

### Season 3- Episode 9

**Derrick Kyle:** Welcome to the Torres Talks Trade podcast. My name is Derrick Kyle and I'm a Senior Associate at Torres Trade Law, and today Torres Talks Tracing- Origin Tracing to be exact. My guest today is Dr. Brett Tipple, President and Chief Scientist at FloraTrace, where he advances forensic chemistry approaches to verify the origin and authenticity of natural materials. Brett is recognized as a substantive expert on isotope analysis and geographic origin verification. During his more than 20-year career, Brett has supported law enforcement in solving cold cases, helped identify and repatriate U.S. military service members remains, and combated mislabeling and claimed origin fraud in the private sector. With FloraTrace, Brett supports importers with supply chain due diligence and documentation of geographic origin compliance using leading-edge authentication methods. Thanks for joining us today on Torres Talks Trade, Brett.

**Brett Tipple:** Hey, thanks, Derrick. I'm happy to be here. Appreciate it.

**Derrick Kyle:** You received your PhD from Yale, I understand, and your academic credits include over 80 peer-reviewed scientific publications. You are what I would call a capital S scientist. If you wouldn't mind, please describe your background in a bit more detail how this led you to founding FloraTrace.

**Brett Tipple:** Yeah, I appreciate that. Yeah, I'm a bit of a recovering academic, as I say. I finished my PhD in 2009 and if you remember, that was probably not the greatest time to enter the job market. I jumped an opportunity to join a spin-off laboratory that was connected to the University of Utah. That lab was led by two really distinguished scientists. I was really excited to join that team. They're both National Academy members. There we were doing some interesting analytical work where we were developing methods to establish where materials originated and how they were grown. Initially we were doing a lot of work with the federal government: the Department of Defense, Department of Justice, as well as some work around food and beverage authenticity and origin. Kind of as you mentioned there in the intro, I worked on everything from helping provide evidence for cold cases. Where was this individual? Where were they before they were deceased? All the way up to sort of food fraud cases around the origin of products. We were developing these tools and data science methods where we could surmise where in the world something came from without any other information. Just by measuring a few chemical characteristics we were able to sort of put some regions on a map where something can come from. While doing my academic and that governmental work, I saw that there was a need for the private sector to have capacity to do these sorts of testing. That's sort of how I kind of rolled into my current position and that's

sort of what FloraTrace is all about is to offer through these cutting-edge forensic science tools to the private sector and importers in general.

**Derrick Kyle:** It's an interesting company. I've looked at the website. We've talked a bit about it. Before we get too far into the usefulness of FloraTrace in international trade, if we could take a step back and if you're able to describe in layman's terms the science behind FloraTrace.

**Brett Tipple:** Yeah. One of the main types of science we use is isotopic testing. Kind of at its core, isotopic testing is an analytical chemical approach that measures really tiny differences in the chemical makeups of materials. Isotopes, the types of isotopes that we generally deal with are stable isotopes. They're around us naturally. They're not sort of the radiogenic isotopes you heard about when there's an issue with a nuclear power plant or a nuclear bomb or something like that. These isotopes are totally natural. They are stable. They're in the environment around us. What isotopes are essentially different flavors of elements. You can kind of think of isotopes as vanilla ice cream, for example. When you go to the store there's French vanilla, there's vanilla bean, there's old-fashioned vanilla. They're all essentially the same thing. They all taste good and they go with your apple pie but there's subtle differences in the flavors of those ice creams. Isotopes are sort of those subtle differences and that subtle difference is the mass of the element. What FloraTrace uses that difference in mass for is we identify these patterns. These different patterns in the isotope ratios of those materials and through that we can identify unique characteristics of those isotope patterns related to where something was grown or produced. We call those isotope or origin fingerprints. We use those origin fingerprints to sort of create a foundation, a database. This is what the world looks like in sort of isotopes. Then we can take an unknown material, a sample or specimen, and we can look at that specimen chemically and we can see what our origin fingerprints are in that specimen. Then we can take that information, sort of put on the map where that unknown sample could have been from.

**Derrick Kyle:** I understand different locations around the entire world have subtly different isotopes fingerprints because of the isotopes, and this is because the isotopes have different masses. Is that essentially correct?

