are recording at the 2023 American Society of Crime Laboratory Directors Symposium in Austin, Texas. Themed Resilient Leadership. Today, we'll be sitting down with members of the National Institute of Standards and Technology, National Institute of Justice, Expert Working Group on Human Factors in Forensic DNA Interpretation. Today's guests will lead us through a human factors perspective of understanding the role of parent organization and forensic science service provider management and leadership in cultivating a positive error culture. Here to guide us in our discussion is Jody Wolf, Chief of Staff at the Phoenix Police Department, Dr. Timothy Scanlon, President of the Forensic Analysis Consulting and Training Company, and Mikayla Martin, a Forensic Scientist at RTI International. Welcome, Jody, Tim and Mikayla. Thanks for joining us today.

Mikayla [00:02:36] Thanks for having us. It's great to be here.

Jody [00:02:38] Super excited to be a part of this discussion, Ben.

Tim [00:02:40] Thanks for having us.

Ben [00:02:41] All right. Let's get started. Mikayla, can you tell us about that NIST-NIJ expert working group on human factors in forensic DNA interpretation. How did it come to be and what is its purpose?

Mikayla [00:02:52] Absolutely. So the expert working group on human factors and forensic DNA interpretation is a study under the National Institute of Standards and Technology and the National Institute of Justice that is led by the study director, Melissa Taylor. RTI International supports this project's efforts as well. The project falls under the NIST Forensic Science Programs Expert Working Group series on human factors and forensic science. This group is the third in the series, with the previous two focusing on latent print examination and forensic handwriting examination respectively. This group first convened

in February 2020 and has been working on these efforts ever since. So we're rounding out three years now. All the groups within this Human Factor series are charged with conducting a scientific assessment of the effects of human factors on forensic science, with the goal of recommending strategies and approaches to improve its practice and reduce the likelihood of errors. In essence, a scientific assessment is an evaluation of a body of scientific or technical knowledge. So this group looks at standards documents, guidance manuals, SOPs that are available research and looks through all of these to to complete its charge. So all of the expert working groups in the series are tasked with the following process but making this specific to this DNA group. The first step in this process is to examine the current policies, procedures and practices within the field to analyze human factors and forensic DNA interpretation. Then the group develops practices based on scientifically sound research to reduce the likelihood of errors in forensic DNA interpretation. The group also works to evaluate various approaches to quantifying measurement uncertainty within forensic DNA interpretation. And after all of these three steps are done in this process, the group publishes its findings and the recommendations that they have developed that also include future research initiatives. So this group examines the current state of forensic DNA interpretation through all of the resources that are available in that scientific assessment, as well as their own lived experiences to highlight human factors issues where further standardization could be helpful to the field and where additional research needs live as well. In total, the group is composed of 25 expert working group members that include both U.S. and international members. The group also is composed of DNA practitioners, human factors and forensic science researchers, legal professionals, academics and beyond. The Expert working Group staff includes Melissa Taylor and Nicki Osborn from NIST, Tracey Johnson, who was our NIJ representative, and myself, and Hope Zakariya from RTI. Collectively, the staff is known as the Steering Committee. We are not authors of the report, like the Expert Working Group members are, but rather we are stewards or we steer the group to project completion. So we help with a lot of general project oversight, facilitating conversation that the groups have, and other administrative and general project functions as well.

Ben [00:05:53] So you talked , or mentioned, a term in there, human factors. Can you explain what human factors are and why they are important to consider in forensic DNA interpretation?

