Oklahoma Innovations Radio Show

Air Date: July 4-5, 2015

Guests: **Robert Allen**, **Matthew Green**, **Ali Shearier**, **Rachel Wellendorf**, **Tom Gersbeck**, **John Frucci** and **Ron Thrasher**, Oklahoma State University Center for Health Sciences (OSU-CHS) School of Forensic Sciences

>> From the OCAST Radio Network, this is *Oklahoma Innovations*, a weekly science and technology radio magazine, brought to you as a service of OCAST, the Oklahoma Center for the Advancement of Science and Technology. OCAST is the state's only agency whose sole focus is science and technology. The OCAST mission is to identify and fund promising research and technologies that allow Oklahoma to compete in a global market economy from our own backyard. This program features some of Oklahoma's most gifted scientists, inventors, entrepreneurs, manufacturers, educators and business leaders who all have one common goal: developing technology based economic growth for all Oklahomans. Now, here are your hosts Gary Owen and Tessa North.

[Music]

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>> **Gary Owen:** We are in Tulsa this week, home to our northeast Oklahoma affiliate news talk KRMG. And our program this week puts the spotlight on Oklahoma State University's Tulsa Campus, the Health Science Center, or Center for Health Sciences, I should say, and OSU's forensic science programs. We're going to talk first of all with Dr. Robert Allen. This should be an exciting program; everyone's interested in forensics.

>> **Tessa North:** I'm really interested in it. My undergraduate degree in actually in criminology. I always wanted to be...

>> **Gary Owen:** I did not know that.

>> **Tessa North:** ...an FBI investigator, something like that.

>> **Gary Owen:** So, did like CSI and some of these other TV shows inspire you?

>> **Tessa North:** Absolutely.

>> **Gary Owen:** See I think that's what inspired a lot of young people because they get hooked on this stuff. What they don't realize is that the TV shows kind of overdo it, you know, as forensic science isn't just like, you know, that quick.

>> **Tessa North:** Right.

>> **Gary Owen:** So, we're going to learn more about that. Our first guest is Dr. Robert Allen, he's Professor of Forensic Science and... is it okay if we call you Robert?

>> **Robert Allen:** Call me Rob.

>> **Gary Owen:** Okay, Rob, that's the short and good way to do that. You've actually, have you been here since the implementation of this program?

>> **Robert Allen:** I have. I joined the faculty in August of 2001, which was coinciding with the acceptance of our first formal class in forensic science education -- graduate education. I was not -- I was involved as a member of an advisory committee on the program as it was developing and getting ready to launch. At that time, I worked at a genetics institute associated with Children's Medical Center here in Tulsa. So I wasn't really involved in a lot of the planning other than the final stages of getting it ready to launch, but I was here for the very first classes that were offered formally.

>> **Gary Owen:** Give us just kind of an overview for people around the state of Oklahoma outside of Tulsa that may not be familiar with the history of this campus, because this goes back to, what, the '70s, right?

>> **Robert Allen:** It does go back to the '70s. It was a small, independent college of osteopathic medicine initially affiliated with what was then Tulsa Regional Hospital as the hospital in town where osteopathic physicians typically sent their patients and practiced. The school became fairly successful with an emphasis in rural medicine and general family medicine and a deal was struck when the school got to be, I guess, mature enough that it really needed a larger university partner, and OSU was interested in having a medical school, and so the union was formed and we've grown and evolved and I think most succeeded since.

>> **Gary Owen:** And the rest is history. And you're growing again, it looks like.

>> **Robert Allen:** We are growing again, we're adding some additional graduate programs...

>> **Gary Owen:** We noticed a lot of construction going on around there.

>> **Robert Allen:** Yeah, we're putting up, you know, we're becoming a formal campus with formal programs and interest from top-level students in all areas of the state, whether it be medicine, forensics, biomedical science, and we need more space.

>> **Gary Owen:** So, those of you who live in Tulsa who listen to this program, what is going on with that OSU campus? Well, now you kind of know what's going on. So, this program started in 2001 and obviously you've got -- you had mentioned off the air before we started the program, you actually have someone who graduated from this; one of the early graduates now actually has a very prestigious position. Talk about that.

>> **Robert Allen:** Yeah, one of our first graduates is a young lady, who once she graduated, joined the Oklahoma State Bureau of Investigation as a DNA analyst, and in fairly short order worked her way up to become the technical leader for DNA services offered by OSBI for the entire state. So that's, I think, three laboratories.

>> **Gary Owen:** Impressive.

>> **Tessa North:** That's awesome.

