# Health and Human Science Matters Season 1, Episode 10: Tiffany Weir

Tiffany Weir: I think right now, I'm very happy doing research, so I hope I could continue in a successful research program, but our department is going to be changing, is changing dramatically right now. We're in the middle of a department head search at the moment, and we have a lot of retirements that have happened, a lot of retirements coming up, and so whether I like it or not, I guess I see myself as a leader in the department.

Matt Hickey: You are.

Avery Martin: Yeah. You already are.

Welcome to Health and Human Science Matters, a podcast by Colorado State University's College of Health and Human Sciences. I'm your co-host and digital media strategist, Avery Martin.

Matt Hickey: I'm Matt Hickey, associate dean for research and graduate studies. In our college, we make it our mission to optimize human health and wellbeing through discovery and innovation. Don't just take our word for it. Each episode, we sit down with people who fulfill that mission, our college faculty and staff, and today, we're lucky enough to have a friend, Tiffany Weir from Food Science and Human Nutrition. Tiffany, welcome.

Tiffany Weir: Thank you.

Matt Hickey: Glad to have you with us, as always. As we were talking about before we went live, we want to know about Tiffany the person and Tiffany the scholar, and we'll start with Tiffany the person. So tell us about yourself, about your family, and maybe some fond memories from along the journey before you arrived sitting in this chair this morning.

Tiffany Weir: Sure. Okay. Well, I am not originally from Fort Collins. I grew up in Pennsylvania and West Virginia. Moved out here when my husband got a job at Colorado State University, but we've lived out here now for... Well, it's been over 20 years. Kids were born out here. I remember when we first moved out, everybody had the native sticker on the back of the cars. It was a big deal to show that you were actually from here, and now I feel like I can put that, because my kids are native Coloradans.

Avery Martin: Absolutely.

Tiffany Weir: Let's see, what else? I have two children. I have two sons. One of them is a second grader, and one of them is a high schooler who's getting ready to go off to college in a couple years.

Matt Hickey: My goodness.

Avery Martin: Exciting, exciting times.

Matt Hickey: Does he have interests in particular of places or things to study?

Tiffany Weir: Yeah, so he wants to do engineering, mechanical engineering. Over COVID, one of our neighbors had a bunch of cars in his yard and gave him one of the old cars, so he rebuilt the car, and then he started buying jet skis online and broken ones and rebuilding those and reselling them and stuff. So he is very into engines. So right now, he's working at the engines lab at CSU.

Matt Hickey: How fun is that?

Avery Martin: As a high schooler?

Tiffany Weir: As a high schooler, yeah.

Avery Martin: That's incredible.

Tiffany Weir: Yeah, so he's pretty confident about what he wants to do, and he talks about engines a lot, at dinner and in the car, and I pretend to know what he is talking about, and have no idea usually.

Avery Martin: That is awesome.

Matt Hickey: So is there a tinkering gene in the family somewhere or an engineering gene, or this is...

Tiffany Weir: No, this is all him.

Matt Hickey: Denovo.

Tiffany Weir: YouTube. Yeah.

Matt Hickey: Wow, that's interesting.

Tiffany Weir: Apparently you can learn anything off YouTube.

Matt Hickey: So I hear. I guess I've got to pay more attention.

Tiffany Weir: I don't know. I tried to fix a dryer once watching YouTube, and I ended up paying double the repair cost, because I messed it up worse. So some people can't do that. I don't even think I could learn to change a light bulb on YouTube, but he's learned to rebuild engines.

Matt Hickey: Wow.

Avery Martin: It works for some.

Matt Hickey: Yeah, exactly. Maybe not for everybody, right?

Tiffany Weir: Yeah, that's right.

Matt Hickey: That's great.

Tiffany Weir: So the other COVID project that we did when we weren't coming to campus, my kids both did remote school last year, was we bought some property up near our house and started a farm.

Matt Hickey: Oh wow.

Tiffany Weir: So we built two greenhouses and have planted a peach and apple orchard.

Matt Hickey: Oh my goodness.

Tiffany Weir: Have a little farm stand, and on weekends I'm harvesting and running a farm stand up below Horse Tooth Mountain. So that's become kind of a passion project and a hobby.

Matt Hickey: Another thing I need to pay more attention to. So where are you at exactly? So I can go get my peaches.

Tiffany Weir: Yeah, if you ever go ride up Horse Tooth Mountain Park, just at the base of the mountain as you pass the little bar and the bed and breakfast, we're on the north side of the county road 38E up there.

Avery Martin: I will have to visit.