Mikayla [00:06:02] Yes, So obviously it's in our title. It's very core to the series and to the work that this group does. But in essence, human Factors is a discipline that focuses on understanding the interactions among humans and other elements of a system. The goal of studying human factors is to optimize human well-being and system performance as a whole. So an easy way to recall human factors because it is so broad and all encompassing, is through remembering the acronym of PEAR, which stands for People, Environment, Actions and Resources. So the work that this expert working group does is completed through something known as a Systems Approach, which examines a collection of the interconnected components that interact with each other within a larger system. As I mentioned, it focuses on the relationships and dependencies between all elements of the system and how that influences the overall system's behavior. So some of the work that this group does is looking at a variety of topics. So with this, we look at how do analysts interface with technology, how do things like work environments, analysts, opportunities for primary and continuing education, and how do things like resources and training play into that overall functioning of a system? So it's a very holistic approach, includes things like bias and errors as well. This report focuses a lot on cognitive and confirmation bias, also focuses on error. What we've learned over the past three years is that error is definitely not simple to define. But this group has done some amazing work to understand from research

that has been done in the field, in an adjacent field, to understanding everything that goes into impacting the work that analysts do on the day to day.

Ben [00:07:41] Jody, what are some common examples of human factors that can impact the work completed by DNA analysts and other forensic science service providers?

Jody [00:07:49] So that's an excellent question and it's something that we focused on during our efforts within this working group process. And as Mikayla mentioned, we're not only looking at those items that people traditionally associate with human factors like bias, undue influence and things like that. We're actually looking at it from a systems perspective and from a human perspective. When you invite both of those factors, pun intended, into the discussion essentially everything that our analysts do is impacted by human factors from when they're recruited, hired, on boarded, trained, practice, when they go into leadership, when they validate new technology, when they enter into the leadership arena, how do they execute that for those that follow them? I think everything is impacted by what we've been working on the past three years, and we're hopeful that with the publication of our study that it helps everybody understand the relationships that exist and how all of those intersect and how they're impacted by something that we may not necessarily even realize affects how we make decisions, because it's all based on that. How do we make decisions? How do we understand the information that's presented to us? How do we consume that information translated into a decision, act on it, and then communicate the output of that action? And ultimately that goes to the entire forensic process. It's not unique to DNA mixture interpretation. It's applicable to all forensic science disciplines.

Ben [00:09:20] And Tim, can you explain the difference between management and leadership and why it is important to distinguish between those roles and individuals and how that impacts forensic DNA interpretation?

Tim [00:09:31] I think that's an important question that we deal with a lot. It's interesting when you look at management versus leadership in general, management is a position where you've been granted authority. So you're an official supervisor and you look at certain aspects of things. Both managers and leaders are trying to accomplish certain goals, but in general it's done in different ways. Typically, that person, that supervisor has been granted authority really focuses on how things are done and what things are being done. So they're focused on planning, they're focused on compliance, more of the quality day to day issues of a situation, and they look at how they can use their resources and how they can control those resources in a good way. Their human resources that are personnel, their property type resources, so their equipment, instrumentation, things like that, and then lastly, their business practices. And their job is to really run day to day what happens within that laboratory. Leadership is a different animal where managers have authority, the goal of a true leader is an inspired vision and provide a vision for the entity. So while the manager looks at the the what in the how, the leaders really want to focus on developing the why we do things and they develop teams. Their goals are to have a shared vision, to not only get people to feel satisfied in their work environment, but also to make them feel engaged and motivated to conduct their job on a day to day basis. Another funny thing about leadership is a lot of leaders are never granted authority, and we call that leading from the trenches. You might have a great bench chemist or person who's an evidence custodian who may never be promoted to the level of a manager or a supervisor, but they're always going to act as a strong leader in a field. It's funny if people say they're natural born leaders, you don't typically hear somebody say who is a natural born manager. So these people really do a good job of leading. Our goal as supervisors and

administrators is a really find those people who are leaders and combine them into hopefully strong managers as they get promoted up. A good way to look at it is the managers really their focus is the body of the organization and leaders is the spirit of the organization. And when you combine the two, you really have a good person to help guide that ship going forward.

Ben [00:11:41] So Mikayla just going in expansion off of Tim's management and in leadership differences, what do you think some of the challenges faced by the management and leadership of forensic service provider are?