>> **Robert Allen:** Yeah, and we have our graduates in the Tulsa Police laboratory downstairs in bench-level positions and in managerial positions. A lot of our graduates stay fairly close to home and serve the people of Oklahoma in their law enforcement support activities, and we're very proud of that.

>> **Tessa North:** That's perfect, that's what we love to hear at OCAST. We like to train them here and keep them here.

>> **Robert Allen:** That's our goal, yes.

>> **Tessa North:** Awesome. So one of the --you know, here at OSU's Center for Health Sciences ... this isn't the only place in the state where one can get an education in forensics. There's also an opportunity in Oklahoma City through UCO, but what you guys are doing here is different. You offer advanced degrees only. Correct?

>> **Robert Allen:** That is correct. We're strictly a master's degree level program, although now we're toying with the notion of adding a doctorate. The field of forensic sciences, because of the CSI effect and the level of sophistication that forensics has achieved is ready for doctoral-level people to bring new technologies online, to help solve crime, in as fast and efficient way as possible, and the one thing about a doctoral-level graduate degree is there's a healthy, healthy dose of research that is a component of that, and the National Academy of Sciences when they reviewed the field of forensic science as a whole and published the report in 2009, indicated that one of the things that was really lacking in many of the forensic disciplines was first-class, quality research. And so, there's been a movement in the general field of forensics to lift up research as a desirable characteristic of the people that are employed.

>> **Tessa North:** What sort of degree tracks do you offer here? You know, improvised explosives, arson, you know, crime scene investigation? What can students study here at OSU?

>> **Robert Allen:** We have specialty tracks which means that you take certain -- everybody takes certain core classes, but then you split off in advanced coursework in your particular discipline. So, forensic biology, which is basically DNA analysis; forensic chemistry, which includes toxicology, trace evidence, also includes some of the explosives work that we do; forensic psychology, which is basically criminal behavior, although Dr. Thrasher will speak to a greater depth about what sorts of career options his graduates have. And then one of our newer tracks, which is death scene investigation. These are basically crime scene people. These are basically crime scene people ...these are basically crime scene people who go to the scene of an unexplained death, they're sort of the eyes and ears of the medical examiner who can't go out to all of the death scenes that may arise in a given day. So these folks have a healthy dose of forensic science with a particular focus on cause of death and securing clues that will help a medical examiner make that determination.

>> **Tessa North:** Very --

>> **Gary Owen:** It's kind of unusual, when we came here, to realize that the building and all of the partnerships that are housed here between the Tulsa crime lab and the coroner's office are all kind of combined in one unit, I mean, this is kind of rare, isn't it?

>> **Robert Allen:** It is. I think we were the second graduate program in the country to have a functional municipal crime laboratory under the same roof as the graduate program, and I think we may be one of the only, if not the only program that has both a crime lab and a medical examiner on the same campus. So it makes for a wonderful critical mass of practitioner and

aspiring practitioner to exchange ideas, you know, our students are doing research in the laboratory every day. Some of that research has already translated to the Tulsa police laboratory as a new and enhanced efficiency in their processing of DNA casework. So it's just a wonderful give-and-take.

>> **Tessa North:** How many students are currently enrolled in the program here?

>> **Robert Allen:** We generally have about 30 to 40 students enrolled at any given time, some on campus, some off campus. We offer degrees to practitioners who don't actually have to come to campus, they can take a lot of their coursework online. And so it may not look all that crowded on this floor right now, we probably have about 10 or 12 students who are resident here doing their research.

>> **Tessa North:** Okay. And what sort of students do you see? I wonder if most of your students are people who, you know, maybe finished up their undergraduate degree and then jumped right into this. Or are you seeing that there's a kind of a large number of sort of non-traditional students, or professional students, professionals who have now become students, anyway.

>> **Robert Allen:** Virtually all of the administrative track people, the people who perhaps will never come to campus, are practitioners, and so they have day jobs. So, they are that individual who is typically been at the bench for five years, 10 years, 15 years, and have decided that they want to get a master's degree, they want to get an advanced degree, either to sharpen their skills, broaden their skillset in terms of what they know about other disciplines that may make them more qualified for managerial spots in the lab or in the administrative hierarchy they find themselves in. The students who come here right after their baccalaureate are young, aspiring forensic scientists. In our death scene tract, to give you an example, we've had two students graduate, one just last week, both of whom are going to medical school and are going to become forensic pathologists, and ultimately, medical examiners.

>> **Tessa North:** Huh.

>> **Gary Owen:** Wow.

>> **Robert Allen:** So, there is a path that makes a certain amount of logical sense given the people's career goals and we try to accommodate as best we can their chosen path while maintaining quality education.

