

Setting up a frog colony and pair bonding with Lauren O'Connell

To become a scientist, O'Connell first needed to leave the family farm.

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This transcript has been lightly edited for clarity; it may contain errors due to the transcription process.

[opening theme music]

Brady Huggett: Here we are. Welcome to “[Synaptic](#).” This is our podcast that investigates the people, the research and the challenges of the neuroscience field. This is Episode 11 of “Synaptic.” My name is Brady Huggett. I host the show, and we're glad to have you listening. Thanks for joining.

[transition music]

Now for today's show, let's start in the Dallas-Fort Worth area of Texas, around 2004, somewhere in that timetable.

Let's go to Tarrant County College, specifically the South Campus, which is located in South Fort Worth. Tarrant is a community college. It was established in 1965 and has a mission statement of providing affordable and open access to quality teaching and learning. Tarrant has five physical campuses in Tarrant County, and in 2023, it had a total undergraduate enrollment of nearly 45,000 students, with the average age for students being 23; 58 percent of the enrollment is female. In 2004, one of those females was Lauren O'Connell. That's today's guest, Lauren O'Connell. She was at Tarrant to get some education, maybe to work toward a nursing degree.

While she was there, a teacher named Jean de Schweinitz pulled her aside and said, “I think you should raise your sights a little bit. I think you should consider transferring.” Now, not long after that, Lauren received in the mail, unsolicited, a flyer inviting her to transfer to Cornell University way up there in Ithaca, New York. She has no idea how the school found her, but she applied and was accepted into the College of Agriculture and Life Sciences. Now Cornell does this with some regularity, I should say. Currently, 30 percent of the undergraduates in the College of Agriculture and Life Sciences are transfers. Cornell accepted Lauren, and she went off to a top-tier university in the Northeast.

“That flyer in the mail changed my life,” as she says in this podcast. We talked about that, how it set her on a new path. We talked about how this new path was difficult for her parents to understand, and we talked about her winning Harvard's Bauer Fellowship and what it did for her career. Of course, we talked about animal behavior and Lauren's work in frog pair bonding.

All of that in the next hour. I interviewed Lauren on February 9th, 2024, in her office in the Gilbert Biology Science Building on Stanford's campus. It was a very nice day in Palo Alto. Bright sun, around 60 degrees. The building next to us was under construction, so sometimes in the recording you can hear the sound of work being done. Her office has whiteboards and bare walls and a row of windows, so the audio is a little bouncy, as I like to say. There is an occasional pinging from what I think are heating pipes, but maybe that will help you feel like you were in the room with us.

I had not interviewed a frog researcher before, and I really enjoyed Lauren. Let's pick the interview up here, where we're chatting about commute times and how long she's been at Stanford. That should be enough to get us going. Here is your “Synaptic” episode with Lauren O'Connell, starting right now.

[transition music]

Lauren O'Connell: Go hiking or something like that. My spouse works in Redwood City, so he has a commute, a 20-minute commute.

Brady Huggett: He does. The first thing, how long have you been at Stanford?

Lauren O'Connell: I've been here for around seven years, I think. Yes, I came here when I started my assistant professor job. Yes, it's been seven years in Palo Alto.

Brady Huggett: Where'd you live before this?

Lauren O'Connell: Before this, I lived in Boston, because I had a fellowship position at Harvard.

Brady Huggett: The Bauer Fellowship. Yes. All right. Let's go back to the beginning. You were not from Boston originally. No. Where are you from?

Lauren O'Connell: I'm from Texas.

Brady Huggett: What part?

Lauren O'Connell: It's like close to the DFW area.

Brady Huggett: I don't know — DFW?

Lauren O'Connell: Oh, that's Dallas-Fort Worth.

Brady Huggett: Oh, OK. I do know what that is. Right.

Lauren O'Connell: Yes. I actually didn't live in an incorporated town, because I grew up on a farm. It's in this place called the Rendon, which is like not even a town. Yes, so I grew up on this farm, in that general vicinity.

Brady Huggett: Around DFW?

Lauren O'Connell: Yes.

Brady Huggett: Like a dairy farm?

Lauren O'Connell: No, we had goats. They were dairy goats, but we had chickens and llamas and things like that. It was like a working farm.

Brady Huggett: Yes. That was the source of income for the family?

Lauren O'Connell: We had this goat farm, and then my parents are also artists.

Brady Huggett: Really?

Lauren O'Connell: Yes.

Brady Huggett: What kind?

Lauren O'Connell: My dad is trained in ceramics. He did a lot of ceramics, and part of our barn was a, had like a, like a wheel and everything. He does Raku pottery. Then my mom does, she's a great illustrator. They had this graphic design company that they ran out of this shed.

Brady Huggett: On your farm. OK. Then my question is how the farm, was this like a family lineage thing? How is it that your family was in Texas at all? I guess maybe that's the question.

Lauren O'Connell: No, my parents are from Texas. There's this cultural thing in Texas to not be dependent on the government and to live off the grid. That's where I think that came from, that desire to have a farm and be self-sufficient.

Brady Huggett: Aha. They started the farm?

Lauren O'Connell: Yes.

Brady Huggett: Then they started, that would make sense for the ceramics. They're going to make their own pots. They're going to make their own, whatever. The illustration doesn't fit quite into that. That one was a business?

Lauren O'Connell: Yes. Well, they needed money.

Brady Huggett: They started this farm to provide, so I guess, were they selling the goat milk as well?

Lauren O'Connell: Yes. We made goat milk and goat chocolate.

Brady Huggett: Oh my God.

Lauren O'Connell: Then also, some goat is, like, a dish, like a meat in some cases. We sold them for those too. Then we had llamas and we, like, spun llama wool and things like that.

Brady Huggett: You say we, so I'm assuming part of your growing up is spinning llama wool, milking goats.

Lauren O'Connell: Yes. Me and my siblings.

Brady Huggett: How many kids?

Lauren O'Connell: Yes, I'm one of four. I'm the oldest.

Brady Huggett: Your parents start this farm. Your dad teaches himself ceramics or —

Lauren O'Connell: Yes. Actually, he was a Marine and he's a Vietnam War veteran. When he got out of the war, he went to school for pottery and he didn't end up finishing that school. He didn't end up graduating from college because it was a lot of money. He started then working construction and then he met my mom and they decided to be, they wanted a place where they can live off of the land and be independent from the government. Then they decided to do that once they started a family.