Mikayla [00:11:54] So in the discussions of the management and work environment subgroup that Jody and Tim both serve on, there's quite the list of challenges that are faced by management and leadership individuals. So with these, it's important to note that challenges and pressures can be faced external to the organization and internal as well. So for an example of an external challenge, something like a pressure for a rapid turnaround time. Sometimes this can be driven by legislation changes, so requirements for sexual assault kit testing to be completed within a certain amount of days. Or it could also be something that is investigator driven, something for an internal challenge is adapting to workflows or adjusting the processes that are used in the lab to increase transparency or documentation. So things like that. They can also be case specific as well as SOFA cases as marked as high priority. An analyst may feel rushed to get that case out the door.

Ben [00:12:51] So I guess you all have been also working on ways that you can take those pressures and mitigate them. Do you have any ideas or concepts on how we could do that?

Mikayla [00:13:00] Yeah, and I'm going to open this up to Jody and Tim as well, but I think central to a lot of the discussions that have been held throughout all of the different topics that this working group has discussed over the past three years, educating and training both personnel in the laboratory and the end users is critical to an underpinning of so many of the topics discussed in this report. So by end users, I'm talking about law enforcement, investigators, prosecutors, individuals like that by providing training and education to these individuals and also personnel, it helps touch on some of the intricacies of forensic DNA interpretation and some of the challenges and scientific limitations for the methods that are employed in the laboratory. The testing kits that are used kind of demonstrates in the event that there was a pressure challenge that was externally investigator driven or something like that by letting individuals and end users know about some of the limitations that the laboratory faces, it can help mitigate some of those pressures and potentially unrealistic hopes for turning around cases quickly.

Ben [00:14:08] Jody, Tim? You got anything to add?

Jody [00:14:10] I think in addition to external pressures, there's internal pressures as well. There are pressures that we place on ourselves because we have expectations of how we think we're going to perform regardless of what else is going on in our lives. So we may be going through a personal crisis. Family member passes away, a pet passes away, a family member sick. Any sort of personal crisis. That's an internal pressure that can affect your own performance. And we all have expectations of ourselves. And I think that we have to recognize that the pressures not only come from outside of our organization, they can come from inside of our organization so much as far as we're putting pressure on ourselves internal to the organization expectations with regard to performance, performance metrics, peer pressure from other members in our section or other members

in the laboratory. We have to recognize that the pressures that we face as forensic scientists aren't just from stakeholders on the agency from a rush case, like Mikayla mentioned. But also we put pressure on each other and we put pressure on ourselves. That awareness and our ability to discuss them and address them and support each other in those endeavors are really important to the health, not only of our individual employees but also of the organization.

Tim [00:15:24] In a kind of follow up on that, I think it's important to, like Jody said, there is internal pressure we put upon ourselves and that work life balance is a factor and we have to encourage our employees to understand if they've had a bad day. They didn't sleep well that night. If you know something's going on at home to take a step back, maybe do something a little more simple that day and really work on that balance. Because I think too often as leaders, we look at our employees, as DNA analyst, as technicians and not as people. And we have to understand that those human factors are going to come from all angles and we have to support the complete person, not just the analyst.

Jody [00:16:00] I was going to say, I think one of the things that we've done a lot better than we used to as a profession and as individual laboratories is recognize that employee wellness is an important factor in our overall success. When I first started in the profession, I heard somebody coined this the other day, I came up in the Suck It Up Buttercup generation. And that that is not healthy for our people. We need to be able to support the entire person. To TIm's point, that work life balance and so providing resources for our employees, supporting each other and making sure that they understand and we appreciate that every day is a different day.

Ben [00:16:38] Yeah, I think in forensics right? Like errors or the fear of errors can get really wrapped up to the point where it can often be looked at or there is a culture of, I guess you could say, negative errors, right? So Jody do you have any like ideas or what a positive error culture is and why it's so important in that forensic science organization?