>> **Gary Owen:** Talk about, if you will, the bullet list of new projects or programs at the school.

>> **Robert Allen:** We've got -- the explosives program is probably the one that's growing the fastest.

>> **Gary Owen:** Is that due to terrorism issues, or?

>> **Robert Allen:** Well, yeah, I think so, I think so. Primarily, but you know, the science of explosives have been around since Nobel.

>> **Gary Owen:** Long time, yeah.

>> **Robert Allen:** And so it's a well-established and recognized discipline.

>> **Gary Owen:** I just wondered because some of the cases that have popped up in the last couple of years in the United States, if that has created a more, shall we [inaudible], reason to create these kinds of programs more within our schools?

>> **Robert Allen:** Yeah, and with IEDs and things in the Middle East, the level of sophistication is changing so rapidly in terms of the materials that could be used to construct the device and how it can be detonated, using cell phones, etcetera, that training programs for ATF agents, bomb techs for the Tulsa Police Department are becoming ever more important. Our faculty here, as you'll see when you talk to them, are very experienced individuals in the fields of explosives, but also in the academics of explosives. So, we're here to provide that training and federal agencies, state agencies, are availing themselves of it. So again, it's a productive service to the community and lifts OSU up.

>> **Gary Owen:** I tell you what, coming up in the next segment we'll be visiting with some of the school's students and past students, and we're also going to be talking later in the program with Tom Gersbeck and John Frucci about the IMPEX or improvised explosives training program. It's going to be an interesting discussion when we return on your science radio magazine, *Oklahoma Innovations*.

[Music]

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>> Now back to *Oklahoma Innovations* with Gary and Tessa on the OCAST Radio Network.

[Music]

>> **Gary Owen:** If you've just joined us, we're in Tulsa this week at the OSU campus, The Center for Health Sciences. And we're talking about their forensics program here with Dr. Robert Allen, who's a Professor of Forensic Sciences, and now he's going to introduce us to some of your students. You've got an alumnus, you've got a current student and you've got an intern, right?

>> **Robert Allen:** That's correct. Matthew Green is probably the first person you'll be talking to. He graduated with his master's degree in Forensic Toxicology, two years ago? One year ago. And decided he wanted to go on for a terminal degree, so he's now a graduate student in toxicology, hoping to get his Ph.D.

>> **Gary Owen:** Awesome.

>> **Robert Allen:** Also, here is Ali Shearier, who's a current student in forensic biology, so she's one of my students hoping to be a DNA analyst. She too has aspirations, at least currently, of going on to get a doctorate after she's done with her masters. And Rachel Wellendorf just joined us this summer as an intern. She wants to sort of experience what forensic science is all about.

>> **Gary Owen:** Get exposed to it, that's a great opportunity. Alright, we'll let's turn the mike over to Matthew Green. Matthew, welcome to the program.

>> **Matthew Green:** Thanks for having me.

>> **Tessa North:** So, Matthew, tell us a little bit about what made you want to study forensic toxicology in the first place.

>> **Matthew Green:** Well, it started at a young age. My grandmother tells a story of my brother and I walking around the house with a magnifying glass. And our response to what we were doing was that we were both looking for clues, and so that's kind of where it started. Obviously the TV shows helped, CSI, NCIS, and I've always been good in math and science in high school and undergrad, and that's what led me to forensic science.

>> **Tessa North:** Awesome. So, what do you plan to do once you finish up with your Ph.D.?

>> **Matthew Green:** Once I finish my studies I plan to work in a federal crime lab, whether it's the ATF, the Bureau of Alcohol, Tobacco and Firearms; or the DEA, the Drug Enforcement Administration. I would like to gain some real world experience in forensic science, and that way, my long-term goal is to become a professor.

>> **Gary Owen:** Awesome.

>> **Tessa North:** Cool.

>> **Matthew Green:** And you kind of need some real-life stories to bring validity to your lectures.

>> **Tessa North:** Absolutely.

>> **Gary Owen:** No kidding. Okay, let's move the microphone over to Ali, who's a current student. Ali, tell us -- get right up on the microphone there -- tell us about your experiences and what you love about going to school here.

>> **Ali Shearier:** Well, what I love about going to school here compared to some other programs I looked at is it's just so hands-on once you get on campus. You're really getting to know the other students in the program and we're getting, you know, life examples of what happens in the crime labs. Though my specialty is biology, I have done criminalistics classes and will have to take one more, you know, that we're actually walking through a crime scene and doing stuff that crime scene techs would be doing. So it really helps give me a full picture of what other people in forensics are doing, not just what a DNA analyst is doing, you know, in the lab, typically by ourselves.