Brady Huggett: Independent from the government, meaning I'm not paying my taxes or just like legal?

Lauren O'Connell: Yes.

Brady Huggett: Oh, really?

Lauren O'Connell: Yes. That kind of vibe.

Brady Huggett: I'm going to make some assumptions, and just tell me where I'm wrong, right? Your father returns from the war.

Lauren O'Connell: Yes.

Brady Huggett: Probably a little disenfranchised.

Lauren O'Connell: Yes. A little bit. I think it was like a mix of like, I think Texas has a culture of being anti-government anyways. Then he also, they were very religious.

Brady Huggett: Christian.

Lauren O'Connell: Yes, they were Seventh-day Adventists, which is a special-

Brady Huggett: Branch

Lauren O'Connell: -flavor and that really believes in the end of times and things like that and being self-sufficient to prepare for something like that.

Brady Huggett: OK. Now this is becoming clear to me. I'm actually a little struck by your father returning from the war and saying, "I'm going to go into ceramics." I don't think I would have guessed that would be the choice. Do you know why he did that?

Lauren O'Connell: No. I think he really liked that in high school. I don't think he had a lot of options, but if you're growing up in the middle of nowhere, I don't think you have a lot of options if you don't have a lot of money. That going into the military seemed like to make sense. I actually think that going into ceramics, I think is after something like being in a war can be healing in a way because you're working, he likes to work with his hands because he was a carpenter for a little bit. I think making something very pretty is, heals your soul in a way.

Brady Huggett: Yes. That makes sense. He met your mother and she was already an illustrator.

Lauren O'Connell: Yes. She had been working as an illustrator for us since she was very young.

Brady Huggett: They said, "Let's go off by ourselves," buy a plot of land, or did they already have it?

Lauren O'Connell: No, they bought a plot of land.

Brady Huggett: We're going to become self-sufficient and prepare for end times.

Lauren O'Connell: Yes.

Brady Huggett: Then into this mix, you were born.

Lauren O'Connell: Yes.

Brady Huggett: Tell me about growing up.

Lauren O'Connell: Growing up, yes. They had us go to a religious school in the beginning, the Seventh-day Adventist school, so it was like very in a religious bubble almost, and this anti-government religious bubble. Then I had a lot of farm chores.

Brady Huggett: Llamas, the goats.

Lauren O'Connell: Yes. You have a lot of kids because there's a lot of jobs.

Brady Huggett: Yes, this is like, this is why you had kids in the first place in the olden days, is to handle the farm.

Lauren O'Connell: Exactly, yes. There was a lot of that.

Brady Huggett: You're growing up. At some point, do you become interested in science? Was there an expectation that you'd help run the farm one day, that you were going to join the church? I don't know.

Lauren O'Connell: Yes, so I think they expected me to do something useful, and then, so for me, something useful that like a girl could do was to be in the veterinary field, so working with animals, or being a nurse in some way. I liked those things. I didn't realize it, but like working on this farm and like dealing with a lot of agriculture, I think that it actually introduced me in a way that I didn't realize until much later, to like animal genetics and animal behavior. I think that primed me to be interested in those realms of science. Because I thought I needed to be something useful to my community, like a nurse or some type of veterinary aid, then I tried to be good at science in school.

Brady Huggett: Oh, OK. Because you're thinking, maybe if I go to vet school, I'm going to need the science, like that.

Lauren O'Connell: Yes, exactly.

Brady Huggett: Was your plan to go to vet school?

Lauren O'Connell: Yes. No, my plan was to do some type of nursing because I wanted to help people. I was going to be this, I went to community college, because my dad didn't finish college, and my mom did eventually finish college after kids and stuff like that. My dad actually, eventually, I think when I was in graduate school, finished community college. There was some recognition that you need something a little bit more past high school. Anyway, I went to community college. Then I really liked science at that point. My professors actually really tried to talk me into transferring to a university to get a four-year degree.

Brady Huggett: This is, I do know this is Tarrant County College.

Lauren O'Connell: Tarrant County College.

Brady Huggett: You're sort of in the nursing track or something and taking biology classes.

Lauren O'Connell: Yes, biology classes.

Brady Huggett: Some professor says, "You might want to aim higher than this one?"

Lauren O'Connell: Yes. Her name is Jean de Schweinitz, actually. She's an amazing human. Every time I'm back in that area, I try to try to chat with her because she was just so amazing. She was my biology professor. She like got me a job in a lab and tried to convince me that I needed to transfer. Which my family didn't think was an incredibly useful thing to do. To go to college and then especially moving away from home. Then, by the time I went to graduate school, they thought that was a total waste of time.

Brady Huggett: I'm interested, what do you think this professor saw? I should back this up. Did they just pull you aside one day and said, "Listen, Lauren, you're doing great in this class and I'd like you to think about maybe expanding your worldview or going to a better school. Because while Tarrant is plenty good, I want more for you."

Lauren O'Connell: Yes. They nominated me for this program, this LSAMP program. It's for, like to get people who are underrepresented, either racially or ethnically or socioeconomically, geography, people from rural places, like, into science. They nominated me through that program. I went to University of Texas Arlington, which was the closest. It was like an hour away, but it was the closest university I had to my hometown. I went there in the summer to do a summer internship. Then I think that really helped me then transfer from community college.

Brady Huggett: Then you began to look around, where can I transfer from?

Lauren O'Connell: Yes, exactly.

Lauren O'Connell: I was going to stay in Texas — because I just like, my world was very small at that point. I got this flyer in the mail from Cornell who I had never heard of before. I was like, "I don't know what Cornell is, but I'm going to apply anyways." Then I got in.

Brady Huggett: That's the only place you apply.

Lauren O'Connell: I applied to Cornell. I applied to Texas Christian University, TCU. Because that's eventually where my mom graduated from. Then I applied to UT, University of Texas Austin. These three places, and I had never heard of Cornell before.

Brady Huggett: How did they find you?

Lauren O'Connell: I have no idea. Cornell is really amazing actually at getting transfer students into the university. They take a lot of transfer students.

Brady Huggett: They focus on it somehow.