Tiffany Weir: Yeah, definitely. We do market Saturday mornings. A couple colleagues from CSU, Colleen Burke is one that comes pretty regularly and visits us, because she's always up there hiking either Horse Tooth Mountain or Soderbergh.

Avery Martin: That is really cool.

Tiffany Weir: Yeah.

Matt Hickey: Saturday mornings, here we come. Of course, season's getting a little long in the tooth here, but...

Tiffany Weir: Well, we have the two greenhouses, so we are slowing down a little bit, but transitioning over, we're able to do greens all year long.

Matt Hickey: My goodness.

Tiffany Weir: So we have greens, and I have five nutrition students right now that are doing a service learning project where their community partner, they did a Halloween smoothie stand, where they came up and they took produce from the farm and they made... "Don't Kale Me" was one. It's like a kale based smoothie.

Avery Martin: I like that.

Tiffany Weir: They had a witches brew that had apples and different things from the farm, and they set up outside and saw our customers came and tried their smoothies, and they gave them recipe cards and things like that.

Matt Hickey: Oh wow. So the astute buyer will be out there at what time on a Saturday morning?

Tiffany Weir: Yeah, that's a good... We're shifting hours for winter. We were doing nine until about 11 or noon, but people don't start showing up until about 10:30 now that it's getting colder and it's darker longer. So yeah, we're definitely not rigid business model. It's like, if the door's open, come in.

Matt Hickey: Oh, that's fun. How cool is that?

Tiffany Weir: Yeah.

Matt Hickey: Great. So tell me more about growing up in Pennsylvania and West Virginia. Family influences... You may have had moments with teachers or mentors that continue to influence decisions you make and how you approach the job and fun of teaching.

Tiffany Weir: Yeah. Well, my mom was a teacher, and she followed me growing up. So she was an elementary school teacher. She taught... Well, it was a small town in West Virginia, and so it was kindergarten through eighth grade. There was no middle school, so she would've been what would've been a middle school teacher. She taught seventh and eighth graders, but she was always there keeping an eye on me.

So the teachers were our friends, those were the people that we hung out with and had picnics with on the weekend and things like that. I feel like growing up, I knew every single teacher that I ever had for class, outside of the classroom, as a friend, and so they definitely, I think, were probably mentors, and then when I graduated eighth grade, I thought I'd finally be rid of my mother, and she moved up to the high school.

Matt Hickey: Of course she did.

Avery Martin: [inaudible 00:06:51]

Tiffany Weir: She became freshman and sophomore English teacher.

Avery Martin: Nice.

Tiffany Weir: So I actually had her, I believe, for freshman English. Again, small town, so there weren't other options. They normally wouldn't put you with your own child or parent. There was only one option. So that's what we did, and then when I was a sophomore, my family moved to Pennsylvania, which is where my mom and dad were from originally. They moved back there, and so then I finally got to go to a school where my mother wasn't, because she was a substitute at that point and was teaching in different schools, but I would say a lot of those teachers that I had growing up that were also our friends were big influences, because, well, one, they knew your parents. You always had to behave in class and pay attention. I couldn't get away with anything ever, but then even outside, I couldn't use improper grammar or things like that, because my mom or her friends would always be correcting me or, "You know better than that."

Matt Hickey: Interesting.

Tiffany Weir: Quizzing me, things like that.

Matt Hickey: Exactly. You can run, but you can't hide.

Tiffany Weir: Right. Yeah, absolutely.

Matt Hickey: So I'm curious, had you stayed there, what would the graduating class have been like size wise? How teeny was it?

Tiffany Weir: Maybe 20, 30 students.

Matt Hickey: Yeah, it's interesting, and I asked for a reason. K-5 for me, had I stayed, it would've been 12.

Tiffany Weir: Wow. So you know what I'm talking about.

Matt Hickey: It was just a teeny little school, and then even when I moved, it was a hundred, which is not exactly enormous. So yeah, small town memories, and I'm a native New Yorker, so we weren't too far from one another.

Tiffany Weir: Must have been upstate New York.

Matt Hickey: Upstate, yes.

Tiffany Weir: You had a 12 person class.

Matt Hickey: Wasn't in the Bronx, that's for sure.

Tiffany Weir: Yeah.

Matt Hickey: Those are fun memories for sure. So then you made a decision at some point, "I'm going to college," and...

Tiffany Weir: No, there was never a decision. My dad was a Penn Stater, and growing up, I didn't know that there were other universities, honestly. I thought, "There's other football teams, but they don't go with schools."

Avery Martin: They're just there for football.