>> **Tessa North:** That's so awesome, and I think, you know, Matthew mentioned that you know, the fact that you guys have -- are getting instruction from professors who have real-life experience and you have access to pretty cool facilities here with the crime labs and the medical examiner's office. I think that would make a really strong educational background for you.

>> **Ali Shearier:** Yes, it does.

>> **Tessa North:** That's very exciting. So, you are working on your master's degree right now, is that correct?

>> **Ali Shearier:** Correct.

>> **Tessa North:** What do you -- and you plan to go on to your Ph.D.?

>> **Ali Shearier:** Yes.

>> **Tessa North:** Very cool. So, would you say you're at OSU her for a while?

>> **Ali Shearier:** I will be applying to OSU.

>> **Tessa North:** Very good. And when will you finish up with your master's?

>> **Ali Shearier:** I'll finish in May 2016.

>> **Tessa North:** That is so soon.

>> **Gary Owen:** What do you hope to gain about -- what do you hope your long-term goal or where do you envision yourself to be 10 years from now?

>> **Ali Shearier:** I'm 23, I would say that's pretty hard to say out to 33.

>> **Gary Owen:** ...somebody say your dream job in forensics, what would that be?

>> **Ali Shearier:** I mean, my real interest is human identification. So, I mean, I've done a little bit of my own research, not necessarily, you know, biological research, but on, you know, lost family members and what goes into identifying them and talking to their family that is still alive and kind of helping them with what happened to their family member, whether that, you know, be murder, or an accidental death. So my hope is, you know, my doctorate will help me in forensics genetics and then move on to identifying human remains, specifically skeletal remains.

>> **Gary Owen:** Awesome. Let's move on to Rachel Wellendorf. Rachel, you're doing a summer internship, and you're actually studying -- you just came from Stillwater, I guess, because you've got, you're studying up there too. What's your focus there?

>> **Rachel Wellendorf:** Yes, and my main focus there is biology and then my minors are microbiology and chemistry.

>> **Gary Owen:** So, your internship program here at the forensics program, tell us about what attracted you to that.

>> **Rachel Wellendorf:** Just getting more lab experience. I've interned, or just helped out at a lab up in Stillwater and I just wasn't very well funded, and so I didn't get as much experience as I wanted and so being here I, you know, working on the capillary electrophoresis, or PCR and that's stuff I learn about in my classes. So it's cool to get real-life experience with stuff I learned about in class, so.

>> **Gary Owen:** Do you find this kind of opened your eyes a little bit, to being very cool, what you're studying here?

>> **Rachel Wellendorf:** Oh yeah.

>> **Gary Owen:** Yeah?

>> **Rachel Wellendorf:** Yeah. Definitely.

>> **Gary Owen:** So, has it kind of changed your focus a little bit, from where you started?

>> **Rachel Wellendorf:** Yeah, I mean it's definitely making me consider working in a DNA lab for, you know, my career, but I'm just still kind of feeling out what I like and stuff, but I definitely like being in the DNA lab here.

>> **Tessa North:** So, once you finish up at Stillwater, do you think that you might be interested in pursuing a degree, a graduate degree here at OSU or maybe, you know, anywhere else but in a forensics field?

>> **Rachel Wellendorf:** Yeah, I mean, being here and working so closely with Dr. Allen and his grad students, it really makes you kind of think about, or I can definitely just see myself here in the forensic sciences path. I never really thought about it before until I was here, but now, definitely being here and getting that exposure, I definitely like it and I can see myself doing that.

>> **Tessa North:** Very cool.

>> **Gary Owen:** Matthew, you have a responsibility that I understand is really good for a student who just recently graduated. Tell us about that; I've got about 30 seconds.

>> **Matthew Green:** Sure. I'm employed here full-time as a research assistant and one of my main goals is to manage client laboratories that are performing pain management testings for their patients. They want to make sure that their patients are taking the right medication and they're not taking something they shouldn't be, and so we do that sort of drug testing here at the forensic toxicology and trace laboratory.

>> **Gary Owen:** Awesome. Great conversation with students here at The Center for Health Sciences and the forensics program at the Tulsa campus for OSU. We'll be back with more on *Oklahoma Innovations*. Coming up we're going to be talking about interesting forensics in the explosives and arson arena, when we return on *Oklahoma Innovations*.

[Music]

>> From Oklahoma City to Tulsa, Woodward to Lawton, this is your science and technology radio magazine, *Oklahoma Innovations* on the OCAST radio network.