Lauren O'Connell: Yes. They have a lot of support mechanisms and things like that. I have no idea how they got my name, but that flyer in the mail changed my life.

Brady Huggett: I want to go back to this teacher thing. Because I'm, but what do you think it was that they saw? For some reason they said, "Well, this person, let's see if we can help them."

Lauren O'Connell: Yes.

Brady Huggett: What do you think it was?

Lauren O'Connell: I don't know. It was a long time ago. I think I was good at the class and they saw that I was getting the material, and quickly. I actually hung out, like I went to their office hours, and now I realize, well, how rare that is, that students come to talk to you in your office hours. To talk through problems and things like that about my life growing up on this farm. I think they could tell I was a little like in this agricultural religious bubble and that this could be a way out of that.

Brady Huggett: If I had to guess, it would be that. It would be that you would come into the office and saying, "Can you tell me more about what we talked about in class today?" Also sharing your life. They thought, "This is an eager person with a curious mind. Let's see if we can nurture them."

Lauren O'Connell: Yes. I think so.

Brady Huggett: Then this flyer comes in the mail somehow. I'm still fascinated.

Lauren O'Connell: Yes. To this day, I do not know how they got my address in the middle of rural Texas to send this to me.

Brady Huggett: You send off to Cornell and you get in.

Lauren O'Connell: Yes. I got in.

Brady Huggett: Now do you have to go to your family and say, "Not only am I transferring to a different school, but I'm going to leave the state."

Lauren O'Connell: Yes. Because I had never been like that far north.

Brady Huggett: Where had you been? You been out of Texas?

Lauren O'Connell: I had been out of Texas. Because we have family in Oklahoma and family in Louisiana. I had been in some surrounding states, but I had never been north of Tennessee or that far north. They were not happy about that, but they were like, "Well, this is something you want to do." I was very homesick, and it was a big culture shock for me, going there. They drove me up there and they dropped me off and then they were like, "OK." They put all my stuff on the side of the road. Then they were like, "I'll see you later." Then they drove, turned around, and drove back down.

Brady Huggett: Seriously?

Lauren O'Connell: Yes.

Brady Huggett: Did they take you into your dorm?

Lauren O'Connell: No. They were just like, "All right, we got to go." Because there's a farm waiting for them and stuff like that. Huge responsibility. Exactly. We couldn't afford a flight into there so they just dropped me off. Yes, only later did I realize when I saw these families helping people into their dorms, that —

Brady Huggett: That's what college looks like.

Lauren O'Connell: Exactly. That I was missing something here. They didn't know; they didn't live in a dorm and a university or something like that. They have no way of knowing that's what you do.

Brady Huggett: I mean they could have put you on a bus. They drove you up.

Lauren O'Connell: Yes. They rented a van, drove me up.

Brady Huggett: Tell me about this culture shock. Did you have a roommate?

Lauren O'Connell: I had a roommate.

Brady Huggett: You'd never met this person before, obviously.

Lauren O'Connell: Yes.

Brady Huggett: What was that person's background?

Lauren O'Connell: She's a New Yorker. Lots of people from Cornell and New York. She was amazing. We definitely had different paces of life and different backgrounds, but we ended up being, becoming really great friends. Then I still talk with her. She's from, I don't know if she's from this. She's from Pleasantville, New York.

Brady Huggett: Not the Long Island.

Lauren O'Connell: Not Long Island, but she's from New York state. Still a world away from where I was. I think it was very rough for me. I had a very thick Texan accent, I have had a very regional accent and people thought I was stupid and so it was tough like fitting in. I think just as transfer students have, it's tough anyways. Because we were like, I was like told to my face that we didn't belong there or people didn't think transfer students should be allowed to come to Cornell.

Brady Huggett: Who? Other students.

Lauren O'Connell: Yes.

Brady Huggett: You didn't deserve it academically to be in there.

Lauren O'Connell: Yes.

Brady Huggett: Because you just transfer here.

Lauren O'Connell: We were like the charity cases. They like, we weren't prepared for college or something like that, because I paid maybe like \$300. Because I was a waitress paying my way into this community college, which was worked out fine, but then I transferred to Cornell, and so I met these amazing professors who really care about teaching. It was only \$300 a year that I could easily make waiting tables, and then to transfer to a place where I had to take out a bunch of student loans and things like that. I think, also, I was getting the same degree, but taking a shortcut, and I think that was their perception.

Brady Huggett: You had to take out loans for Cornell?

Lauren O'Connell: Oh, yes.

Brady Huggett: You weren't accepted with any financial aid or anything like that?

Lauren O'Connell: I did have some financial aid, yes.

Brady Huggett: Still, loans are going to be needed on top of that. You transferred in as a sophomore or a junior?

Lauren O'Connell: A junior, yes. Yes, I got financial aid to cover all my tuition, but I had to —

Brady Huggett: Cost of living.

Lauren O'Connell: Yes, exactly, like room and board.

Brady Huggett: Were you prepared for classes?

Lauren O'Connell: I think so. I think I was really just overwhelmed by the differences in the classes, and how that was everybody's just full-time job, because at a community college, students typically have full-time jobs, where families are taken care of, and everybody just studied all the time, and I think that was the expectation. I think I struggled with the pace of the courses, and then just that being the expectation that you have this, that you're just studying all the time.

I really missed home at that point. I remember being like dropped off at campus, and I was like, "OK, how do I eat? Where is the food?" Just worrying about these basic needs. Then having enough money to buy food and things like that, because I also needed to find a job.

Brady Huggett: Yes, and no car, how would you even get the food?

Lauren O'Connell: Yes, I don't know, and so I didn't even know how a dining hall worked or something like that. It was like a big learning curve, and I think I didn't do well my first semester there, but then it took me a minute to figure out how things worked, and then I ended up doing really well.

Brady Huggett: Two things I want to ask about. One is, did you lose your accent very quickly? If people are making fun of you and saying you sound stupid, your accent cleaned up quick.

Lauren O'Connell: Yes, it still comes back when I'm talking to my mom, or-

Brady Huggett: Or when you're home?

Lauren O'Connell: -when I'm home, when I'm like have a glass of wine. I worked really hard to try to soften it a little bit because-

Brady Huggett: To fit in.