Tiffany Weir: Right. They're just there for football. No, yeah. I don't remember ever making a decision. In Pennsylvania, where we moved, there was a small kind of community college, and then there was the Penn State campus that was the local campus. There was no way I was going to the local campus. Had to go to main campus for my dad and my uncle and my dad's cousins. Long tradition of people going to Penn State, and so I didn't apply anywhere else. I applied for early admission the end of my junior year. I knew before my senior year started, that's where I was going, and I got into main campus, and I got there and realized, "Hey, there's other schools I could have looked at." I visited a friend in Ohio, and I was like, "Hey, Ohio State, that's an actual school that people go to." Went to Wisconsin Madison and thought, "Man, this is a beautiful campus." I had no idea there were other places that you could go, but Penn State's a great school, so obviously, I don't regret that at all.

Matt Hickey: As an undergrad, what did you study? What was your major?

Tiffany Weir: Yeah, so my mom wanted me to go to law school, and she helped me fill out my application form to go to Penn State. So we signed up for pre-law liberal arts, and I actually started in the summer about two weeks after I graduated, went up and took a gym class. I took sailing, which was an awesome gym class.

Matt Hickey: Right on!

Tiffany Weir: Penn State had the best gym classes. I had sailing and skiing and fencing.

Matt Hickey: Wow.

Tiffany Weir: So it was fun, but yeah, I took my English 101, and I took a gym class, and then the next semester, I promptly signed up to take a bunch of biology courses. Didn't tell my parents that those were not what the advisor had told me to take for pre-law, and then I got my report card that first December, and they said, "What? Why do you have biology 101 on here? Why do you have this on here?" Kind of changed my major.

I knew what I wanted to do, but... Well, actually, I didn't know, ultimately, where I was going to end up, but I thought I wanted to be a forensic pathologist. I thought that was cool, until I started thinking a little bit more about it and I was like, "I'm going to be around dead people all the time, and I don't know if I want to do that," but there might be other avenues of science that I could do that I can figure out puzzles and solve riddles without having to be in a morgue all day.

Matt Hickey: Well said. Well said, but an early interest in science. It's just a matter of manifesting itself in different ways.

Tiffany Weir: I don't think I knew that you could do that as a career growing up. I was always interested in science in the natural world. I liked to hike, I always collected leaves and plants, but I didn't know that scientist was a job. I didn't know you could do that for a career. So I think I always liked science and science things, but I thought you had to be a teacher or a vet or a pilot or something like that, or a lawyer.

Matt Hickey: Or a lawyer. Yeah. So at some point in your undergraduate trajectory, I'm assuming somebody or some moment opened your eyes to this graduate school thing?

Tiffany Weir: Yeah, well, I took an ecology class, I think it must have been my sophomore year, and the professor in this class, I don't even remember his name, but you asked about teachers that had influences, and I would definitely say that he was one, because he made us read scientific literature, which typically you don't do in undergraduate courses, and I think they were probably his papers, but he was an ecologist that spent his research time in Hawaii collecting plants and studying plants, and I'm like, "How do you get to do that?" He's in Hawaii outside all the time, and I think that's when I realized this is something you could actually do as a career, that you could become a researcher...

Matt Hickey: And call it work.

Tiffany Weir: Yeah, and so instantly, after that class, I started looking for research positions, and my sophomore year, second semester, I started working in a lab in the College of Ag and plant pathology, and my major professor studied mushrooms, because Pennsylvania is one of the largest mushroom producers. They have a big mushroom industry over in the eastern part of Pennsylvania, and he studied what was called the La France isometric virus, which can infect mushrooms and reduce yields and things like that, and this is at the dawn of genetic engineering, basically. I hate to say that, because it shows how old I am, but our lab was getting a gene gun, which was the top of the line technology where you could shoot... It really wasn't as exciting as it sounded in my mind. I'm imagining this rifle that you're shooting mushrooms with genes or something. It wasn't at all like that.

We were doing sequencing, which, at the time, was Sanger sequencing, and we made gels the size of the whiteboard in this room, and you'd sit there with it on a light table and actually read the lines on the gels and say, "That's going to be an A, that's a G," and that was my job as an undergrad, was to sit there, one, to make these giant gels, and then to sit there and read all the little lines on the gel and decipher what they were.

I worked directly with a grad student, and he was from Jamaica, and he had this really big personality, and every time I come in, he was like, "Fame and glory. Fame and glory. Come on, I'm going to put your name on a paper," and it just really motivated me. He was super dedicated. He slept under his desk, and was just one of those guys that was in the lab 24/7. He slept in the lab, he ate in the lab, he was in the lab on weekends. In hindsight, I don't think he showered much, and probably didn't have much of a social life, but it was all about fame and glory, and I bought into it. I was like, "Yes, fame and glory."