**Brett Tipple:** Yes, exactly.

**Derrick Kyle:** They have origin fingerprints. Something you said sounded very interesting to me. You can essentially create a map of the world based on these different isotopes in different regions. Just how specific does that get? Is it like every, and what causes a difference to the extent we know?

**Brett Tipple:** Yeah. It can be very specific for some materials. It depends on sort of how you define and build your origin fingerprint. Or it can be quite broad, large geographic areas, countries, regions in there. That's one of the things that we actually do. That sort of technique is called an isoscape, so mapping the world associated with those isotopes. You can kind of think of it like a topographic profile of elevation. There's sort of a profile isotope pattern around the world. We use that type of information to help us assess where something was coming from. Why do these isotope patterns exist in materials? It could be anything from if you're looking at it like a geologic material that has to do with how that geologic material was produced in its history, sort of the geologic history of that environment where that that material was formed all the way to like a plant. A cotton plant growing in a field, is that cotton plant being irrigated with water or is it rain-fed? Is it being provided different types of fertilizer? Those all provide information that's incorporated into the isotope profile of that material. Again, this is just embedded in the material. There's nothing that's labeled on it or added to it. It's just sort of naturally incorporated into the material.

**Derrick Kyle:** So a number of factors. I think the cotton example was great with whether its rain-fed or irrigated. It's the material itself, but it's other things that go into it. That's very interesting to me and I'm already starting to understand, but I'd like to hear you describe how this origin fingerprinting, this isotopic testing, and FloraTrace more holistically is useful for importers and other companies that need to prove the origin of their product.

**Brett Tipple:** Yeah, exactly. It comes right down to like proving the origin of the product. For importers and international trade, we do a couple of different things for sort of that that sector of our business. One of them is to comply with trade laws like the Uyghur Forced Labor Prevention Act, which is I'm sure your listeners are very aware of what the UFLPA is and that requires that knowledge that material is coming from where your paperwork claims it's coming from making sure that there's no cotton or whatever it is that's grown in the Uyghur Xinjiang Autonomous Region of China. Another sort of use case is supplier reconnaissance. That's one thing that we do quite a bit of, is help retailers and brands that are procuring materials overseas to help them basically check their suppliers and make sure their suppliers are sourcing where they say they are. Where their documents say they are. It's part of the risk management approach. Then we have other clients, not so much in the international trade space, but that are interested in protecting their brand reputation. Many of these brands are built on ethical sourcing. It's very expensive to build that and they want to make sure they protect their image and their reputation. Sourcing materials from the places they're saying they're sourcing, making sure that their carbon impacts are what they say they are, those sorts of applications. Then sort of the fourth is competitive intelligence, working with a brand to go out and look at what their competitors are doing, where they're sourcing

their materials from. Those are sort of the four areas that we find clients use this technology for.

**Derrick Kyle:** When you're talking about supplier reconnaissance, one thing I thought of and I'm not sure if it's used for this, but like what's the term? There's champagne and parmesan and all these things that it's like protected domain something.

**Brett Tipple:** Yeah, I know what you're saying there. The geographic indicator, there's protections around that exactly.

**Derrick Kyle:** I could see the use case there. Those are the examples I always hear. But I know there's tons of food products that that have those. Champagne's always the example and Parmesan, but all sorts of cheeses and wines as well as oils. I know, I think Europe has a very specific set of laws for that but that seems like a use case as well, because it's going to have its own fingerprint from the isotopes, correct?

**Brett Tipple:** Exactly. Here in the States, you think of wine appellations and those appellations like here, I'm in Southern California, understanding these regions of Northern California, these various valleys, Napa Valley. Then there's little sectors within that valley that there's a claim of origin that goes with that. They tend to support that with a lot of documentation that goes with it because that's a very unique characteristic. People pay more money for whatever that profile is that they're looking for. The same thing with protecting marks like Wisconsin cheese or Vidalia onions, those sorts of things. Anything that there's that label associated with origin, this is where this tool can help.