Lauren O'Connell: Yes, to fit in, exactly.

Brady Huggett: Then the second thing is, when you transferred, you were also thinking biology?

Lauren O'Connell: Yes.

Brady Huggett: OK, so tell me what you studied in your remaining two years.

Lauren O'Connell: Yes. Well, I wanted to do biochemistry, and I wanted to be, at that point, I was like, "Oh, maybe I can be a doctor instead of a nurse." That had never occurred to me before. No one had ever said that, and so-

Brady Huggett: Because girls aren't doctors?

Lauren O'Connell: Girls aren't doctors, where I'm from.

Brady Huggett: Yes, so now you're in a place where girls can be doctors.

Lauren O'Connell: Girls can be doctors, yes, which is, well. Also, I had no idea what being a scientist was. I had no idea that was a job. Now I'm at a big university, and I got a job working in a lab, doing media prep for yeast cultures. Then I'm like, "Oh, being a scientist is a job." Which is something that never even occurred to me.

Brady Huggett: Did you get that job because you needed a job, or because you were interested in science?

Lauren O'Connell: Both. So I needed a job. Because part of my financial aid required me to have a job and to do community service. Yes, I needed a job to keep my financial aid. Yes, I got a job doing lab prep stuff. Then I thought I wanted to do biochemistry, and then I looked at these classes that they had here, and I saw a bunch of classes on animal behavior. Then,

when I started taking these classes, I was like, “Oh, this stuff about the brain is really cool.” I switched my concentration to this neurobiology of behavior track that they have at Cornell Biological Sciences.

Then I got introduced to people doing science in nature. Then I was like, “Oh, this is where I want to be.” I couldn’t actually do any of that at the time, because a lot of field experiences are unpaid. I don’t come from money. My parents weren’t paying for me to be at college, and so I couldn’t accept any positions that didn’t pay. I didn’t get to do any field work when I was there, but I recognized that it was a thing, and it was a job people had. I decided that’s what I wanted to do, study the brain in nature. Then I wanted to go to graduate school to do that.

Brady Huggett: OK, but you wanted to study the brain in nature and animals.

Lauren O’Connell: Yes. Well, I think growing up on a farm, I liked animals. I thought, I understood, the animals that we had. Then I also did this, summer shadowing thing, where I shadowed a physician. I did not like it at all. I think, I shadowed somebody in an MS clinic, and they were testing this person that came in. They went through this flow chart, this yes/no flow chart. Then they basically, at the end of this thing, told this person, this 18-year-old woman, that she had MS. She was crying, and her family was crying, and I just felt like I should not be in that room, that it was a very personal moment.

I thought that, I was like, “Wow, I think, I want to work on the basic aspects of these things, rather than working on the human aspects, and doing diagnoses and things like that. I want to figure out, actually, how to fix the problem.”

Brady Huggett: As opposed to being the one who might say, “You have this problem.”

Lauren O’Connell: Yes.

Brady Huggett: The yes/no is like if, do you have this? Yes. OK, then I’ll follow up with this question. Does this happen? Yes. Oh, shoot.

Lauren O’Connell: Yes, I didn’t like that flow chart. I thought it was very binary.

Brady Huggett: Impersonal.

Lauren O’Connell: Impersonal, and I didn’t like that at all.

Brady Huggett: Yes. I want to ask this, too. Growing up Seventh-day Adventist, were you, if you start thinking about biology, and animals, and evolution, that’s usually outside of the church’s thinking. Was that something you needed to overcome?

Lauren O’Connell: Yes, so, I didn’t learn about evolution until I got to Cornell. I had never taken a class. This is not taught in public school in Texas. Back then. I don’t know if it is now. Yes, I didn’t learn about evolution. The E word was a bad word.

Brady Huggett: Really?

Lauren O’Connell: Yes.

Brady Huggett: In school, you’re learning the Ark?

Lauren O’Connell: Definitely, when I was in elementary school.

Brady Huggett: Noah’s Ark.

Lauren O’Connell: For sure.

Brady Huggett: That’s how animals-

Lauren O’Connell: Yes. At some point in middle school, there were four of us at this point, and my parents couldn’t afford this private school anymore, and so they put us into public school. We weren’t learning biblical passages at that point, but we also, even in public school, they’re not learning about evolution in that same way. The evolution is this bad word.

Brady Huggett: How are they explaining? Animals. Just that they're out there. They're not saying, they're not tying it to God or anything. They're just saying animals are out there, and we're not going to discuss evolution.

Lauren O'Connell: Yes, you just talk about a physiological process. How hearts work and things like that. I think you don't even have to touch upon-

Brady Huggett: How it got to be that way?

Lauren O'Connell: Exactly.

Brady Huggett: Yes, OK. Now you're at Cornell, and you come across evolution.

Lauren O'Connell: Oh, I took an evolutionary biology class, and I was like, "Oh my God. Everything makes sense now." I was like, "Whoa." It was like, yes, I loved that class. Just because I was like, "Everything makes sense."

Brady Huggett: For the first time in my life.

Lauren O'Connell: For the first time.

Brady Huggett: Everything makes sense.

Lauren O'Connell: Yes, exactly.

Brady Huggett: Is that the thing that, never mind that you spent the time shadowing this physician, and you didn't like that, right?

Lauren O'Connell: Yes.

Brady Huggett: Was this the thing that said, no, I want to, because a lot of what you do is now evolutionary biology, kind of, yes?

Lauren O'Connell: Yes.

Brady Huggett: This is the thing that did it.

Lauren O'Connell: Yes. I think a mix of finding really interesting classes on the brain and behavior, and coming from a childhood of being outside all the time, working with animals on a farm, and then taking this evolution class, and being like, everything makes sense now. Yes, I wanted to put that together in some way.

Brady Huggett: Did you bring up that class with your family? Go to your parents and say, "I took this amazing class today; there's this thing called evolution"?

Lauren O'Connell: I brought it up with my siblings, yes.

Brady Huggett: You being the oldest?

Lauren O'Connell: Yes, none of my siblings are religious, and I'm pretty sure my parents think that that's my fault. because they-

Brady Huggett: If you'd never gone to Cornell.

Lauren O'Connell: Yes, exactly. They sent me away to this liberal place in New York, and I think that they, maybe not now, but they definitely thought that might have been a mistake.