[Music]

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[Music]

>> **Gary Owen:** We are talking about forensics education programs at the OSU Tulsa campus Center for Health Sciences and so far, this has been a very interesting program.

>> **Tessa North:** Very cool, yeah.

>> **Gary Owen:** We did not know this was going on in Tulsa. And I'll bet Tulsa didn't know about it [inaudible] so it's very interesting. Right now, we have on the microphone two guests. We have John Frucci, who is Director of Training for the IMPEX, which we're going to find out what that means here momentarily, and Tom Gersbeck, who is also with the program. These two guys are going to share with us what they do at OSU, and it's going to be fascinating listening, because there have been several news stories this week, as we know, related to explosives crime, and we're going to find out what these guys do and the wonderful opportunities that students have to learn about explosives technology. Alright, so gentlemen, welcome to the program. John, I'll start with you. You're Director of Training for the IMPEX, so what does IMPEX mean?

>> **John Frucci:** IMPEX stands for improvised explosives and we shortened the name just to cover for the Center for Improvised Explosives now, and it deals with a lot of the homemade explosives, where people can buy things over the counter and...

>> **Gary Owen:** Learn how to do it on the internet.

>> **John Frucci:** Correct.

>> **Gary Owen:** From pipe bombs to sophisticated bombs.

>> **John Frucci:** Correct.

>> **Gary Owen:** When we talk about -- what I want to get into specifics, but our audience knows about a lot about the stories that have happened over the last year or two in the United States alone, leave alone what goes on overseas. I assume that that has increased the interest among local state and federal agencies.

>> **John Frucci:** It has. The education piece is definitely very important as we go to court proceedings, because besides the practical knowledge, the education, or masters-level education piece is extremely important for the experts in the field to have. And that's what we're providing here at IMPEX and the AEI program.

>> **Gary Owen:** Tom, tell us about your part of the program.

>> **Tom Gersbeck:** The primary piece that I focus on is military ordinance identification, functionality, how they can be used as weapons if obtained illegally, how some of the practice munitions that you'll see at gun shows and such can be modified in order to be used in criminal activities, and what law enforcement and bomb technicians and such can do about that. And then also, the battlefield-type forensics. That's where my area of expertise is.

>> **Gary Owen:** What's your background?

>> **Tom Gersbeck:** Retired marine, explosive warrants disposal officer. I retired in 2001 and then I served at the Federal Air Marshal Service Explosive Division for seven years. And then went to Afghanistan, did three tours in Afghanistan, one in Iraq, working in forensic labs and program manager at counter-ID mobile training teams, and some other things. I've done some work in African -- in Cambodia, also in the field doing this type of work.

>> **Gary Owen:** Impressive.

>> **Tessa North:** So, that's another great example of the awesome resources that are available here for both students and the community who are interested in utilizing the services of the forensic department. You're getting services from people who have been in the field and have done this for years.

>> **Gary Owen:** Yeah, tremendous experience there.

>> **Tessa North:** So, one of the things that you touched on already was that, you know, the center exists to educate. But there are also -- you guys also do other things, such as testing and training and research. Can you talk a little bit about some of those aspects?

>> **Tom Gersbeck:** Sure, on the testing front I was a bomb technician from New Jersey -- I retired -- and I'm, when we get equipment out in the field, sometimes it hasn't been tested as much as it needs to be tested, and the testing usually comes from the manufacturer, not hands-on. So we do objective tests on equipment that comes out and try to provide that to either the military, the law enforcement community, whether it be state, local and federal, about what the product is, whether it works or not and whether they should, it's a tool that they could use.

>> **Gary Owen:** It's my understanding, when this program launched that there the school only thought there would only be a few students entering this program. It's been an overwhelming response from what I understand, is that right?

>> **Tom Gersbeck:** Yeah. We were talking about that the other day; we are -- we had a one-, three-, five-year expectation, and we thought it would be three or five, no we're getting close to 80 or 100 students.

>> **Gary Owen:** Wow.

>> **Tessa North:** Oh, wow. That's awesome.

>> **Tom Gersbeck:** Well, in the past, arson and explosive-related investigation was always considered the "on the job" training aspect, not the formal education. You would get an education in chemistry and you would learn about that when you're in the field or at the lab.

>> **Gary Owen:** Yeah.

>> **Tom Gersbeck:** You see a lot of one-week or two-week-long tech crash courses. Some are lengthy for military MOSs or public safety bomb technicians. They're a little more extensive, but

they're still not degree-seeking programs. They were considered technical type training. So, we're really the first ones offering that in a formal education, but also at an advanced level. So, that you end up with a master's degree in forensics with an area specialty in arson and explosives.