So that was it. There was no turning back after that. I continued on. I actually ended up doing my master's degree in that particular lab. The major advisor offered me a graduate, and again, I feel like I've kind of jumped in a stream and just let the water take me. I was like, "I'm going to Penn State because it's where I'm supposed to go," and then didn't really look at grad schools. I just stayed at Penn State, because I got offered a position in the lab that I'd been working in and ended up staying there. So just kind of grabbed at the opportunities I had rather than went out and looked for opportunities, but I finished a master's in plant pathology. I ended up working with him. Pete Romaine was my major professor, and then also Barbara Krist, who worked with potatoes, and that's where I got interested in microbiology, and I think that's carried through, even to now, because microbes are everywhere, and I could work in almost any department on campus, because microbes are a part of everything.

Matt Hickey: Well said. So the PhD.

Tiffany Weir: Yeah.

Matt Hickey: How did that happen?

Tiffany Weir: I didn't want one of those. I went to go work for the government. After I finished my master's degree. I worked for plant protection and quarantine, which are the people that inspect things that are coming into the country and looking... They wanted people who had entomology backgrounds and plant pathology backgrounds, because you're looking for plant diseases that might escape, and I had some really fantastic experiences working there.

I joined what was called this rapid response team, and the rapid response team, this kind of comes back to my high school cop shows wanting to do the forensics, is like, "Oh, there's an outbreak, wheels up in 24," or whatever, and you had to pack your bag and be ready to go wherever in the country they sent you, and I was working at JFK Airport in New York, and my first rapid response was to go and work in Amityville, New York.

Matt Hickey: Oh wow.

Tiffany Weir: They sent me to go look at trees in Amityville.

Matt Hickey: That's straight out of the movies too, isn't it? Holy cow.

Tiffany Weir: Yeah. We just went and knocked on people's doors and walked around in their backyards, inspecting their trees, and I'm embarrassed to say I don't remember what we were looking for. It was a beetle. You're a New Yorker. Do you remember? There was some sort of beetle infestation. They had to cut down trees. So we were looking for this beetle, and then... I'm trying to think. I don't think I did any more rapid responses, but then I got married, my husband got a job out here at CSU, so I transferred to the Denver office, and I was commuting from Fort Collins down to Denver, and got to go travel. I went to Alaska as part of the rapid response team, where we did a blitz on all the FedEx flights that come in and out of Alaska. Spent 10 days up in Anchorage in February, which is not the time that you want to be in Anchorage. It got light at noon, it got dark at 3:00 PM.

Matt Hickey: My goodness.

Tiffany Weir: They let us out of work at two, which was good. So we got to see the sun for an hour every day and do a little hike and stuff, but it was minus 28 degrees, so you didn't really want to be out too much, and I didn't get to see the Northern lights, which was a little disappointing. They didn't show up that week.

Matt Hickey: How do you like that?

Tiffany Weir: Yeah, but I went to California and tracked fruit flies, and then I got sent for summers a couple times down to Texas, and I could have just stayed in Denver, but at that time, it was around the time of the change in regime. So we went from Clinton to Bush, and we'd been in the Bush years for a couple years, and so they were changing what my job was going to be, and I was going to become more of a police officer rather than a scientist.

Matt Hickey: Bioterrorism kind of thing?

Tiffany Weir: Yeah. So I think I just went to work one day and said, "I quit," and didn't really have a plan, didn't know what I was going to do next, and there was a professor that I knew from CSU, because they had a cooperative agreement with us, and I'd worked with him through my role in AFIS, and he said, "Well, I'll hire you on as a research assistant." So this was Bill Brown, I don't know if you knew Bill Brown.

Matt Hickey: Sure.

Tiffany Weir: Yeah. So I came up to work for Bill Brown, and he died four months later. So I'd quit my job, and got hired by somebody who passed away then rather quickly, and just said, "Well, I'm here. I might as well start a PhD program." So I worked, actually, for my husband as a technician in his department, in his lab for a while, and then started a PhD in cell molecular biology.

Matt Hickey: Who was your mentor in that PhD process?

Tiffany Weir: Herbert Schweitzer.

Matt Hickey: Yeah. All right.

Tiffany Weir: Yeah, I remember him too.

Matt Hickey: Yes I do.

Tiffany Weir: He's gone now. He's in Florida, I believe.