**Derrick Kyle:** Very interesting. It tends to come back to food for me. I know it's other ones, but those are easy for me to think of. My understanding [is] you started FloraTrace back in 2020. You mentioned it before, the Uyghur Forced Labor Prevention Act became effective in in 2022. Just a reset a bit for listeners. Many will know, but the UFLPA, the Uyghur Forced Labor Prevention Act, it creates a rebuttable presumption that imports from the Xinjiang Uyghur Autonomous Region of China – or from specific entities that are on a list of entities called the UFLPA Entity List – the rebuttable presumption is that those goods are produced with forced labor. And then an importer may overcome, it's a rebuttable presumption. The importer may overcome that presumption by providing clear and convincing evidence that the goods were not produced with forced labor. Would it be accurate to say that the UFLPA increased the demand for a product like FloraTrace?

**Brett Tipple:** Yeah, absolutely. Like you mentioned, we were kind of formed in 2020. This was when some of the initial bills were being introduced that sort of were starting to put this legislation together. There were some WROs, withhold release orders, associated with some

of the companies that ended up going on to that that entity list that you described there. We were, initially our company was formed to sort of support a class action lawsuit around the claimed false designation of origin of Kona coffee. During that time, we were sort of understanding more and more what this forthcoming UFLPA was going to look at, some of the types of materials that they were going to lay out there. Then in '22, June of 2022 when Homeland Security released their sort of strategy document and in there, they outlined isotopic testing as a method for origin tracing. Really kind of since that time we've been focused on UFLPA-related and sort of tangential work. Our initial focus was on cotton and cotton containing products. That was a big push with that initial UFLPA roll out and now we are expanding into other product categories. A lot of food and beverage ingredients and supplement ingredients, and that's where sort of we see this sort of going in the future. I would say cotton is a big part of our workload now but moving more into some other materials as well.

**Derrick Kyle:** The UFLPA is part of this strategy. It's updated every year and they have high priority sectors. Cotton is one of those. Others include aluminum, apparel, seafood recently last year, and tomatoes, and downstream products. I can see a few of those that definitely lend themselves, tomatoes, for example, comes to mind, lend themselves to this origin tracing. Listeners may remember I had a conversation with a representative of the domestic shrimp industry and a big part of that episode was the inability to trace or the traceability of foreign imports of farmed seafood. I imagine this, especially, with the relation to UFLPA, may be a suitable use case for FloraTrace

**Brett Tipple:** Yeah, absolutely. Seafood is a big area of fraud and mislabeling. It might be one of the biggest ones. But yeah, this tool works very well for those sorts of applications distinguishing between different regions where a material might be coming from. Wild-caught versus farm-raised, or aquaculture-raised materials. Those would all have distinct origin fingerprints in this isotopic chemistry that we're looking at and would be applicable to use this technology to help show that some fraud is happening or that your supply chain is clean of this sort of material that you don't want to be in there. So yeah, absolutely.

**Derrick Kyle:** What are some common misconceptions in your experience that companies may have about quote origin verification or traceability when they are sourcing globally?

**Brett Tipple:** Yeah, this is a relatively new tool for importers. I spend a lot of my time on education. Talking to folks about what isotope testing is, what isotopes are, what they can do, what they can't do. There's a bit of what we call the CSI effect. The show CSI, right? Where folks initially think this testing is instantaneous and what we're measuring reveals like with pinpoint accuracy where something came from. As with any scientific measurement, there's some amount of uncertainty associated with it. That fact alone can be really uncomfortable

for folks, especially if you're making a big significant decision about purchasing or sourcing and importing. There's some uncertainty associated with it. I understand how that can be troubling for someone. I think another thing is with UFLPA compliance in particular, one of the things we talk to importers a lot about is that CBP wants importers to use isotopic testing as part of their sort of supply chain due diligence package. Not really as a standalone solution or as after the fact, "Oh, I got in trouble; I got a detention notice." CBP wants importers to use this prior to any issue happening. Really what CBP wants is that importers to use isotopic testing to confirm or verify that the claimed origin of their imports are consistent with the isotope pattern. Not necessarily that this material was or wasn't connected to Xinjiang region of China. They just want to know that the paperwork and the isotope testing match up. In terms of where that material is coming from. As an example with like a T-shirt, if the paperwork and all your traceability documentation say that the cotton used in this T-shirt was grown in the United States. What CBP is looking for is the use of isotopic testing to sort of confirm that isotopic data with that cotton sample is consistent with the United States. It backs up sort of what the paperwork says. Those are sort of the kind of the big things that we talk about. I don't know if they're misconceptions, but it's sort of education about what the tool can be used for.