>> **Tessa North:** And that sounds like something that is really going to be of benefit to everybody because, as we've already touched on, you know, the technology in these improvised explosive devices is just a really, you know, it's becoming very sophisticated and it will continue to do so.

>> **John Frucci:** The main goal that we want to do here at the center is to prepare the students that are already in the field, which are, like I said, the federal agents, the local bomb techs. How to package the evidence, how to, you know, on the DNA side, get trace DNA, trace explosives. So, everybody kind of understands what they need to do when they get to a scene, because as we know, the scenes are happening more often than we like them to.

>> **Gary Owen:** Which has created the increase, do you think, in the student interest?

>> **Tom Gersbeck:** Yes and no. What John just spoke about is at the scene, and that's not where everything ends. It continues on after that. So, there's the, okay, now you have the information, what do you do with it? And that brings in the intelligence aspects, whether it's law enforcement or military, federal or state or local. Intelligence has -- everything plays a part and it comes around full circle, whether it's for prosecution or you're trying to attack a network, look at it like a drug-type investigation. If they can't get the drugs in, the drugs don't hit the streets. Well, if the bombers, or the people trying to do this type of crime can't get the things they need to do it, then they can't do it.

>> **Gary Owen:** You know, I think listening to your commentary, most of the laypeople I would assume that the FBI and NCIS organizations like that would already have training programs like this, but they're coming here for advanced training. Is that what this is about do you think, for more intensive training?

>> **John Frucci:** They're coming more for the education aspect, to have the degree behind them when they go to testify. It gives them more credibility. The FBI, ATF, NCIS -- all those programs are outstanding with their training. All those agencies are outstanding with their training, but we've offer the education piece so they could have not only the status of being with one of those agencies, but also have the degree behind it.

>> **Tessa North:** So, one of the things we've learned so far throughout this show is that the forensics department here is really interesting in that it offers opportunities for students and it also offers opportunities for both public and private sector as well. And so to that end, do you guys do some testing. So if somebody were to, you know, from the community, bring in, you know, some sort of device that they had found, you know, after it had been defused or whatever, is that something that you guys might test, or what sort of testing is involved here?

>> **John Frucci:** It's more -- that that type of criminal investigation, those agencies handle that, but we'll do different, like I said, different types of testing on equipment, we'll try to come up with new and innovative tools to help with the community. Basically, what we're trying to do is put the safest equipment and information out there. Our main goal is to keep the people involved in this field safe. So the research aspect, we come in at all different sides. There's research on arson, with methamphetamine, being able to get trace evidence, we also do destruction of the

methamphetamine labs here, how to come up with the device, so there's all different aspects that we try to touch on.

>> **Gary Owen:** Well, I am impressed you haven't blown the roof off this building yet. So -- no, I'm kidding. We know that there are containers that, and provisions taken for testing, and I'm assuming you do some of this even off campus, right? Don't you have fields and places where you can do this, some of this testing?

>> **John Frucci:** We do. We utilize several areas, ranges that we work on and we also utilize some of the agencies that we work with, their ranges. We are in the process of acquiring our own range to accomplish these goals.

>> **Gary Owen:** That's amazing. I would be fascinated to talk to people in the program because of their experiences, what they've seen. Obviously, the legal aspects -- we don't even think about them, which -- we always think about the incident, the investigation of the incident. We don't think about the court side, you know, when these guys have to come to court and testify, as you mentioned earlier, and be credible witnesses for prosecutions, so it's amazing. Coming up, and we want to thank you guys, by the way, for being on the program -- interesting stuff. Coming up in the next segment we're going to be talking with Dr. Ron Thrasher, he's Professor of Forensic Sciences, with a focus on psychology, and of course, that's the base for a lot of crime. Right? So we'll talk more about that when we return on *Oklahoma Innovations*.

[Music]

>> Gary and Tessa will be back after the break with more interesting conversation. This is *Oklahoma Innovations* on the OCAST radio network.

>> As a police officer, one of the most dangerous parts of my job is arriving on a scene where an armed suspect has barricaded himself where we suspect some type of booby trap. We're most vulnerable when we don't know what kind of explosives or weapons are on the other side. It can be deadly.

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[Music]

>> **Gary Owen:** We are talking about forensic sciences at the Central Health Science Center at the campus of OSU in Tulsa, and this time around, we're going to get into the psychology aspect of forensic sciences. Dr. Ron Thrasher is our guest and welcome to the program.

>> **Ron Thrasher:** Glad to be here.

>> **Gary Owen:** Tell us a little about you. Now, you're a native Oklahoman, I understand, is that right?