Jody [00:17:01] I do. I've spent a lot of time thinking about this for the entire profession, just trying to understand this concept of error. Because when I first started in the profession and I'm going to date myself a little bit when I started in seized drug analysis and I went to the Forensic Chemists seminar hosted by the DEA, which is a wonderful program, and I was so lucky to be able to participate in it. But we had early on a discussion about what is error. I remember it was a really seminal moment for me and my career and this discussion that when you go and testify in front of a jury that you always have to be right. Like what kind of expectations is that set as an industry? And if you're a leader in that industry, what kind of expectation does that set for the people that you influence? And I don't know about anybody else, but I'm not perfect. So the expectation that I'm going to be correct 100% of the time is an unrealistic expectation. And I think that when we go from personal experiences to understanding from a social science perspective, what does error mean and how to create a positive error culture. There's actually been and done a lot of work done in that arena, in particular with high performing organizations and learning organizations. And when we examine what it means to be a learning organization, we have to understand that we're on a journey, that it's not a static point in time, it's not a checklist where we check it and we automatically move on and we have we produce high quality. It's a journey, It's a dynamic process. And so we have to understand with a positive error culture that we need to learn from our mistakes and embrace failure. Whenever we learn to ride a bike what's the first thing that happens when we ride a bike? Typically fall off. We're not steady, we're not confident, but we learn how to manage that bike and we learn how to ride. It's the same kind of thing that when we're dealing with talking about

error in a learning organizations, we need to learn how to embrace failure and understand that failure is an opportunity for us to be better and to learn from it. And we need to focus back on what Mikayla said earlier. And that's a systems approach, not an individual approach. I think it's very much human nature to examine who is involved when error occurs as opposed to how and what was unique about that system that allowed that error to happen. So it's a systems mentality, it's a systems approach as opposed to an individual approach. And when we can talk about it from that perspective, then we start to learn at the individual level, we learn at the team level, we learn at the organizational level. And as we institutionalize that knowledge, then our organization grows and becomes a learning organization. And that's really, in my opinion, the nuts and bolts of being able to create the foundation for a positive error culture. There's other factors that go into that.

Ben [00:19:45] What you're kind of talking about is like people make mistakes, right? And in the past, suck it up buttercup culture, right? Whatever that mistake is, is the death of you, right? Like, there's no way around it. And we that we were treating those mistakes as like wanton disregard for operations procedures that this person is a horrible person and they should never be employed ever again. Right? And what you are more talking about is that does happen. But that's the small percentage and the large percentages that we're just humans and so we need to use strategies to build those positive culture. So what kind of strategies would you suggest or you've seen be effective?

Jody [00:20:31] I'm really glad you asked that question, Ben, because it is so foundational and so crucial to creating that positive error culture. And it starts when you first start engaging with your employees before they're even your employee. So part of your recruitment and selection process, evaluating the highest talent that can be a part of your organization and guarding your organization's mission and bringing those individuals on your team that are the right fit. And then once they're a part of your team, onboarding them and having that discussion. And as you know, because we get to work together.

Ben [00:21:04] Yes.

Jody [00:21:05] One of the things we do when we hire somebody is a part of their onboarding process, and their inclusion in our organization is having these discussions from the get go. Like some of the things I think that we used to do is we used to be afraid of making mistakes because of the things that you said, because it was a catastrophic failure and our careers would be over if we made a mistake. That is not the case. We're going to make mistakes. Everybody does. There's a difference between making a mistake and learning from it and making yourself better in the organization better, as opposed to creating misconduct or having misconduct or committing negligence. There is a huge difference between that and early on in the culture that we developed with our employees. So we need to make it okay to make a mistake. We need to embrace failure. We need to embrace those mistakes because they're opportunities for us to grow as individuals, as teams and as an organization. There's a difference between a mistake in misconduct. Misconduct and integrity issues? You're right, your career is going to be over.