Brady Huggett: Two years later, you finished with your degree?

Lauren O'Connell: Yes.

Brady Huggett: Then you already know, you look, I actually want to be a researcher.

Lauren O'Connell: Yes.

Brady Huggett: You started looking for a Ph.D. program?

Lauren O'Connell: Yes. Because I was in a lab, and they helped me apply for graduate school and things like that, because I had no idea.

Brady Huggett: How to do that, even?

Lauren O'Connell: How to do that or what to do or how to pick graduate programs or things like that. My lab, when I was at Cornell, really helped me with that. I ended up applying to a bunch of places, but I ended up going back to UT Austin, to Texas, because I did miss being home. Then the other thing, my sister was having a baby. She was on her own with that. I wanted to be there to help her, to be close, to have some family responsibilities. I went back to Texas.

Brady Huggett: If you're thinking like the next five, six years of my life or whatever, might as well be close. You're going to be, about to be an aunt?

Lauren O'Connell: Yes.

Brady Huggett: You moved back to Texas and you go to UT Austin?

Lauren O'Connell: Yes.

Brady Huggett: Your Ph.D. was behavioral.

Lauren O'Connell: Yes, I think it's technically cell molecular biology.

Brady Huggett: Oh, yes, that's right.

Lauren O'Connell: I picked labs that studied some aspect of neuroscience and some animal that you could also study in the wild. There are lots of people studying mice in the wild now. Either it wasn't happening as much back then or I wasn't aware of it. The only people who were really accepting students like that were these people who were working in these ectothermic animals, like lizards and frogs and things like that, or fish. I decided to do something like that because I always had fish or a snake or a tarantula or whatever when I was growing up. That didn't creep me out at all.

I was totally, and I knew that they had very complex behaviors that we didn't quite understand yet, but it was a little bit more simple than working in a mammal.

Brady Huggett: You do that for, I don't know, five years.

Lauren O'Connell: Yes.

Brady Huggett: Graduate with your Ph.D.

Lauren O'Connell: Yes.

Brady Huggett: Then you get this Bauer Fellowship.

Lauren O'Connell: Yes.

Brady Huggett: How did that happen?

Lauren O'Connell: Well, because one of the reasons, I wanted to be a scientific illustrator, actually, at that time. I either want to go into graduate school, but I don't know how to do that. I do know how to do illustration because this is what my family did. I was like, "I think I could be in between these worlds and be a scientific illustrator." I think I'm going to apply, but those jobs are hard to get. I think I'm going to apply to these Ph.D. programs to be able to be better prepared for being a scientific illustrator. I got into this Ph.D. program, and this was still my plan at the end.

I had no intention or even the thought that I could be a faculty member because I think I had this really amazing woman professor at a community college where you do a lot of teaching, and so I really didn't have any women PIs that ran research groups and stuff like that. For some reason, maybe that's the reason. I'm not sure. It didn't even occur to me to be a faculty member. I had gotten married, and I was pregnant with my first kid at the time. I was becoming really interested in parental care and things like that. I was still not going to go into academia.

One of the reasons is because what I wanted to do, no one did. There was no place for me to do a postdoc and no opportunity to start something totally new. I was just going to go into doing this scientific illustration. Then what happened was that this person from Harvard, Andrew Murray, who runs the Bauer Fellows Program, came to give a talk at UT Austin and asked me, if I could do anything, what would I want to do? I told him the thing but there's no place for me to postdoc to do that.

Brady Huggett: Oh, you didn't say illustrator, you said, "I'd like to study."

Lauren O'Connell: Yes. I'd like to study this, but this isn't possible, so I'm going to go do this illustration thing over here. He was like, "Well, you should apply to this thing, this program that I run that it's for people starting new things." I was like, "OK." I'm on maternity leave. I'm bouncing my baby with one foot. I wrote this fellowship application on this idea, and then I sent it off, and then I'm about to start this job.

Brady Huggett: As an illustrator?

Lauren O'Connell: Yes. It was the only thing I applied for other than an actual job. Then it came back, and they accepted me into this place at Harvard.

Brady Huggett: Do you ever think about that? Are any of these drawings yours?

Lauren O'Connell: All of the drawings in the hallway are mine.

Brady Huggett: Yours? You're going to illustrate?

[crosstalk]

Lauren O'Connell: My website.

Brady Huggett: Obviously, right?

Lauren O'Connell: Yes.

Brady Huggett: I think that would've been a wonderful life for you had you done that. It came very close because if you hadn't applied, you'd be doing the illustration jobs now.

Lauren O'Connell: Yes.

Brady Huggett: Do you ever think about that?

Lauren O'Connell: Oh, I think about stuff like that all the time. [laughs] If I hadn't met Andrew at this one dinner, if I had been like, "Oh, I'm not going to go to this dinner." I think about that here and the people I interact with now in this position of power as a faculty member, who I open up my calendar to, and who I think it's just amazing how these one little meetings can-

Brady Huggett: Change everything.

Lauren O'Connell: -change somebody's life. This one dinner at this barbecue place, [laughs] opened up this door. Then, my spouse was like, "Well, we can't say no to this Harvard thing; this sounds nice." My daughter was 1 at the time, so we moved to Boston, and I remember just being like, "I don't know what I'm doing here."

Brady Huggett: OK. Two things. Is your husband a scientist too? Did you meet him at UT Austin?

Lauren O'Connell: Yes, we met at UT Austin. He is also a scientist. He is in industry.

Brady Huggett: When he sees this Harvard thing, he's like, "Yes, we can move the family. Let's do it."

Lauren O'Connell: Yes.

Brady Huggett: You move up there, Boston too. If you were unhappy when you first landed in New York, Boston is its own cult really. It's a different city. What did you make of it?

Lauren O'Connell: It's very cold. I'm not a fan of being cold. I think it's this mix of the weather. For me, it was more like the lack of sunlight that I thought was really hard. Also, I think just the culture was very different from this Southern culture that I grew up in. Everybody's very direct and tells you what's on their mind, which I appreciate now. Then it's like this mix-in of being at Harvard, and everybody's like, "Oh, Harvard." I'm like, "Ah." I remember walking through the Harvard quad and being like, "I don't belong in this place." [laughs] It was very difficult to do that.

