

Just the Forensic Laboratory Workforce Part 1

Voiceover [00:00:05] Now this is recording RTI International Center for Forensic Science Presents Just Science.

Introduction [00:00:20] 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 eight of our Strengthening the Forensic Workforce Season, just sat down with Dr. Peter Stout, president of the Houston Forensic Science Center, Dr. Ray Wickenheiser, Director of the New York State Police Crime Laboratory System and Matthew Gamette, Director of the Idaho State Police Forensic Services Laboratory System, to discuss their perspectives on forensic science training and recommendations for students and faculty and FEPAC accredited programs. FEPAC accredited institutions are preparing students for future jobs in crime laboratories across the United States. Lab directors use these institutional standards to help guide them in their hiring processes. Listen to part one of this two-part episode as our guests discuss crime laboratory accreditation, hiring challenges and the importance of multidisciplinary training. This episode is funded by the National Institute of Justice's Forensic Technology Center of Excellence. Here is your host, Gabby DiEmma.

Gabby DiEmma [00:01:22] Hello and welcome to Just Science. I'm your host, Gabby DiEmma, with the Forensic Technology Center of Excellence, a program of the National Institute of Justice. Throughout this season, Just Science has discussed forensic science programs and NIJ funded research at universities accredited by the Forensic Science Education Programs Accreditation Commission, or FEPAC. This week, we would like to take a look at forensic science training and education from the perspective of laboratory directors and hiring managers. Here to guide us in our discussion on the forensic science workforce is Dr. Peter Stout, CEO and President of the Houston Forensic Science Center, Dr. Ray Wickenheiser, Director of the New York State Police Crime Lab System and Chair of the Forensic Science Standards Board for the Organization of Scientific Area Committees for Forensic Science or OSAC and Matthew Gamette, Forensic Sciences Laboratory System Director at the Idaho State Police. Peter, Ray, Matt, welcome. It's great to have you on the podcast.

Peter Stout [00:02:22] Good to be here. Thank you.

Ray Wickenheiser [00:02:23] Thank you for having us.

Gabby DiEmma [00:02:24] Before we dove into today's discussion, I'd like to ask each of you to tell our listeners a little bit about your background and your current role at your agency.

Matthew Gamette [00:02:33] So my name is Matthew Gammon. I'm the Laboratory Systems Director for Idaho State Police Forensic Services. We have three laboratories. We are the statewide laboratory system. So I have about 56 employees that we have here. We're a small state lab system. We do most of the traditional forensic science disciplines, probably the exceptions currently being trace analysis. So my background is in DNA and crime scene science. That's where I cut my teeth as a scientist and then came up and was Quality Manager and now I'm the Director of the lab system. My other interests are in national forensics with a consortium of forensic science organizations where I represent the American Society of Crime Laboratory Directors on that organization and we lobby on behalf of forensic science organizations for resources for the labs.

Peter Stout [00:03:22] I guess I can go next. Peter Stout, I am toxicologist by training, past naval officer. I've worked government laboratories, commercial laboratories. I've been on the research side of stuff. I am an RTI alumni. Houston Laboratory is a, I think the technical term is big ass laboratory. We're about 212 employees, about 30,000 requests a year as just this single laboratory. We serve Houston proper, which is about two and a half million people. We get stuff from surrounding agencies through all the various inter-agency agreements. So the total Houston area, greater metropolitan area of Houston, is pushing 10 million people. We are a little like Matt, we do just about everything other than trace. Crime scene is under us. Our crime scene unit responds to homicides, officer involved shootings, child deaths in the Houston area. We are a weird organizational structure. I think we are unique in the country. My boss is actually a board of directors. We are this quasi-governmental organization called a local government corporation. So the laboratory is in fact separate from Houston police, even though that's where we get the vast majority of the evidence that we process from. And my budget comes from the city of Houston directly. So you can think of it that I am a contractor to the city of Houston to provide forensic services for the city of Houston.