Matt Hickey: Yeah. Great, and you completed your CMB PhD?

Tiffany Weir: I did.

Matt Hickey: How did our friends in nutrition get fortunate enough to recruit you to their department?

Tiffany Weir: I'm not entirely certain how that went down, but we have a fermentation and science and technology program.

Matt Hickey: We didn't back then.

Tiffany Weir: Yeah, well, they were in talks, right? So the charge had been made by Chris Melby, and the food scientists that were in the department at the time said, "Well, this brewing class that Jack Evans teaches is really popular." So they said, "We could turn this into a major, and we think it would be a big deal," but of course, our department focuses on nutrition and health, and it felt like a big disconnect, and at that point, I had finished my PhD, I spent some time in Peru doing a postdoc type... It was more of a visiting scientist type position, and I was working on microbial ecology. So this is when all the sequencing technologies came out that allowed us to start looking at these mixed microbial communities.

When I came back, I ended up sharing an office with Elizabeth Ryan, and the two of us started talking, and I was like, "Soil microbes, poop microbes, it's all the same. It doesn't matter what media you're working in," and this kind of comes back to, if you're working with microbes, they're everywhere. You could do just about anything. So Elizabeth and I started working together on a clinical trial looking at how rice brand consumption altered the gut microbiota and colorectal cancer survivors, and at this point, I had been given a non-tenure track position in horticulture and was working on this with Elizabeth.

So Chris Melby wanted to bring in a health related aspect to the fermentation science so that it wasn't just going to be about beer, and I'm working on fermentation in the gut and looking at how the food we eat gets fermented and turned into compounds that can benefit human health, and so I think there... Ended up in nutrition to bring legitimacy to the fermentation science program. At least that's the way I tell it to my students, that, "I know you guys aren't here to study gut health, but this is why you're in a nutrition department, because this is the health aspect of fermentation."

Matt Hickey: Oh, we're fortunate that Dr. Melby had some foresight for sure. So you're now a tenured professor. Nice.

Tiffany Weir: I know. They haven't kicked me out yet.

Matt Hickey: Nice trajectory, and so this is a natural transition into the scholar part of our conversation. So in terms of what you've got going on now, your lab collaborators, et cetera, I'm just interested in you sharing with the listeners what excites you the most about your current research activities.

Tiffany Weir: Yeah, it's never a dull day. Every day is different. I think when you're doing research, and when you're doing research well, you're not looking to prove something that you already know. You're looking to find the answer to something that you don't know, and so as long as you're following the data and going where it takes you, then you're always doing different things, and you're always kind of looking for that next piece to the puzzle, and I've always enjoyed doing puzzles and kind of putting all those pieces together, and then you start to see the big picture. So I think that's what I really enjoy about doing research, and in my career, I may only get to put together one tiny little corner of a puzzle, but it's still exciting to be able to put those pieces together.

I also like that I span translational... I do translational work. So I span these preclinical models, work in mice and cell cultures and things like that, but I also have a clinical arm to my research, and so everything always comes back to, "Okay, can we modify the gut microbiota to improve cardiovascular outcomes in mice? Great, but does this actually matter to a human population?" So going back and forth between humans and mice, I feel like I'm able to keep what I'm doing relevant.

Matt Hickey: So when you think about you and your team, your trainees, postdoc students, et cetera... And we realize there's no such thing as a typical day. You just alluded to that. Every day's a little bit different, but a day in the life of the Weir lab team.

Tiffany Weir: Great.

Matt Hickey: Feel free to tell us who's on your team. We're always interested in...

Tiffany Weir: Okay. Well, I wouldn't say there's a Weir lab, because I collaborate a lot, and I started initially with the Ryan lab and working very closely with Elizabeth Ryan, and now I work very closely with Chris Gentile Teal and Sarah Johnson in particular, who are my two main collaborators, and with Chris, it's on the preclinical work, and then with Sarah, it's more the clinical work, and when I say you're looking at changing the gut microbiota to modulate cardiovascular disease, I'm the microbiota part of that, and they're the cardiovascular disease part of that.

So obviously, collectively, in fact, Chris and I, we have a joint lab meeting, we co-advise students, and so really, it's kind of the Weir-Gentile lab or Gentile-Weir, depending on who you ask, but Chris and I, right now, are advising two and a half grad students. One is accepted, and she's actually working in the lab, but she's deferred until she can get her Visa situation figured out, because she's from China, so she's trying to get the student visa status, and then she'll start officially. We'll have three graduate students together. We have a couple undergraduate students. Sarah and I share a graduate student as well. So yeah, they've all been amazing, helping keep the research going, especially through COVID.