>> **Ron Thrasher:** I am, born and bred Oklahoman, born around the Claremore area. I spent a few years outside of Oklahoma and glad to return.

>> **Gary Owen:** Tell us a little about your background and how you came to OSU.

>> **Ron Thrasher:** Well, OSU is where I went to undergraduate.

>> **Gary Owen:** Really?

>> **Ron Thrasher:** I did my graduate work at OSU and then got involved in law enforcement. Was one of these people that got five hours from finishing my undergraduate program and then went into law enforcement. One of my career goals in law enforcement was to attend the FBI National Academy, but found myself as a college dropout. So, the FBI, I owe a great debt to. They motivated me to return to school. While at the academy, I obtained a -- I finished my undergraduate degree, attended the academy, then attended -- I was able to obtain a little criminal justice diploma program at the University of Virginia. Came back and went to OSU for a master's, and then later a Ph.D.

>> **Gary Owen:** So, tell us about the program here, because you obviously head up this division of the program and specialize in forensic psychology, which you know, people think about Criminal Minds, the television with Criminal Minds. So that kind of, I guess, is kind of in the area which you train students?

>> **Tessa North:** Yes, educate us.

>> **Gary Owen:** What is a profiler?

>> **Tessa North:** What exactly is criminal -- or forensics psychology?

>> **Ron Thrasher:** Well, forensic psychology is probably one of the broader fields of forensic sciences. It includes such areas as psychology of crime and delinquency, legal psychology, victimology is a huge aspect of forensic psychology, correctional psychology, and then police psychology, which is the area you're talking about. What we offer that's kind of unique in the terms of criminal behavioral analysis, or criminal profiling, if you will, is that what we do is, for example, when you to go to our crime scene we believe that, like Dr. Allen or Dr. Wagner, which is to say that every touch leaves a trace, where there be trace DNA. We also believe that every behavior leaves a trace as well, and we look at that crime scene and we want to work it backwards. We want to -- we believe that personality reflects behavior and behavior reflects personality. So, what we approach -- it's a little unique -- is that when you go to that crime scene, not only are you going to be collecting things like hairs and fibers and footprints and fingerprints and DNA, but you're also going to be collecting just as tangible evidence like hate, anger, insecurity, lust, sexuality. And we want to analyze those aspects and those pieces of evidence along with the physical evidence to get a better picture of our criminal offender and to assist in the investigation and so, from the Criminal Minds perspective, that's what we would offer here at OSU.

>> **Gary Owen:** So, basically you're providing training on behavioral profiling, right?

>> **Ron Thrasher:** Well, we call it behavioral analysis, but yes, criminal profiling.

>> **Tessa North:** I'm super interested in this; this is right up my alley. Like I said, my degree is in criminology. So, what does one do, once they end up, once they graduate? I guess, first of all,

when you graduate with a master's in forensic science do you have -- can you select a specialty in forensic psychology, or is this just a track of courses that students will take?

>> **Ron Thrasher:** No, this will be a specialty within the master's degree in forensic psychology and then you can also specialize, for example, in victimology, or victim services or things like that.

>> **Tessa North:** Okay. So, when somebody does obtain that degree with the specialization in forensic psychology, what sort of jobs do they typically find themselves in?

>> **Ron Thrasher:** Actually, we have a broader area of potential employment in forensic psychology than in many of the other forensic fields. For example, Dr. Allen's specialty in forensic biology and DNA; his students graduated and they know exactly what they're going to do, they know exactly how they're going to do it and their challenge is where am I going to do it at?

>> **Tessa North:** Right.

>> **Ron Thrasher:** You know, in forensic psychology, we're more able to tailor a program because of the five specialty areas. So for example, we graduated a student last year, and her interest was in therapeutic courts. We know that in Oklahoma in the area of correctional psychology that if we spend about $25,000 putting someone in prison, particularly they have a related disorder whether it be a drug addiction or mental illness or something like that. We put them in prison for a long time, usually because we don't like what they did, and when they come back, depending on their category, as many as 80% of them return to prison and we start that process again. What we found in Oklahoma, and our first drug court was in Oklahoma in Stillwater, what we found in Oklahoma was that if we sentence these people to treatment, most of those programs are only 18 months long, they cost us $5,000 a year to administer, and only about 20% of those people recidivate. Well, we have a really good way to evaluate drug courts, because we can drug test people. But now we have a new phenomenon called mental health courts. How do you mandate good mental health? And how do you even mandate, or how do you even evaluate those programs? This was the focus of a recent graduate. So she studied the mental health courts in Oklahoma, developed a methodology to evaluate those, went to Anaheim -- we obtained her an internship with Tulsa County mental health court. Took her to Anaheim last summer where she presented her research. The Tulsa mental health court offered her a job upon graduation. As a result of her presentation in Anaheim, a state drug court offered her a job as an executive director and she turned both of those down and she is now enjoying a very healthy stipend in a Ph.D. program at OSU Stillwater.