Ray Wickenheiser [00:04:50] Hi, my name is Ray Wickenheiser. I am the Director of the New York State Police Crime Lab System. We have four labs across the state covering a population of approximately 20 million folks. There are 19 other crime labs besides us around the state, most of them toxicology, and the more full-service labs are in the major cities. So we fill in essentially everything that other folks don't cover and then cover some other disciplines as well. My background is originally in trace and I was dragged kicking and screaming over into DNA when that first began. So I also have experience as a director for a number of years for different lab systems or labs, I should say, and being the QA manager. My interests are investigative genetic genealogy and touch DNA search specifically, as well as standards, obviously as part of the Organization of the Scientific Area Committees and the Forensic Standards Board that oversees that. We are also a full-service crime lab, so we have our main lab in Albany and satellites, three satellites around the state. We have all of the disciplines. So get biology, drugs, firearms, evidence receiving latent prints, toxicology and we do have trace evidence as well. There is also computer crimes and audio visual units within state police that do not report out through our crime lab system. So that's us in a nutshell.

Gabby DiEmma [00:06:14] Great. So you all mentioned a little bit about your jurisdiction size and your organizational structure, but what sort of accreditation standards do you guys adhere to at your laboratories?

Matthew Gamette [00:06:25] We are A2LA, that's our accrediting body. And most all of our disciplines, we are not accredited in crime scene, but we will be soon. That's our biggest effort right now. And we are bringing over digital evidence and making an effort to - we're bringing that over from our state police and putting that under the forensics lab and we're also making an effort to get that accredited right now. We do require that all of our scientists be certified within the time period that we allow in our manuals and things. We also are an OSAC implementer, meaning we look at the standards that are coming out of OSAC. We implement them into our manuals. We do not like take them and make them our manuals, we take from them and adopt our manuals to apply, so.

Peter Stout [00:07:13] Hey, Matt, I'm curious, what ISO standard are you accrediting crime scene and multimedia to?

Matthew Gamette [00:07:19] So we're going to do - we are 17025:2017 in all of our forensic disciplines and that will be the same for crime scene and also for digital evidence. And also we're bringing on forensic document examination and that will also be accredited under 2017.

Peter Stout [00:07:36] In Texas, laboratories are statutorily required to be accredited in toxicology, firearms, biology, chemistry and trace. Those five disciplines are statutorily required. We have all of our disciplines accredited, all of them to ISO 17025:2017. So I was curious, Matt, there because we've accredited crime scene and multimedia to 17025 and they are imperfect fits, but everything is an imperfect fit. Personnel are required by state law to be licensed again in those five disciplines. We are looking in Texas, they've just launched a voluntary licensure program for question documents and anthropology. So the Texas Forensic Science Commission started with those disciplines because they're small. The next ones they're looking to roll out are latent prints and crime scene. And when they roll that out, I am toying with the idea of just how mandatory I make it for employees to be licensed, to have that voluntary license in those disciplines. Organizationally, we've got a strong inclination towards certifying wherever they can, being licensed wherever they can. But that's - and we're - our accrediting body is ANAB.

Ray Wickenheiser [00:08:46] Ok so we are ANAB accredited to do 17025:2017 version in all of the sections I mentioned. Crime scene does not formally fall under the crime lab and as such it is not accredited, but we do have a connection with the latent print component and will be accrediting that. Our latent prints in our main crime lab that actually does the comparison is accredited to 17025. We'll be looking at 17020 and 17025 as an option for those regional folks who actually do the development and do a lot of the initial comparison. We do have a little bit of a different command structure where we have a little bit of a hybrid. The lab falls fully under the New York State Police. We have a civilian director, which is myself, and then we have a fair chunk of our command staff is actually uniformed members embedded within the lab. And we do have technically responsible people who are all civilians. We also report from a QA side to a commission of forensic science, which has a DNA subcommittee. They're not operationally responsible for us, but all of our QA nonconformances and whatnot, and they approve us in terms of requiring accreditation, which is mandatory for our state.

Gabby DiEmma [00:10:03] For clarification for those in our audience who might not be familiar, what is ANAB and what is ISO 17025?