Matt Hickey: Yeah. So let's talk about that a little bit. We're interested in how people respond to unanticipated challenges like that. So what has been the impact on your activities?

Tiffany Weir: We've been able to move forward, definitely at a much slower pace, and the students have had to take on a lot more autonomy and a lot more responsibility, because we really were told, "Don't come to campus. Don't be in your offices unless you absolutely need to," and yet, especially when you're doing studies with animals, the human studies we were able to put on hold and not do for a while, but you've got animals over in the vivarium, they still need to be cared for, and those experiments needed to be continued, and so the students came in when no one else was, and were really the ones that kept the work going and carried everything forward, and without them, I don't know where we would be right now.

Matt Hickey: It was a major disruption in every sense of the word, wasn't it? We walked into places we never even imagined. Permission to go back into my own lab. Right? Very unusual, that's for sure. So who funds your work?

Tiffany Weir: Lots of people fund it.

Matt Hickey: Good answer. Good answer.

Tiffany Weir: Lots of funding. So the work that Chris and I do, we are PIs, multi PIs, co-PIs on American Heart Association funding and National Institutes of Health, and then for the clinical work, I work with several companies. So Deerland Probiotics and Enzymes has been funding some work. Chris Bell and I, from Health and Exercise Science, have some collaborative projects together as well, and those have been funded by a CBD company down in Denver. We also are funded by a group that's called Think Healthy LLC, to do study on magnesium. So a lot of the clinical work is typically funded by companies and things like that. Have some internal funding from the Colorado Ag Experiment station for projects that I haven't been able to develop enough to try to get big funding, but hopefully down the road, we will.

Matt Hickey: In the midst of all this mentoring and scholarly activity, you wear a couple other hats on campus. So tell us, what else occupies you on campus?

Tiffany Weir: What else occupies? Well, I just, this July, became co-coordinator of the Microbiome Network with Mike Wilkins, and tonight, this afternoon at four is going to be our first in-person event for the Microbiome Network, which I'm excited to see that up and going again. They had Mars sponsored some research, the Mars Research Institute and we have three people that were awarded Mars grants over COVID, and so they're going to present their proposal and kind of progress to date on where they've gotten with the money that we awarded them through the Microbiome Network.

Matt Hickey: That's great. Classroom time? What do you teach?

Tiffany Weir: What do I teach? I teach in the fermentation program. So I teach fermentation microbiology. I do not know how to brew beer. I have made cider at home, and it was really dry. I liked it. My husband did not, but I do a lot of fermented foods and things like that.

Matt Hickey: I'm willing to go out on a limb and say there's a YouTube video somewhere that would show you how to brew beer.

Tiffany Weir: Oh, I'm sure there is. Yeah. Oh absolutely. I'm having... Actually, the NOMA fermentation book from that restaurant, NOMA, is amazing. I've been taking things from the farm and trying to experiment, doing a lot of fermentations. The lacto fermentations. I'm doing black garlic right now and lacto tomatoes, lacto gooseberries, apple cider vinegar.

Matt Hickey: My goodness.

Tiffany Weir: Yeah. So I do a lot of fermentations, but I don't brew beer, but I talk about all the microorganisms that brew beer. People don't brew beer. The microbes are the ones that are producing all the alcohol.

Matt Hickey: Well said.

Tiffany Weir: Yeah. So I know all the microbes. We're close, the microbes and I, but I'm not as familiar with the brewing process.

So I also teach a course for graduate students on probiotics, and another course on personalized nutrition, focusing on how we can utilize what we know about the gut microbiota and the metabolites that are produced by the gut microbiota to be able to really look at people's genetics, at their conditions, things like that, and focus in on what foods they should be eating for optimizing their health.

It's interesting, because I think it's a pretty big pie in the sky to be able to talk about personalized medicine and personalized nutrition. I don't know if I'll see it to the level that I'd like to see it in my lifetime, but there has been a burgeoning interest in this, and Matt knows this pretty intimately. We spent a lot of time on the phone and Zoom last year. The NIH is putting millions and millions of dollars now towards research and personalized nutrition, and we applied for a grant to do some of the metabalomics. We didn't, unfortunately, get the grant, but I'm just excited that they are putting a lot of money towards this, the Europeans are putting a lot of money towards this, and it's not just these occasional private institutes in La Jolla and stuff that are focusing on this personalized nutrition. So I think it's going to make some really great strides in my lifetime. I don't think that it'll be, "You give a blood and a poop sample, and here's your ideal diet, it's going to be printed out on a printout for you," but we're getting there.