Ben [00:22:04] Yes.

Jody [00:22:05] But if you make a mistake, we can always fix mistakes. We can always recover from that. We have systems and processes and checks and balances in place to help each other be successful so that we can provide the highest quality work product to the criminal justice system. And we start that very early. I mean, literally within the first couple of weeks of an employee's experience in our laboratory, we're having that

conversation with them and then we make it a common vocabulary as that individual goes through their training, as they become a practicing forensic scientist and do casework. And when we have a non conformance, it's not something that people are afraid of necessarily. It is something that they already have an expectation of how that system and that process is going to work. So we've erased the unknown and provided them resources to be successful and they are part of that process. It's all about learning and getting better and having a commitment to continuous improvement.

Ben [00:23:00] So just to continue on with Jodi's themes there, Tim, do you have any other comments or ideas on that?

Tim [00:23:06] Yeah, I think she hit the nail on the head. What she's talking about is something that I've witnessed firsthand at y'alls Lab in Phoenix and we went down there for training, is that what you've built and what we want to build in our organizations is we want to go away from a culture of blame to a culture of accountability. And that's really what Jody's talking about, you know, in a culture of blame. And it starts from the top down and your people, from the newest intern to your most senior employees, can feel that cultural shift. It's almost like when you walk into the building, you feel like something's wrong when you have a blame culture. So I think in a blame culture, people are the problem. People are not solutions. And you want to get away from that. Which leads to is when people will come the problem and they feel attacked all the time that they can't make errors, like Jody said, and every error is going to be the death nail. They stop being innovative, they stop going outside the box, they stay in their lanes. And you go from having people with a scientific, open mindset who want to challenge the process and pave the way and do innovative things to people who are scared of turf wars and scared of getting outside their silo and not just within DNA but everyone we supervise. The goal is to switch to a culture of accountability. It's different. We're not saying do whatever you want, but the way it's addressed is different. The process is wrong. That's what we have to fix. If our people are making errors, why? It's because we're not giving the right tools, the right process and they have to understand they can come to us with the mistake and we're going to look at is not a people problem, but a process problem and fix it. The biggest thing in an accountability culture is you want to fix the problem, not the blame. And I think that's a big thing that we always joke about. Quality is always against the lab, and that's not true. Quality makes us who we are. It keeps us on the right path and that's why our quality assurance is so important. We do that shift. The last thing is as leaders and we all in our own way, act as leaders in the field, we have to learn to delegate and to give people responsibility and let them make small decisions first. And once they get used and trained in making decisions and start helping us build that positive culture. Then you'll see a shift in trust. And people say, okay, I went to Ben with an issue and I'm still here. And he's actually let me champion the cause to fix that issue. And it goes a long way to what we do each and every day that allows our people to get innovative and take, we don't want to take crazy risks, but they can take calculated risks as a part of your team and know that they have you or Jody or someone as a mentor as they are developing and going as leaders. So I think the biggest thing that Jody is saying, a lot of us work for parent organizations. It starts from the top down to really develop that culture of accountability and get away from this culture of blame that we so like to use as a crutch in these big agencies.

Ben [00:25:49] So taking some of those points there, you talked about the parent agency, but a lot of what our culture development is is in the lower levels or the line level leaders, for lack of a better statement along those lines. Do you have any ways or ideas that those

like managers and leaders that are often the first line of managers or leaders in the organization, how they can generally shape that culture?