**Derrick Kyle:** Right. The isotopic testing shouldn't be your only leg to stand on. It is support for your audit trail of your entire supply chain. That's got to be a great feeling when you have all of your audit trail, you have your supplier verification, your due diligence, and you get the isotopic testing. It's really a check on your suppliers. You've already done most of the work. Now you're verifying most of the paperwork. Now you're verifying what your suppliers say is true to the extent possible with this testing; it's support.

**Brett Tipple:** Yeah, exactly.

**Derrick Kyle:** Yeah. Brett, can you share a case study of a company or a type of product that's used FloraTrace's services and what measurable impact or risk mitigation they're able to achieve through this?

**Brett Tipple:** Yeah, that's an interesting area. That's a good question. And I have a very recent example here I wanted to share. We work with some major natural color importers to ensure their supply chains comply with these trade laws and for them to monitor their suppliers. We've heard in the news how natural colors are becoming . . . a lot of these big CPG companies, consumer packaged goods companies, are moving away from synthetic dyes to natural colors. We've been working with some of these color importers to basically make sure their supply chains are up to snuff. One of the materials that we've been working on is paprika oleoresin. Paprika oleoresin is a natural color that's used to create red, oranges, and yellows. It's super common. It's used in a ton of different food products. Anything that's kind

of that reddish hue like sausages or sauces or your potato chips with red color on them. Paprika oleoresin is kind of in a lot of things. It's an established color that can be used. Most of the world's supply of paprika oleoresin is produced in India. About 80% of it or so. Just this past June there was an anti-dumping investigation launched against Indian paprika oleoresin. The proposed duties there, a dumping margin I should say, were almost 200% over what they were selling it for. Now that investigation is ongoing right now, and we don't have any resolution yet. But the importers that we're working with are now scrambling to sort of minimize their exposure to these Indian-originated oleoresins, which make up the vast majority of where they're sourcing from. The other place that paprika oleoresins are produced is in China. However, the problem is that about 2/3 of the world's supply of paprika peppers used to make this paprika oleoresin that's used in our red colors that is in our food and beverage products, they're grown in the Xinjiang Autonomous Region. It's a huge supply source of these paprika peppers. It really isn't as easy as just switching from an Indian source to a Chinese source, because with those Chinese sources there's a really elevated risk of that raw material that's being incorporated in that product – this basically red oil extract that they're extracting from these peppers – there's a big risk that the initial material that went into it was grown in Xinjiang. What we've been doing right now has been helping some of these natural color importers vet new Chinese suppliers. Suppliers that are outside of the Uyghur Xinjiang Autonomous Region that are basically saying, “Our peppers are grown in inner Mongolia,” or wherever it is outside of that region. Helping these brands, these importers here in the United States sort of vet other suppliers to help them sort of manage both the Xinjiang source material risk as well as avoiding some of these potential dumping duties.

**Derrick Kyle:** From India, that's very interesting. I'm just thinking that even the product is interesting. I imagine quite the growth market. There's a push to get rid of red dye #3 and red dye #40 and this is the natural color. Importers and downstream companies. . . sounds like they will have a hard time because it's between the rock of duties, where you're paying anti-dumping duties – where you can be paying 200% more than, you said the dumping margin was, in duties – or having your product detained if it's coming from the Uyghur Autonomous Region; that's the hard place in the rock-and-hard place metaphor. That's a very interesting case study. Both the underlying product, the difficulties for importers, and then FloraTrace and the isotopic testing to help verify or validate suppliers. That is a very interesting case study there.

Based on your work in the area over the past few years in product origin verification, do you think from your perspective is there anything that could be changed or even slightly tweaked in relevant customs laws or regulations or others even that would make these laws more effective when it comes to origin.

