

Podcast Transcript

UNMC Chancellor Jeffrey P. Gold, MD: Hello, I'm Dr. Jeff Gold, and welcome to this episode of "Heart to Heart." My guest today is Melissa Helligso. Melissa is the manager and the technical lead of the Human DNA Identification Lab here at UNMC. She and her team work closely with law enforcement agencies and have recently received important news that our Human DNA Identification Lab, under the direction of Dr. Jesse Cox, has earned full accreditation to perform forensic investigative genetic genealogy -- and we'll unpack that in just a minute -- which will now allow this lab to assist in cold case investigations and in many other areas.

Melissa, I have a lot of questions to ask you as we unpack those fancy words together, but why don't we start off with a question that our audience loves to hear answers to -- which is, how did you get interested in this career, and at what point did you sort of wake up and say, 'This is what I want to do?' Because there are a lot of students and even people who are midcareer who are thinking about what their futures may be, and they're excited to learn how other people made decisions.

Melissa Helligso: Sure. I started here at the University of Nebraska Medical Center in 1998, and I was in the Molecular Diagnostics Laboratory, which just means all the testing is done with DNA. They had a forensic DNA lab. I did not start in there. But then the show "CSI: Las Vegas" started. I was home with my first child, I was watching some TV, and I thought the intersection of law and science is just really exciting.

Dr. Gold: And the rest is history.

Helligso: Right.

Dr. Gold: So, talk to us a little bit about what your lab does, and then we'll talk about the accreditation.

Helligso: In general. We are brought items of evidence and we're asked to try to identify areas....

Dr. Gold: Typically, by law enforcement. Is that how that works?

Helligso: As an independent lab, we're able to do testing for the prosecution or the defense, but I would say in most cases, it is for the prosecution. So, generally speaking, by law enforcement, yes. But we're brought items of evidence, and we're asked to try to find areas that may contain human DNA. If we develop a profile, we'll compare it against any known individuals associated with the case, write a report, and then we testify if necessary.

Dr. Gold: And then there are, as I understand it, large registries that some of these DNA profiles can be compared to. Is that right?

Helligso: With our current testing, in which we test STRs or short tandem repeats, that has a database called CODIS, which is the Combined DNA Index System, run by the FBI.

Dr. Gold: And how extensive is CODIS?

Helligso: It has millions of profiles. You can upload evidentiary profiles, so unknown profiles from pieces of evidence, but also convicted offenders are entered into the database as well.

Dr. Gold: So, really fascinating. So, let's talk about that. I'm sure you can't give us details about ongoing investigations, at least I hope you can't, but perhaps you might give us an example of one or two of the more interesting things that you've seen in your career.

Helligso: I participated in a couple of more high-profile cases. These days, since I have so many administrative duties, I tend to do only homicides.

Dr. Gold: And you said earlier that you not only do all of the technical work, but you actually get to testify.

Helligso: Yes.

Dr. Gold: What's that like?

Helligso: At first it was very intimidating, and it made me very nervous. But I would say over time, it's become kind of one of the more challenging aspects, and it's enjoyable just because you have to stay on your toes.

Dr. Gold: And it must be very satisfying to be able to add science, to come back to your CSI example, of really living the interaction between the science and law enforcement and our judiciary system.

Helligso: Yes, it takes a lot of... This field is very challenging, and it is changing all the time. So, one thing I really like about it is, it is never boring, and I also get to interact with many different kinds of people. And so sometimes I'm testifying, but other times I'm educating. And I enjoy both of those.

Dr. Gold: I believe at one time there was some questions as to how reliable this type of evidence was. And now would you say it's pretty well accepted, or do you still have to educate juries and communities and our judicial system?

Helligso: I think it is very well accepted. DNA provides a way to identify a person in conjunction with a statistic to tell you how rare that profile is. So, that's different than, say, fingerprints, because fingerprints doesn't provide a statistical value. So, that helps juries to determine the weight of that evidence and the confidence in that match. But I would say I still have to educate, because most people, once they're out of school, and if they're not in the science field, they really are not keeping up on things like DNA.

Dr. Gold: But I'm sure that that educational process serves many purposes and it's not just the evidentiary components of it, but it really creates an awareness of the precision, if you will, of the process.

Helligso: Yes.

Dr. Gold: Very exciting. So, if you were talking to a group of young women and young men, and they were thinking about careers, and they had been a serial watcher of "CSI," what advice would you give them on how to pursue that career?

Helligso: For me, I started with an undergraduate degree in medical technology here at the university. I really feel that that gave me a really solid base for being extremely careful in the laboratory and to make sure that I'm not contaminating things and to understand the importance of quality control and those sorts of things. So, for me, that was a great start, and that is how our lab started here at UNMC. Since then, I would say that many people in my laboratory, including myself, have master's degrees as well. So, most of us got our master's degree from Nebraska Wesleyan in the forensic science program there. So, I would say you would need to definitely get your education, and then if you're able to intern somewhere or even shadow, we have shadows every once in a while. I think it's important to spend some time in a field that you think you're interested in, just to make sure that you are interested in that field. And the DNA part is very tedious, but it's also very rewarding. So, it takes a special person, I think, to work in the DNA lab.

Dr. Gold: Well, clearly, you're a special person, and we're really proud of you and we're really proud of this accreditation, and thank you for being with us today. But most importantly, thank you for what you do, and it's just so important to be a phenomenal representative of the med center providing this service.

Helligso: Thank you.

Dr. Gold: Thank you for turning into this episode of Health Care Heart to Heart with Dr. Jeff Gold. And until