Jody [00:26:16] Yeah, and it's something that I've thought a lot about and actually talk to my leadership team in the laboratory about as well. And I think first we can turn to the body of evidence that's been produced by our social science colleagues that have done a lot of research in this arena. And when we look at examining how do you develop a culture, what is the most common factor that's identified as having a significant impact on the development of culture and its leaders? And who do our people interact with the most from a leadership perspective? And that's their direct supervisor, whoever that may be. And wherever they are within the organization, it's who they report to. And so leaders have a responsibility to be actively engaged in this positive culture, in a culture of learning and building our body of knowledge as professionals, individually, as a discipline, as a laboratory, as a profession. And those leaders have to make that a part of who they are and how they lead. And one of the best ways that you can do that, if we're talking about embracing mistakes and embracing failure, listen, I'm not perfect. I haven't met a single person that's perfect. And so when I make a mistake, I need to own it. I shouldn't be embarrassed just because I'm the leader. I'm going to make mistakes and that provides credibility, it provides how they can relate to you, it provides safety so that when they make a mistake, they can come to you and they can have that conversation. So first it's owning it, right? We also have to be able to walk the talk. So we're not just saying quality is important. We actually have to engage in those systems, actively participate in the processes and lead our people in that quality endeavor and that commitment to continuous improvement. Part of that is also from a leadership perspective at the higher levels within an organization is investing in the leadership development of those leaders within your organization. So supporting them in increasing their skillset because leadership is a skill set, it's based on education, training and experience. And you have to be able to afford your your leaders, your first level supervisors, your middle managers and your executive level leaders the opportunity to invest in that skill development. So that's participating in programs, whether it's a graduate program like an MBA or a certified public manager or the ASCLD Leadership Academy. But that's a part of, you know, you have to be able to support your people investing in their skill development from a leadership perspective, just like you do from a technical perspective and something that I'm super passionate about. It's very important to me and my organization. That's how we grow and we develop.

Ben [00:28:58] We talk about human factors and DNA, which is really the start of where this path has gone. Tim how do you see the role of human factors evolving with forensic DNA interpretation in the future? What steps do you think may need to be taken to ensure that the factors are appropriately addressed?

Tim [00:29:18] So I think the biggest thing we have found that it's a holistic approach that when we think of human factors, everyone thinks of bias and that's all it's about. It's about the science, it is about the science and about bias. But there's so much more that, that comes to it, and especially when we start talking outside the lab and outsiders looking in the other components of the criminal justice system, it's like, Hey scientists, go fix your science. But there's a lot more to it than that. So as supervisors outside of the criminal justice partners, they say, scientists, go fix your science. But we again, have to keep that holistic approach when we start looking at human factors. And I think this group has done an excellent job in doing that. Again, the science and the technology are very important to what we do, but other components such as training and education, much like Jody mentioned with onboarding, building into our college courses and our undergraduate graduate programs more lectures and coursework on bias and how it affects and human

factors and how it affects what we do, training our supervisors like the Leadership Academy and other things, and how to combat and how to deal with human factors. I can't stress enough how training and education is going to help us fix this problem. Again, from university, graduate school, all the way to our ongoing programs. And the last step is the administrative factors. It's how we in leaders and management deal with things like our employees stress. How do we make the work environment a place that benefits them? Ask our employees for their input. Don't just say, Hey, we've redesigned a DNA lab and this is what you're all going to use. Test it ahead. Let them see the bench space. Let them test out the things with you. Make them feel a part of the process. I think the biggest component of the human factors is really taking a holistic approach and attacking it from all angles.

Ben [00:31:05] We mentioned a little bit about leadership and opportunities of where leadership and training can be found. Do you all have any ideas or resources of where individuals can go to for that?

Tim [00:31:16] Yeah, I think Jody mentioned it a little bit and again, we have a little bias here because three of us are part of it. But the ASCLD does an excellent job with the ASCLD Leadership Academy and they have right now levels one and level two, and we're in the process of developing level three. And the whole point of this is to start doing the things that we talked about here, not just within our DNA labs, but across our crime lab culture. And it's been a very successful program. I think we're almost to a thousand people have gone through it thus far and we're a decade in. So I think it's a great resource that's out there for crime lab personnel, managers, future managers and future leaders.