>> **Tessa North:** Very cool.

>> **Ron Thrasher:** So there's lots of opportunities, victim services, every DA has a victim's coordinator -- all kinds of jobs.

>> **Gary Owen:** You talk about doing crime and delinquency psychology. I know it's a big interest because of shows like Criminal Minds and whatnot, and people today trying to wrap their hands around the behavior of criminals and why they do the things they do. I would think in your arena of education you get that stimuli from students, their interest is trying to study criminology in the criminology arena trying to study why criminal do what they do. I mean, I would think that would be a huge interest in your field.

>> **Ron Thrasher:** There is, and that, quite honestly, is the definition of forensic psychology. Forensics is nothing other than the relationship between science and law. Forensic psychology would then specialize that or narrow that to the relationship between psychology or behavioral analysis, behavioral sciences and the law.

>> **Tessa North:** I'm just wondering, because of shows like Criminal Minds, as we mentioned, is your program one of the more popular programs here within the department?

>> **Ron Thrasher:** Well, I would hope to think so.

>> **Tessa North:** I think it sounds amazing.

>> **Ron Thrasher:** I can certainly share that it's the program that certainly holds my greatest interest.

>> **Tessa North:** Sure. I think it sounds fascinating, all this stuff is so interesting to me. You know, you guys do a lot of research on behavior of criminals. Are you looking at actual case studies, are the students looking at case studies for -- you ultimately know what the outcome is? Are they, these are all theoretical types of studies they'll be doing throughout the coursework?

>> **Ron Thrasher:** Yes, we look at both. We -- one of our first introductory courses is, of course is criminal behavior analysis, and the first half of that course we what we call "-isms" and "-obias," you know, so phobias and -isms within psychology. And then we follow that the first night in every class, the first half of every class we start off with that and we end with a case study of a famous, usually a sexual serial murderer, you know, a Ted Bundy or a John Wayne Gacy or someone like that -- Ed Kemper. And then the second half of the semester what we do is we actually talk about the most widely used typology of violent sexual murders that's used by law enforcement with a theoretical base, and then the first half of the course we present a typology and the second half of the course we bring in an actual case that follows that typology. And we bring in the entire thing. We bring in a crime scene video, we'll bring in the interview tapes, interrogation tapes, you know, we'll bring in the autopsy reports, bring in the whole nine yards and present a case study to represent that, and the whole program is designed like that. It's a very applied program, but it has a theoretical base, so that even though you may study a particular case, you have that theoretical background to base that on, where you can take that out and apply it to a wide number of situations.

>> **Tessa North:** Right. And this sounds like it's not a program for the faint of heart, if you're going to be looking at real cases and crime scene videos and things like that.

>> We do, and regrettably, sometimes that draws some students as well.

>> **Tessa North:** I can imagine, yes.

>> **Gary Owen:** What do you find challenging for most students going through this program because, I mean, I'm sure a part of this does affect their own psychological well-being, because they're seeing and involved in a lot of ill-fated evidence and background. Let's talk about that.

>> **Ron Thrasher:** Absolutely.

>> **Gary Owen:** It's different than regular psychology or psychiatry.

>> **Ron Thrasher:** And different from sociology and social psychology, but we also get students from other disciplines, like anemology, and anthropology, and archeology, and we get a wide

range of students that have a particular interest in this area. But we talk about stress, we talk about -- we have students that explore and research the phenomena of police suicide.

>> **Gary Owen:** Interesting.

>> **Ron Thrasher:** And some studies have actually indicated that their own police officers are seven times more likely to take their own life during their career than to be killed by an unknown assailant. So we talk about de-stressing, we talk about coping techniques, we talk about all those issues as well.

>> **Gary Owen:** You've been phenomenal. This is a great program, the entire program, and we've learned a lot here. Tessa, and you being a criminologist...

>> **Tessa North:** I'm thinking I might need to go back to school.

>> **Gary Owen:** Well, okay, all right.

>> **Tessa North:** Really interesting to me.

>> **Gary Owen:** We may lose you, all right. Well, listen, thanks to all of our guests this weekend, hats off to OSU Tulsa campus and the Center for Health Sciences, it's been a great experience for us, and we'll talk to you next week on another edition of *Oklahoma Innovations*. Have a great week.

[Music]

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