Brady Huggett: You did belong in that place.

Lauren O'Connell: Yes. Eventually, years later, I did what I set out to do there and established this new system in neuroscience and things like that. I was like, "Oh, I could actually stay here and be happy, I guess." I felt much better about it at the end.

Brady Huggett: You get this fellowship, you went to step to do this independent research that you considered but didn't really know how to do and someone said that's a good idea.

Lauren O'Connell: Yes.

Brady Huggett: You didn't really know how to do it. You had to get animals; you had to get frogs. How did you do all that?

Lauren O'Connell: I picked frogs because they have this- I was interested in parental care because I was having my first child at the time, and frogs have these really wonderful diversity and reproductive strategies that isn't really easily studied in any other vertebrate taxa. I knew I wanted to study these frog behaviors, but they've been a model system in ecology and evolution for a really long time. No one was doing any neuroscience with them. No one was doing anything molecular with them. I was like, "OK, this is what I'm going to try to start."

When I got that fellowship, I was like, "Oh, now I have to figure out what I'm going to do because it was all just this grandiose idea." Who I reached out was the really lovely people in the poison frog hobbyist community, because there are people who raise these frogs and have them in their basements and really dedicate their personal life to growing these frogs and breeding them in captivity. I reached out to them, and I was like, "Hi, I'm putting together an academic colony; will you help me do this?" I started going to these hobbyist shows and talking to all of these people who eventually helped me set up this colony at Harvard.

Brady Huggett: They're not in Boston, or they-

Lauren O'Connell: There are some in Massachusetts, and then they're sprinkled throughout the U.S., and we still buy frogs from hobbyists and for our research and things like that. They're not trained in academic science, but that doesn't mean that they aren't community scientists in their own way. They're very careful about observing the animals, and they've been raising them for a long time, and they are very much experts in this field. I reached out to them, and they helped me establish this colony so that I could-

Brady Huggett: Do the work.

Lauren O'Connell: -do the work. Exactly.

Brady Huggett: The fellowship came in two parts. One is they're going to give you some funding to do this research.

Lauren O'Connell: Yes.

Brady Huggett: Two, I think there's mentoring on how to set up and run a lab. Is that part of it?

Lauren O'Connell: Yes. Oh, definitely. Because this fellowship is for people right out of their Ph.D. I was 27 [laughs] when I started this lab at Harvard. [laughs] I didn't know what I was doing. How to mentor other people, how to set up a lab, how to run a budget, all of these things, and so you have this mentoring committee, actually of like four or five, like Harvard faculty that you meet, like a Ph.D. committee. They meet with you and help you through a lot of these challenges.

Brady Huggett: Once a week or whenever you meet?

Lauren O'Connell: We met like twice a year. Then Andrew Murray, who's the director of this program and still runs a similar program, we met like once a month to talk about all these things.

Brady Huggett: This is huge. Now I understand- When you leave there, not only have you done some research that's probably notable, but too you know how to run a lab.

Lauren O'Connell: Yes.

Brady Huggett: Your next job is that much easier.

Lauren O'Connell: It was a lot easier. I think we were protected a lot from all the administrative things that come with this job. Then also there was very little teaching. I think, coming here, I was still overwhelmed with, at the amount of administrative things I had to do, but I at least knew how to do a budget, how to set up the colony, of the animal colony, which was really important. I had a clear sense of what we needed to do, which I think would've been impossible to do for a faculty member starting a new system that would be next to impossible.

Brady Huggett: The fellowship is four years.

Lauren O'Connell: It's five years.

Brady Huggett: Five years. OK. When that ends, you end up here at Stanford?

Lauren O'Connell: Yes.

Brady Huggett: Did you have your second child by then?

Lauren O'Connell: Yes, I had my second child when I was in Boston.

Brady Huggett: You have two, you and your husband, two children. Now you're looking for something new. Were you looking at Stanford? Was he looking to go to the West Coast, or how did it work?

Lauren O'Connell: Yes. He did a postdoc at Harvard Medical School. I went on the job market, because at that point I was decided I was going to try- I wanted to keep doing this research and I was going to be a faculty member. I applied to a bunch of places. I got some interviews, we got some offers, and then we basically, I sat down at the kitchen table one night. I was like, "OK, these are the places that will offer me a job. Where would you like to be? Where do you think you could also work and be happy?" He picked Stanford because the Bay Area just has a lot of opportunities for people in the industry.

Brady Huggett: Is he in the biotech industry?

Lauren O'Connell: Yes.

Brady Huggett: That makes sense. Then you thought, “Well, we’re going to raise our family out in California?”

Lauren O’Connell: Yes.

Brady Huggett: What did your parents say to that?

Lauren O’Connell: [laughs] They feel the same way about California that they do about New York. [laughs]

Brady Huggett: New York, right. I would think so.

Lauren O’Connell: It’s like this liberal place where- They watch Fox News. They think of California as this place where there’s like rampant drugs and crime and things- They’re like constantly worried about us. I’m like, “No.” [chuckles]

Brady Huggett: The grandkids?

Lauren O’Connell: The grandkids. Exactly. I’m like, “No, everything is fine.” [laughs]

Brady Huggett: It’s fine. Have they been to Stanford?

Lauren O’Connell: No.

Brady Huggett: It’s gorgeous.

Lauren O’Connell: They don’t have any interest in coming over here.

Brady Huggett: Well, they should because they would not feel worried if they walked around the campus.

Lauren O’Connell: [laughs] Exactly.

Brady Huggett: Seven years ago, roughly, you set up your lab here. There’s a study that you did that I found- Well, first off, I want to ask about wolf spiders.

Lauren O’Connell: OK. [laughs]

Brady Huggett: Because when I’m reading your work, I understand how you can get trackers on fish or frogs, but I do not understand how you get them- When you are working with wolf spiders, are you tracking them in the wild?

Lauren O’Connell: We are not tracking them in the wild. We have a lot of them downstairs in our lab colony. They do a very similar behavior to our frogs, actually. Our frogs, they lay their eggs in the leaf litter, and then when the tadpoles hatch, they have to be transported to water somehow, and so the parents give them this piggyback ride from the leaf to a pool of water.