Matt Hickey: Yes, and you're a part of that.

Tiffany Weir: I'm the tiny, tiny little corner of the puzzle.

Matt Hickey: Yes.

Avery Martin: A contributor [inaudible 00:31:28].

Tiffany Weir: I'm an edge.

Avery Martin: That's awesome.

Matt Hickey: In your spare time, you're a significant contributor to the college's research day activities. One of those many things that Tiffany does that was unnoticed by some people, but noticed and appreciated by others. So we just left a meeting where we're talking about year three, right?

Tiffany Weir: My whole contribution is just to goad you so that you work harder.

Matt Hickey: We have some friendly competition.

Avery Martin: Yes.

Matt Hickey: That's part of what makes it fun, right?

Avery Martin: That's the best part.

Tiffany Weir: Yeah.

Matt Hickey: Exactly, and you're still involved with CMB program as well, last I checked?

Tiffany Weir: Yes, I am. I'm the research chair for CMB.

Matt Hickey: Talk about spare time, huh?

Avery Martin: That's a lot of hats, and a farmer, and a [inaudible 00:32:11]?

Tiffany Weir: And a farmer, and a forager. That's probably my other big hobby that I enjoy, is foraging.

Avery Martin: Would you mind elaborating about that?

Tiffany Weir: Yeah. So mushroom hunting. It's actually-

Matt Hickey: Now I have to interrupt, and forgive me, because I was kind of hoping this would come up, because for many years, I taught an undergrad class here at CSU and would use that phrase, "Has anybody heard the term mushroom hunting?", and most people would, unless they were from the Midwest, look at me like, "Do you get your orange jacket out and tiptoe up on it?" These things, it's interesting, but in fact, it's quite fun.

Tiffany Weir: There's huge groups of people that do it. Once you start doing it, you can recognize another forager in the forest. They're the ones that are carrying baskets and you're like, "Why are you carrying a basket on a hike?" You can see them turning over every leaf and things like that. So you can definitely tell other foragers.

Matt Hickey: You need to know what you're doing, because if you grab the wrong ones...

Tiffany Weir: Yeah, you could die. This is my adrenaline rush. I'm not jumping out of helicopters and skiing down mountains and doing stuff like what you and Chris Melby like to do. In fact, I turned around halfway up Long's Peak with Chris Melby. I said, "This is it. I don't want to die today. This is high enough."

Yeah, but that's my adrenaline rush. Just like, "If I eat this, am I going to die?", but no, really, you have to be a hundred percent certain. You obviously wouldn't touch anything that you don't know what it is.

Matt Hickey: So I have to ask you to hop into the flash forward machine. Imagine we're five years down the road. What's Tiffany up to?

Tiffany Weir: National Academy.

Matt Hickey: Right on.

Avery Martin: Love to hear it.

Matt Hickey: I like it.

Avery Martin: Love to hear that.

Tiffany Weir: No, just kidding. That would be awesome, but yeah, probably not actually in the cards. I think right now, I'm very happy doing research, so I hope I could continue in a successful research program. NIH funding is going to end here in a year and a half, two years, so starting to look towards renewal, but our department is going to be changing, is changing dramatically. Right now, we're in the middle of a department head search at the moment, and we have a lot of retirements that have happened, a lot of retirements coming up, and so whether I like it or not, I guess I see myself as a leader in the department.

Matt Hickey: You are.

Avery Martin: Yeah. You already are. Definitely.

Matt Hickey: My position occasionally obliges me to check on metrics, and so on Google Scholar. I'm not aware of anybody in the college that has more citations than Tiffany Weir.

Tiffany Weir: Really?

Matt Hickey: Yes. So congratulations.

Tiffany Weir: Thank you.

Matt Hickey: That's no small thing.

Avery Martin: Not at all.

Matt Hickey: We've got an active college, and we all know that some people aren't in there, invisible, but yeah, 10,000 plus citations, which is...

Tiffany Weir: Wow.

Matt Hickey: Quite nice.

Avery Martin: Yes.

Tiffany Weir: I had no idea.

Matt Hickey: I pay attention to these things. So good for you. We have two more questions. I want to talk a little bit about your impressions of life in the College of Health and Human Sciences in particular. What are the key things that appeal to you about being part of that particular community on campus?