**Brett Tipple:** Yeah, I think not necessarily a tweak or change, but last November, about a year ago now, CBP released a guidance document specifically for importers regarding

isotopic testing. This was a huge, great step for them to really give importers a good primer on the tool. The types of questions they should be asking, testing providers about materials, and those sorts of things. Really how to bring that science into their due diligence and traceability frameworks. That was, I think, a really great thing that CBP did for the trade community to help them – like I said, it's a new technology, it's kind of unknown, it's different – to help them sort of have some foundations to sort of think about incorporating this testing into their package of supply chain compliance and traceability. I think in terms of UFLPA effectiveness, CBP should expand some of the things that they're currently targeted. I mean, I just this, this paprika oleoresin, these paprika peppers, that's not on the list. These companies that we're working with they are going above and beyond. They want to make sure that this stuff's out of their supply chain. They know there's a big risk here. They're not necessarily being targeted by CBP yet, but they know that it could happen. CBP, I think, is looking at other materials and having those sort of in the mix on say a targeted list would be good for effectiveness to help with what the goals of the UFLPA are. I mean obviously to rid the world of forced labor in this part of the world, but also to help U.S. businesses compete because they're not competing against a practice where there's forced or slave labor that's depressing the price of these materials.

CBP and sort of the approach that they are using for isotopic testing, this is something that they actually do. They built 3 new laboratories to do isotopic testing in particular. They have those in LA/Long Beach, Savannah, and then in New York/Newark. They're doing a lot of testing and primarily they're doing a lot of work around cotton origin, and they can expand that. They can use that tool for other things. With recent advances in sort of data analytics, AI machine learning that speeds things up tremendously. CBP took nearly a decade for their sort of honey origin project. It took about four years to roll out this cotton project that they're going on now and sort of these new advances can speed that up exponentially. Things could be rolled out much faster. I think there's some other bills that are in committee in Congress right now, particularly one is Buying [American] Cotton Act. Basically, that's sort of a tax credit for importers to use American-grown cotton in their products that are produced overseas. Say U.S. cotton is grown here, sent over to China to be spun and woven into fabric that's incorporated into a garment, and that garment is imported back in the United States. They get some tax breaks on that. I think that's a really great tool, but it's relatively weak in some of the traceability aspects of that. Incorporating some of these traceability tools in sort of that framework would be good in terms of adding to sort of the traceability components of that.

**Derrick Kyle:** There's a few interesting things you mentioned there. One, we have to tell our clients sometimes, they're not always aware. Much of the government and including CBP, U.S. Customs and Border Protection, employs scientists, right? You can't always just say something and think you will be able to pull one over on the government. There are many

scientists and other professionals that are employed by the government whose job it is to figure these things out. Same idea with isotopic testing. There are scientists and there's these three labs you've mentioned, so that's interesting. Something else that just came to mind as you were speaking, you said a lot of your work, early on in these days is education. Hopefully this is part of it. People are learning more about isotopic testing. But I even think for members of Congress that are writing some of these acts and some of this legislation, to the extent they are or are not familiar with the abilities of isotopic testing, it really is very interesting science; it's very much involved in a lot of imports especially, but to your point, also verification of U.S. origin, right, for other things. I think that's very interesting in the ways that it will be deployed. We know just the data side of things CBP is using AI a lot more to find patterns and when things change, if an HTS code changes or country of origin if it changes. It's all these things working together. We're at an exciting time, I'm sure for you as well, who's very much involved in this science. I'm sure the science side of it is only going to continue to get better.

**Brett Tipple:** Yeah, exactly.

**Derrick Kyle:** Thanks so much. So far, I think it's been an incredibly interesting conversation. I did want to leave you the opportunity if there's any final thoughts or takeaways you have for our listeners either about the science, about FloraTrace, about anything that's going on surrounding that. The floor is yours.

**Brett Tipple:** Oh, awesome. Thanks, Derrick. Yeah, I appreciate the opportunity to chat here. I think you had some great questions. Hopefully provided some insight to the listeners here about what isotopic testing can do. Hopefully provided the variety of use cases of where that might be applicable to some issue that somebody might be having sort of in the trade, international trade sector. So again, thanks a lot. I appreciate it.

**Derrick Kyle:** Yeah. Thank you again. Our guest is Dr. Brett Tipple. He's the President and Chief Scientist at FloraTrace. Thanks so much and thanks to all our listeners. We'll catch you next time on Torres Talks Trade. Bye.