Wolf spiders are very similar. The mom carries this egg sack with her for two weeks, all the spiderlings hatch out, and then she carries them on her back for like two weeks. She is basically not eating during this whole time. We were really interested in, these are very similar behaviors. Are there similar neural mechanisms that are promoting these behaviors even though they have evolved independently? Are there similar themes in the neural structure?

That’s mostly what our wolf spider work is about. We need a lot of tool- There’s not like a spider brain atlas and things like that.

Brady Huggett: That’s what I meant.

Lauren O’Connell: Same with frogs though. We have this goal, this science question, and then we’re also having to build a lot of resources as we make it to that goal. We had to build a spider brain atlas and sequence their genome and trying to figure out spider neuroanatomy and things like that before we can even map on where the neurons in a spider that-

Brady Huggett: What’s lighting up when they do this or that?

Lauren O'Connell: They do parental care. Exactly.

Brady Huggett: That's ongoing?

Lauren O'Connell: Yes.

Brady Huggett: That answers my question. You did a lot of work with pair bonding. You had found that when pair bonding is focused on resources, not necessarily parental pair bonding but resources that you see more variance in there. You'll see male-male pair bonding, female-female pair bonding, and that is tied to resource protection. I was thinking, well, that's more like community building. I think we're all in this together. You found that?

Lauren O'Connell: Yes. I think the species that you're talking about are these butterflyfishes. What we were interested in is, pair bonding and parental care are intertwined in mammals. Because when males are involved, they typically are- they're one, in a biparental pair-bonding species, and two, then they are providing parental care.

That's one of the reasons I couldn't work on mammals is because the definition of being a mammal is that moms have to be involved and so it's very difficult to disentangle pair bonding and parental care in a male mammal. I had to not work on mammals to be able to disentangle those two questions, but some species pair bond without parental care. These butterflyfishes will just spawn into the water column, but they do stay paired to defend their coral larvas. They eat coral and so they defend these territories.

What we found when we started collecting brains was that it could be a male-male pair, a male-female- There was a huge variation in who was pairing up with who. To get back to your point, someone even asked me, like, "Oh, well is it like really a pair bond or is it just this like intense friendship?" I was like, "Well, I feel like those are very similar." [laughs] It could be if it makes you more comfortable to call it a friendship. That's fine. It's this social bond that persists outside of the context of reproduction.

Brady Huggett: I read this other thing too. This other bit of research that you did, and this is in frogs. It was picked up in the media as an empathy thing, and maybe that's how you described it, where you would take frogs that have been pair-bonded and you would take one away and stress it in some way and measure cortisol levels. Then the frogs would be put back together, and you would measure the cortisol levels in the other frog that had not been stressed and their levels were also higher, which suggested that they understood what had happened to the other frog and were having feelings of empathy toward them.

Lauren O'Connell: Yes.

Brady Huggett: I thought, number one, fascinating experiment, so interesting. I also thought it was like, well, how did this stress get transferred? It's either some sort of communication, where they said, "This thing happened to me. Can you believe this happened today?" They said, "Oh my God, I'm so-" Is there some sense or-

Lauren O'Connell: I don't think we know exactly how they're sensing. This happens in humans. This happens in mammals. This happens in birds, where you will state match your partner hormonally. Like when your partner comes home and they're like, "Oh, I had this really stressful day," and they're really stressed, your cortisol levels will go up too, and you're like, "Ah." There's this hormonal and physiological-like state matching.

For a long time, they thought empathy and state matching was something that was unique to us, to primates, to mammals, who I think we understand a lot better than we understand how a frog might be feeling. Charles Darwin, a long time ago, thought that actually empathy is very widespread. Looking at the natural world, that animals within a species can almost understand what's happening to another individual. It makes sense that they would be able to read another individual state to predict what's happening in the environment.

I think, most people, now, don't think that something like a frog and a fish can- I think empathy is still something that people like to reserve for humans, but they can still like, state match, at least physiologically, their partner who is stressed, and they don't do this to someone who's not their partner was the other part of that study. We gave them some- we stressed out their partner and we stressed out this other female. Then the male state match only their partner.

Something about being pair bonded to this individual, that they were really stressed. They also had this cortisol response. I don't know. I think whether or not they can smell the stress or there's some behavior that we don't pick up on as humans, that-

Brady Huggett: The way they move. Exactly.

Lauren O'Connell: -they can see to it, like with each other, like something is transmitting that this individual is stressed. I think that's the part we don't understand yet. I think we challenge the concept that something like empathy is only for humans.

Brady Huggett: Not true.

Lauren O'Connell: No true. [laughs]

Brady Huggett: To be clear when they were separated and one was stressed, the other one could not see that.

Lauren O'Connell: They couldn't see it. No, no, no. They couldn't see it.

Brady Huggett: There had to be some communication afterward.

Lauren O'Connell: Yes.

Brady Huggett: That's so amazing. OK. I want to ask a few things. One, I was looking at, I think just your resume and the grants that you had gotten. Most of your grants are NSF grants. Yes?

Lauren O'Connell: Yes, we have a lot of NSF money, and then we have some NIH money.

Brady Huggett: You do. OK. That was my question because it seemed like you had gotten something like \$3.6 million in NSF money, and NSF has something like a \$10 billion budget, whereas the NIH has a \$48 billion budget. If your work is like- I didn't know if it made it- so that's a smaller pie, the NSF.

Lauren O'Connell: Yes.

Brady Huggett: Maybe, are there less people vying for that pie than-

Lauren O'Connell: No.

Brady Huggett: No, it's equally as competitive as trying to get NIH money.

Lauren O'Connell: Yes.

Brady Huggett: Some of this work is applicable to humans, as we discussed, at least if you extrapolate it that way. A lot of it is probably not in the eyes of the NIH.

Lauren O'Connell: Yes, I think it's something that we straddle both these worlds, and it's a struggle because we do have NIH money, and a lot of it has to do with benefits of the frog system we're working on. These tadpoles that we study bond to their mothers, and they can recognize their moms apart from like stranger frogs, and they communicate when they're hungry.

Our knowledge of how infant brains or the brains of young are formed and shaped by social experiences and things like that are very limited because it's very hard to work on those questions in rodent pups. Where these tadpoles are, they're transparent, so we can image their brains throughout development because they're not growing up in a womb. We can image brains throughout development. A lot of these same genes that we see, regulating begging behavior and bonding to moms and things like that, are the same genes that mammals have. We're studying these bonding processes just in a simpler, more accessible system. That's mostly what NIH has funded us for.