Peter Stout [00:10:10] ANAB is ANSI National Accreditation Board and ANSI would be American National Standards Institute. So, we just say ANAB. ISO 17025 it is a calibration and measurement standard. The other one you see in laboratories and probably you see in some crime scene units is ISO 17020. That one is an inspection standard. So reality for all of forensic sciences, there's one in the works. It might be there before I retire, but there is no forensic standard under ISO, so we all have to shoehorn ourselves into something that is an imperfect fit.

Ray Wickenheiser [00:10:52] So I would just add to what Peter said, with respect is 17025, there is also a supplement that goes along with that, depending on the accrediting body that tailors that calibration standard to forensic science. So there's a little bit of an adjunct to that, that makes it a little more forensic specific. But I would also concur that we really would be better served by a specific forensic standard. One is in the works, but standards do take a long time in development. So we're not holding our breath on it but it's on the way.

Matthew Gamette [00:11:26] We are accredited by the American Association for Laboratory Accreditation, otherwise known as A2LA. ANAB and A2LA are the big players in the accreditation space and forensic science. There are others that are used by like specific toxicology laboratories and things, but those are the two big ones for the multidisciplinary labs.

Peter Stout [00:11:47] And in Texas, that accreditation has to be either by an ANAB or A2LA. That's what - or you could College of American Pathologists is still recognized in there and National Laboratory Certification Program. Those are very narrow accreditations but if you are not accredited by ANAB or A2LA, that's not recognized under the state statute.

Ray Wickenheiser [00:12:07] So just to further complicate things -

Peter Stout [00:12:10] Yeah because it's all complicated.

Ray Wickenheiser [00:12:11] Because it needed to be even more complicated in the state of New York, they actually looked at both accrediting providers and actually chose to stick with ANAB, but there is also ABFT, which is the American Board of Forensic Toxicology, which for the toxicology labs in the state, they could accredit under that body, who then decided to essentially merge themselves with an ANAB so our toxicology labs are on the way over to ISO 17025 from the ABFT standard.

Matthew Gamette [00:12:46] And we would be reticent not to mention that we all represent forensic laboratories. None of us have the medical examiner coroner component. But certainly if you're speaking to a lab director of one of those laboratories, then the name the National Association of Medical Examiners Accreditation Program would come into play. But that's not our workspace on this phone call.

Gabby DiEmma [00:13:08] So you mentioned a little bit about the different disciplines that your laboratories do cover and I'd be curious just from your different perspectives, because you are located in different states across the U.S., what are the most common types of crime and or the most common types of evidence you typically receive in your area?

Matthew Gamette [00:13:28] Honestly, I think a lot of the crime labs are limited by what we have the ability to work on. So we work on the most severe stuff first, which is going to be crimes against persons. So I would say most of us focus on homicides, major assaults, assaults and, you know, other crimes against persons such as sexual assault and then down to severe property crimes, high value property crimes, things of that nature, robberies, burglaries. But I think most of us spend most of our time on homicide, assault and sexual assault. At least that's in my jurisdiction.

Ray Wickenheiser [00:14:02] I very much agree with Matthew. Very much what we spend our time on is resource driven. So certainly we're going to work on virtually every homicide case that occurs where there's forensic evidence present. We have a law in New York where every sexual assault must be submitted within ten days. So we do virtually 100% of the sexual assaults, particularly if the victim approves of that. So they have to essentially sign off that their sexual assault kit will be submitted to a lab so they're all submitted. And then we do the crimes of violence, certainly driving offenses where there's impairment, suspected controlled substances, that would be drug cases. And we certainly like to also work in as many property crimes as we can because they tend to be less items per case.

So we try to dovetail those into the larger cases because we do a lot of batching depending on the section. So we do have some section driven sort of specific types of crimes and certainly with our National Integrated Ballistics Information Network, so that's NIBIN the firearms database. We're able to look at a lot of shooting cases to try to provide investigative leads and many of those link back to homicides and other kinds of cases. So we try to take a very kind of progressive approach in terms of where we can add the value with investigative leads, as well as working those cases depending on, again, how much damage to society. Really trying to maximize - make best use of our resources.