Tiffany Weir: Yeah. I feel like our college is somewhat of a collection in terms of having to find the common threads, and I really love what Lisa has done with the research day to try to bring the college together. I feel like this is the first time that I've actually met people from health and exercise science. We tend to collaborate a lot with them, I'm on committees over there, but the rest of the groups in the college, I haven't had as many interactions with, and so I felt like that was a great way to see what else is going on in our college, but to start making those connections about, how does our work intersect with that work? What are the overarching themes? I think that's great, because I think that what we do really touches on every aspect of everyday lives.

Matt Hickey: It's an aptly named college, I think, upon reflection. Health and human sciences is expansive by definition, and yet they're hard to disentangle, really, and why would you want to, in some ways, right?

Tiffany Weir: Design and merchandising, I always thought about that like fashion shows or whatever, what does that have to do with what I do? Then go to the research day and you see they're making antimicrobial fabrics.

Matt Hickey: Exactly.

Tiffany Weir: So I'm all about that.

Matt Hickey: They're speaking your language.

Tiffany Weir: Right, or using interesting materials, like mushroom scobies from kombucha and things like that to turn it into materials. So yeah. You start to see those connections, and I think without the research day, I probably wouldn't have had that ability to interact with other people in the college and really find out what it is that everybody else is doing and how cool their stuff is.

Matt Hickey: It's a lot of neat stuff going on, for sure.

Tiffany Weir: Yeah.

Matt Hickey: The next layer up is this institution, Colorado State University, which is a land grant, and that particular vision matters. We take it seriously, and so I'm interested in your reflections on being an academics and a scholar and a teacher and a member of a community at a land grant institution.

Tiffany Weir: Yeah, that's... Boy, that's a tougher question, I guess, because I don't necessarily think about it from that perspective always. I think we tend to put ourselves into our silos, and I do reach out in terms of cell molecular biology is an interdisciplinary program. The microbiome network, we actually have faculty from, I believe, every college is involved in the network. Even when we had a cluster hire. So this was from funding from the VPR, and our final position that we had from this cluster hire, we hired somebody from the English department, and they talk about policy and communications and things like that related to the microbiome, because it's really a big and upcoming thing.

You've got the aero biome folks, which just got a huge grant to study the aero biome, and we have the soil biome and we have the human biome, and so you need people to be able to communicate why that's important and to figure out, "Do we need policies around this and stuff?"

So that's what Erica does, and so I think that's really cool. You start to, again, see how you fit into this bigger picture when you're working with all these different groups. I will say being at a land grant university is difficult sometimes when you are doing clinical work, because you don't have access to the resources that medical schools have in terms of clinical populations, but you also, I feel like, are a little bit more supported, because there's more of a teaching mission than if you were at a medical school, and so yeah, I'm not worrying about 50% of my salary coming from grants. I can actually focus on teaching and doing research and interacting with students instead of locked up in my office writing grants just to cover my salary all day long.

Matt Hickey: Well said. Yeah. It seems to me too, as you described your trajectory today, you had some pretty important experiences that give you an appreciation of this land grant mission that many of us that were maybe a little more linear never had, your reflections on Texas, and we often can be in our ivory towers and not realize the impact the work we do or policy suggestions we make would have on a farmer or a rancher, what have you, and so I think those have been really interesting experiences not all of us, I would say, get to have. You might laugh at "get to have". "Had to go through" is another way to phrase it, but I think it gives you a more expansive vision. I think it's colorful experiences, but also neat ones. Help us to think about who are we and watch our charge as members of a land grant institution.

Tiffany Weir: Although I'll also say that I really only have experience with land grant institutions, because Penn State is also a land grant institution, and so I guess I take that for granted too, because I don't have that comparison of, what is it like not being in a land grant institution, and what is that experience? So I guess I don't often think about it, but especially being in nutrition, and nutrition is food, and food is agriculture, and agriculture is really a big drive of the land grant institutions, and so I think that probably a lot of non land-grant universities maybe don't even have nutrition departments. There are some universities that don't, and so I think all those things have shaped my experience, but in ways that I haven't really thought about.

Matt Hickey: Well, we're delighted you were able to spend a few minutes with us today. Time has slipped through our fingers, and we're going to have to let you go, but thank you again for coming to join us, and for the rest of the history of the college, you can claim that I was the food science and human nutrition rep on season one.

Tiffany Weir: Awesome.

Matt Hickey: So thanks, Tiffany. We appreciate it.

Tiffany Weir: Great. Thank you.

Matt Hickey: That's our show. As always, thank you for listening to Health and Human Science Matters.

Avery Martin: Be sure to check out our other episodes. If you want to learn more about our CSU College of Health and Human Sciences, visit our website, chhs.colostate.edu.