Jody [00:31:51] In addition to the Leadership Academy. We've been very fortunate that ASCLD's been able to partner with the FTCOE on several different initiatives. One of them is the Train the Director series, where we identify timely topics and do webinars on them. They're typically about 90 minutes, and then those webinars are archived so that you can access them at any time. And we talk about topics like bias and employee wellness and backlog management. There's always different topics that are really relevant in our related to challenges that we are currently experiencing. It doesn't cost you anything. You can just go out there to the website, you register and you have free access to it. In addition to the training the director series the FTCOE and several of us that are leaders in the forensic science industry, were able to create a product, a leadership series, it's like an online program where you can go through these different modules and you can talk about leadership, communication, ethics, all of these topics that are really important to us as leaders. Again, a free opportunity for skill development in the leadership arena, and I encourage you all to take part of that.

Ben [00:33:00] So you all have been talking about how you've been working on this for three years. I'm sure the listeners are wondering, when are you going to publish that paper you said that you're working on? So Mikayla, are you able to provide us with any idea of when we can expect that to be published?

Mikayla [00:33:16] So at this time we are getting feedback from external reviewers. We will be meeting later this month to go through that feedback and adjudicate it and produce another working final draft with anticipated publication coming this summer. So nearing the end.

Ben [00:33:32] Great. Looking forward to it. Just to wrap up, any thoughts, any of you all have to close anything out that we maybe didn't touch on yet?

Jody [00:33:39] I would say from my perspective, one of the things that I've gained from being able to participate in this process is that it's a journey and something that never ends. Like when we publish this, this document, it's going to be a great asset to the community. It will spark discussion. Hopefully it's something that everybody can embrace and learn from, but that's not the end of this endeavor. When we talk about human factors and how we can support the highest quality work product that can be produced by our, our analysts and our organizations, it's an ever evolving and ongoing endeavor and a journey that we're all on together. And so that's for me, one of the greatest things that I've gleaned from this process and the value is being able to engage in that discussion. And I look forward to being able to carry that on after the publication comes out.

Tim [00:34:28] It's kind of funny when when everyone reads this publication, they're going to a two dimensional view of this process. This is a great group of people who I think at their heart want to benefit the forensic science of criminal justice communities, to watch the sausage get made and to be a part of it is really been an experience. People from different walks of life, from different areas, from academic, scientific, we had lawyers involved, so everybody got in the room and to watch the process and how everybody really tried to get the best thing out. And we're still doing it to this day. It shows a commitment to really improving this aspect of forensic science.

Ben [00:35:03] Jodi, Tim, Mikayla, I have really enjoyed our conversation today. Thanks for your time and your willingness to discuss the last three years of your hard work.

Mikayla [00:35:11] I'd like to say thank you to NIST and NIJ for allowing us the opportunity to produce this critical work and for bringing this expert working group together and for RTI International for supporting the efforts with NIST and NIJ as well.

Jody [00:35:27] For me, today, this afternoon has been really special because, Ben, I'd like to thank you for hosting us and for facilitating the discussion. I've had the honor of having you as a part of my team and being able to work with you for several years. Your entire career?

Ben [00:35:41] Yes, my entire career.

Jody [00:35:44] And you've done a great job. And I'm so honored to be able to be a part of this with you.

Ben [00:35:48] Thanks.

Tim [00:35:49] And lastly, I want to thank ASCLD. It was a great experience to do the podcast live like this at the symposium. I think it's a good thing that you continue to happen and Ben thank you and thank everyone else involved in the project.

Ben [00:36:00] If you enjoyed today's episode be sure to like and follow Just Science on your platform of choice. For more information on today's topic and resources in the field of forensic science, visit ForensicCOE.org I'm Ben Swanholm and this has been another episode of Just Science.

Introduction [00:36:21] Next week, Justice Science will sit down with Brian Hoey to discuss building resiliency through a strong culture and good followership. Opinions are

points of views expressed in this podcast represent a consensus of the authors and do not necessarily represent the official position or policies of its funding.