Brady Huggett: It means that if you were describing your grant simply as, “We’re going to figure out what’s going on with these frogs,” without saying how this might-- you’re never going to get that grant.

Lauren O’Connell: No, no, no, no. In fact, we do get this now from NIH is that like, frogs are a long ways from humans.

Brady Huggett: That’s the response you get.

Lauren O’Connell: Yes. That’s like my job though, in a grantsmanship sense, to convince them that actually it’s easier to understand in this basic system. We have to understand the basic principles of this behavior and what’s going on in the brain before we can scale it up to something more complex and difficult. Sometimes panelists are like that, but other times they’re like, “We actually learned a lot from flies.”

Brady Huggett: Yes, of course.

Lauren O’Connell: Frogs, are a little bit closer than that. Sometimes they’re like, “Well, you should try for NSF money,” because I mentioned the word evolution or something like that.

Brady Huggett: They [crosstalk] down the line.

Lauren O’Connell: Then they’re like, “Go talk to NSF.” I’m like, “No. This is relevant.” [laughs]

Brady Huggett: Along those lines, you have, I think a couple of the L’Oreal- you have a fellowship from L’Oreal, one of which is for, I think just a grant for research. One is a mentoring fellowship, right?

Lauren O’Connell: Yes.

Brady Huggett: I’ll be dead honest. When they first came out with those, I was really skeptical. I thought, “This is L’Oreal. They spent their life telling women that their face is important and they need to look this way. Now they’re telling me that they’re interested in women’s brains.” I was like, “This is a PR stunt through and through,” and it probably still is. They’ve partnered with what? The American Association for the Advancement of Sciences. Yes. They funded Jennifer Doudna, Pardis Sabeti, they’ve nurtured some incredible talent. I think that I was a little hasty in my skepticism. Would you agree with that?

Lauren O’Connell: Yes, I would. People have even asked me if you have to provide a headshot for that grant. I’m like, “No, [laughs] not at all.” As fellows, they have us come to their labs, to see just how much science-

Brady Huggett: Is there.

Lauren O’Connell: -goes into that industry, which is there’s a lot of science happening there and a lot of like material science and a lot of just like really amazing scientists working in that industry. Which is something I didn’t appreciate before.

The other thing I think that program does is that they support women at this really critical transition, between being a postdoc, in this postdoc years, because this is when like most people have children, and that is really hard. There are not a lot of grants that support women who are also community-driven and want to also give back to the community. It’s also mostly in research funds, instead of your salary. They actually want to fund your research ideas. I think they’re actually filling this really important gap when a lot of women leave science. I think actually what they’ve done has been able to keep more women in science for that reason.

Brady Huggett: I have just one question left. We sort of talked about this, but I feel like if you hadn’t have hit the evolution class, your life would be totally different. Is that the thing that completely turned your brain in a new direction?

Lauren O’Connell: It was a mix of this evolution class and a mix of my animal behavior class. I didn’t know you could have a job, or I didn’t know there are people who studied those two things. I come from a community where you have to be very useful and you have to- taking care of animal health is useful from an agricultural farm aspect, or like being a nurse and helping humans through tough times is a useful aspect. Studying animals in their natural contexts, and also how behavior evolves, I didn’t know that there were people that did that, that that was a job. That opened my eyes to this possibility that I could spend my life doing something like that. Being outside studying how animal brains worked in the wild.

Brady Huggett: When you say it like that, it's like- if someone had told you as a child, "Your job is going to be to study animals in the wild," you'd been like, "That's amazing. I get to do that?"

Lauren O'Connell: Yes. I do that now, as a kid.

Brady Huggett: Or, it's like, send you around the world.

Lauren O'Connell: Oh, yes. I had no idea, the scope of that. That there were scientists working on- that studying frogs would take me all over the planet.

Brady Huggett: That's amazing. Given that this is your career now, has it stressed your relationship with your parents? Do they wish that you had stayed on the farm and the grandkids were around all the time?

Lauren O'Connell: Oh, for sure. My dad told me he was really disappointed in me for a long time. The only time he really told me he was proud of me was when I became a faculty member at Stanford, because he was like, "Oh, I guess what you were doing is-

Brady Huggett: Is important.

Lauren O'Connell: -somewhat useful." [chuckles] I think it wasn't clear back then; graduate school could be a waste of time. I thought, they think it was pulling me away from our community. I was being a bad example to my siblings and things like that. I think it was definitely this period where they thought I was like run astray. I think it's actually much better now. Only being here have they come to the realization that what we might be doing might be useful to people.

Brady Huggett: All the siblings, so you have three other siblings.

Lauren O'Connell: Yes.

Brady Huggett: Are they all out in the world?

Lauren O'Connell: Yes. They all live in Seattle actually.

Brady Huggett: Oh, wow.

Lauren O'Connell: I think the level of communication is variable across siblings. It can create a lot of stress. It was really meaningful when my dad finally- he was disappointed in me for going to graduate school and wasting my life and things like that to finally, when I had this job, that he was like, "I'm really proud of you." It made me cry. [laughs]

Brady Huggett: OK, I'm going to stop. Thank you.

Lauren O'Connell: OK. [laughs]

[transition music]

Brady Huggett: There you go. Great talk with Lauren, I thought. Before I left campus, I managed to go up in the Hoover Tower and to see the Rodin Sculpture Garden, both of which Lauren suggested I do before getting back into an Uber. Thank you for that, Lauren, and thanks for having me into your office. This podcast will be archived on thetransmitter.org and is available wherever you find podcasts, Apple, YouTube, Spotify, find it and subscribe, and you'll get each episode.

You can also share the episodes or rate and review "Synaptic," which does help other people find the show. Some of the information on Tarrant County College for the intro was taken from the TCC website. Our theme song was written and performed by Chris Collingwood. That's it for Episode 11. I'll let the music take us out.

[ending theme music]

Brady Huggett: Do you have any questions for me before you-

Lauren O'Connell: Do you have any advice or things you don't want me to say? [laughs]

Brady Huggett: No.

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