Peter Stout [00:15:33] So for Texas exceptionalism, we're a heck of a lot like everybody else here. Again, resource limited in what we tend to work first and Houston is very much one of the places in the country that the homicide rate has really jumped. So homicide, violent crime disproportionately affect the laboratory. If you look at request volumes, for us, typically biggest request volume are guns. We get one metric crap-ton of guns. We process typically something in the neighborhood of about 700 guns a month. And then next after that, it's a little bit of a toss-up between toxicology and latent prints as to which one of those makes up more of the number two and then in there, typically in those top three is seized drug requests. For us, we are strictly DNA casework. We don't do any of the databasing stuff. That is the Texas DPS lab. We're maybe about 12% of our work is DNA. What probably has grown more than many is the multimedia evidence. I got more phones than I know what to do with. Everybody carries seemingly multiple phones, so every crime has many multiple phones associated with it. A couple of years ago we had actually beaten most of our backlogs into submission. They are back with a vengeance in just about everything.

Matthew Gamette [00:16:54] I just want to focus on what Ray said just for a second on property crimes. Every lab in the country has been overwhelmed with sexual assault kit backlogs and discovering kits and trying to get those backlogs under control. But now we're seeing a different day I think. Most of us are getting on top of that, if not resolving it, getting the turnaround times down. And so I think you're going to see in the next little while that the big foray goes into property crimes because those are gateways. And if we can start identifying these perpetrators earlier on in the process, getting that information to law enforcement, I think we will likely see a reduction in those most severe crimes. So that's where our focus is going, at least is standing up high throughput property crimes, things like that, putting the resources a little bit more in advanced, going more into an intelligence role rather than a reactionary role. And I agree with Peter. Our big push is going to be digital forensics, computer forensics, phone forensics. All those things are going to be huge and that will probably be a bigger section of the laboratory than anything in the near future.

Peter Stout [00:17:58] I could easily see that. Backlogs that worry me the most right now is probably guns. That one has really taken off on us. We had - we did not have a backlog in firearms before the pandemic. That one has grown entirely inside of the pandemic. We are at a place where we've almost gotten rid of all the sexual assault kind of backlog. Texas is a test all state as well. So, you know, DNA is not as much the backlog issue with violent crime, but I'd agree with Matthew that if we were at the place that we could prioritize burglary of habitation at night and burglary of habitation and day, you know, there I think there's a lot of logic in somebody who is willing to go into personal home at night. That's a person that's on the cusp of something worse happening. And to be able to head that off, there's a lot of value in that. I wish we were there. We aren't.

Ray Wickenheiser [00:18:52] I do want to touch on something that both Matthew and Peter have alluded to, and that is really our, not just our backlogs, but our turnaround time, because we all know that a lab report today is worth a lot more than a lab report in a few more days or weeks or months. So we've done pretty well in terms of getting our sexual assault backlog down. We've got a number of new folks that we've trained and so we can see that going down. But certainly the shooting violence has really increased. And with the ATF for Alcohol, Tobacco and Firearms requiring a goal of 24 to 48 hour turnaround time, that's, while a tall order, we agree with it. And then you're going to get a better lead when you can get it now when the gun is still in the hands of the perpetrator. So really shooting on, I guess, pun intended there maybe, to get that response time down, but getting additional resources because the shootings are absolutely up. I think we've seen 100% increase in lab submissions in the last year and then 100% on that from the previous year. So COVID has really been a big factor in terms of increasing the number of shootings. So we recognize that the minor crimes absolutely lead to bigger crimes. And being able to provide a quick response is one of the challenges. We also do have the database here. I failed to mention that. So we've got a number of folks who are working on DNA. We saw the number of DNA database samples really go down through COVID with because we get ours through convictions so the courts were really shut down for a lot of COVID. Now those are really come back strong and we do somewhere in the neighborhood of 30,000 to 50,000 samples a year. So it's a pretty good flow. Our hit rate is somewhere in the neighborhood of 40% where we're able to provide investigative leads, which is again a really great service were able to provide statewide.

Matthew Gamette [00:20:43] Probably our most interesting one, though, right now, at least in my estimation, is controlled substance analysis and toxicology. Which Peter said that by volume, that's by far the majority of the cases that we get into the laboratory because they can be worked quickly, there's a plethora of them coming in. But we're seeing some very interesting trends in the toxicology, and we're trying to do more and more of how many drugs we can analyze, how many drugs we can quantify. Also, looking at things like seeing novel substances coming into the laboratory, those trends have shifted so much. It's very interesting to watch from an epidemiological perspective and whatnot of what's going on in society with drug use and abuse. So those are some very interesting trends. And in the in the topic of, you know, we're looking at students being educated in colleges and coming into forensic work and what are we tracking on that's going on in the community? You know, we're looking at people being trained in some areas that were not even possible a few years ago, looking at training them in pharmacology, training them in different identification techniques of controlled substances. Something new that I know Peter is working on and I'm working on as well is looking at data analysts. Now that's not something that was part of forensics long ago, but now we're looking at all kinds of data analysts from DNA and genealogical world to looking at people to break down data for intelligence of how we can work smarter and better. So we're taking all kinds of students now into forensics that didn't used to be in this market.

Gabby DiEmma [00:22:22] So considering the, you know, the changing crime trends and also the changing landscape of what type of testing and what type of training is available, on average, how many new positions do you hire to fill annually?

Matthew Gamette [00:22:36] So I hire a whole lot more than I'd like to hire because we unfortunately are in an avenue of we are a governmental lab. We are limited on what we can pay, we are limited on how fast we can compensate for changes in society like inflation, cost of living increases. So generally my employees are leaving to go other places. Places where they can get more money, either at a private laboratory or, and

we've lost a lot to private laboratories or to other states, counties, entities that will pay them more money. We provide a lot of training. My estimate is somewhere around \$300,000 in training an analyst and getting them up to speed and when I lose someone like that is a huge loss. And so what we're trying to do is communicate with our policymakers that, you know, increasing the salaries, doing some things to help keep these employees is a better thing than turning over people all the time. But for us, we're hiring a lot because we're turning over positions, but also we're growing and the government can't keep up with the growth that we're making. You know, our population in Idaho and Texas and all these places are through the roof. And so when we have crime rate increasing, we have population increasing. I can't even request that many positions from government, and so we're using grants and other things to try and fill that gap there until we can make them permanent, full-time employees. But what I'm finding is I've now got about probably six or seven people and I'm a small state. I mentioned my 56 is my total staffing and seven of them are on federal grant funding and we are using them as contractors so they're not even state employees. And some of the things that don't come with that, like benefits and other things. But we're finding that, you know, students are willing to take those positions to kind of get their foot in the door, to get trained, and then hopefully we pick them up for us or maybe we take them to another laboratory that that needs them and it provides a good service. But I'll tell you, that's one of our biggest struggles right now, is getting positions that we need.

Peter Stout [00:24:43] I'm afraid I probably have poached one or two of them from you there, Matt, sorry. It's a problem for us as well. Our turnover rate had typically battered about 6% pre-pandemic. In the last about six months that's accelerated to about 12 and a half percent. You know, for me, that means we're hiring probably in the neighborhood of 30 or 40 people kind of thing at a throw. I've got a little bit more latitude. It is one of the things that I know nobody ever thought of when they put this LGC idea together of what that did was it made all the employees at will employees of the corporation, not city of Houston employees. So I've got a lot more latitude and flexibility in hiring. I've got a lot more latitude, we manage more to the dollar, not to the FTE. So I've got a lot more latitude in moving things around to hire people, but it still comes up against resources. Probably for most government entities period, but I think probably for most laboratories, labor cost makes up 75% of the budget and that you just can't. Things don't move by single digit percentages. You've got to be moving by multipliers to actually make any kind of difference and that is a difficult argument to make. Every lab I talk with, everywhere I hear, we all struggle, particularly finding experienced personnel. They just don't exist. Pretty much every discipline, they just don't exist. Oftentimes we can open a position with educational requirements and no experience requirement. We'll get 400 resumes overnight. But, you know, you open a position requiring even minimal experience and you can go a long time before you get candidates.

Ray Wickenheiser [00:26:23] So in New York, as I mentioned, we have about 280 positions. So we I would say, maybe have more of a moderate turnover. Some of that, I think, increased with COVID and because we had a COVID freeze. Typically we see maybe 20 to 25 vacancies a year. Whereas it when we were able to start hiring, I think we had well over 40, maybe closer to 50. So fortunately, we've been able to fill a lot of that gap. I would absolutely agree with Peter that we really do not get experienced candidates. The folks from Idaho don't seem to want to travel all the way over to Albany to bring their experience over here. So we'd love to get fully -

Peter Stout [00:27:01] We've got more guns in Texas. That's what it is.

Ray Wickenheiser [00:27:04] We'd love to get more - and it's and is further south, too, probably. But the seasons are great over here in New York, so come on over. But we'd love to get to train folks, but we absolutely see that we do get large numbers of applicants, of folks with really pretty good university training, but really no practical training. And so that is quite a drain on our program to have to keep training people from scratch. And it is absolutely a major hit when you have to lose someone, because we're, by my calculation, easily spending over \$100,000 per year training these folks. So it is a massive investment and you hate to lose it. It's one thing to lose it to another forensic lab, but it's particularly painful when they leave the space entirely.

Matthew Gamette [00:27:48] Some of the things that we all hit on was the lack of senior and technical people that are willing to move. So if you have a vacancy that you can't fill is a DNA technical leader or another discipline technical leader, it's extremely difficult. You pretty much have to train from within for those positions because they're not willing to move. And who would, right? When you're vested in a state retirement system or in a local retirement system, you get 20 years on the job. Why would you want to uproot, move to another state and lose most of that retirement potential that you have? So it's difficult once you get vested in state retirement. The thing we are going to and seeing some success in it is through COVID, we can do remote work. We're finding ways to do a lot of the data reviews, the report writing and things like that with people that are already established in an area and want to stay in that area and we can make it work for them remotely. So we're experimenting with a lot of that. We're seeing some good value in that. I've been able to retain some experienced examiners that way and people that I've had that wanted to move to their home or closer to their family, and we can still keep them on as an analyst working remotely. So luckily my state's been really flexible with me in doing that. I don't know if that'll be a long term model or not, but at least it's working to hedge some of this this gap that I've got.

Peter Stout [00:29:09] Matt, how's that working for you with testimony aspects and those folks?

Matthew Gamette [00:29:13] Yeah, we try to minimize the number of cases that they're touching that we think are going to go to court. But it is a liability if I'm flying somebody from Atlanta to Boise to testify in court regularly. But honestly, it's a risk I have to take because I have to have the senior examiners to be able to finish the cases.

Peter Stout [00:29:30] Yeah, we've done something kind of similar, and often we have them as a contract analyst doing exactly that; data review, report writing. Yeah it's - in the terms of the cost aspect it's probably less costly to fly them in for a testimony and deal with it that way than trying to recruit train. I am finding the experience level for what is the demand of testimony is getting difficult and I think we're particularly affected here in Harris County because between Hurricane Harvey and COVID, Harris County courts, this is not the laboratories, but this is the entire courts system. The court system here is 135,000 cases backlogged. It is catastrophic within Harris County courts. So the level of pressure that the entire system is under is creating really rough testimony experiences. The DA's office here has just hemorrhaged experienced ADAs. So most of the ADAs that people are dealing with are very inexperienced, which then leaves analysts more vulnerable. And basically, you know, an analyst is the one that's the most experienced person in the courtroom trying to teach the ADA what the - how they should be trying their case. And you've got an ADA asking questions that could seriously jeopardize an analyst's license. So it is getting pretty concerning to me about how do we equip our analysts to be able to handle some really hostile circumstances in testimony, even though testimony is probably

3% of our request we actually testify in. But right now, they're testifying in violent crimes from 2016, 2017. That isn't even up to the point - 2019 is where we really started the homicide rate ticking up here. So we are years yet from that. This is going to be rough here. It's already broken. It's just going to get rougher.

Matthew Gamette [00:31:25] That analyst, remote analyst that I was talking about, it's a double-edged sword because I can keep people on my books that work in Atlanta and work in California. But the private laboratories have also figured out that, and other laboratories have also figured out that. So I've lost some of my best technical staff to laboratories on the East Coast, and those employees still live here in Idaho. So they're making East Coast salaries here in Idaho, living on a ranch and doing pretty well. So that becomes really difficult for me to compete against as well, where they're not having to move to take a job like they used to.

Peter Stout [00:32:05] So I would add that in New York we've been fairly successful with the remote testimony. And again, it's really up to the courts. That's their jurisdiction. They can make a decision however they please. But with COVID, a lot of people got more used to working remotely and that included the courts. So certainly a lot safer for them. So we actually put up a really remote testimony room, more of a broom closet, to be fair, but it works for us. And while we have less of an appetite for the folks working remote, and some of that has to do with we just have a lot of people in proximity to the lab. We're very flexible with the shifting and whatnot. However, that remote testimony has been, I think, something that we can really build upon that helps us just be more effective, less travel time, that kind of thing, and have more time spent on analysis as opposed to the travel time, which is really wasted costs.

Matthew Gamette [00:33:03] That's an interesting point that Ray just brought up because we're noticing that with our own analysts, and we do have a state law, we worked with the, you know, the courts and whatnot to get remote testimony so our analysts can testify remotely. And, you know, we're a rural state, to be sure, and have a lot of miles between the courthouses. We testify in 44 different counties at any given time. But the other thing to Peter's point about testimony becoming more difficult. Well, it's a lot easier for the defense to get experts to come in from anywhere in the country via remote testimony as well to challenge those analysts on things. So it is becoming a lot more difficult to train an analyst to a competency level and then to be challenged in court at a very high level very quickly in their career.

Peter Stout [00:33:46] Yeah, so we talk about things for students and training and one of the questions we had in here was, you know, do we see students coming out prepared to testify? Oh, heck no. Nowhere even remotely kind of sort of close. It is on many fronts testimony is becoming much more complex. You've got probabilistic genotyping in DNA and now trying to explain probabilistic results to juries that they're not getting it. The lawyers aren't getting it. The judges aren't getting it. Trying to accurately and appropriately explain statistics and what those mean to laypeople in the court that do not have an appreciation for what it means. That is starting to, I mean, you can see this. It's that kind of probabilistic reporting is going to be in all of the disciplines in the coming years. And the courts are not anywhere close to understanding what that means. All of our analysts or even the biology analysts are just barely now starting to truly understand what that stuff means. But students coming out of school? Nowhere even close. It is a significant challenge, I think, for all of us to get new students. Not only is there the practical experience at the bench, but that testimony aspect is getting more aggressive, it is getting more challenging. I actually had a group of students who was through for a tour yesterday.

I had one of them who was in there that was just all excited about the testimony stuff and I was telling her, no testimony is terrifying. If you aren't terrified by testimony, you are doing it wrong. You should be going at this as an enormously intimidating thing because it has gotten really intimidating. You know, I've got 30 years in this and watching some of these testimonies, it's like, crap. I think I'd be worried up there.

Gabby DiEmma [00:35:30] Peter Rae. Matt. This has been an excellent conversation and we still have so much to discuss. Let's pause here and pick this up again next week. 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 forensics field, visit ForensicCOE.org. I'm Gabby DiEmma and this has been another episode of Just Science.

Introduction [00:35:57] Next week, Just Science continues this conversation. Opinions or 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.