

## Young Scientist Spotlight Interview #12: Stephanie Renee

**Devika:** Hey everyone, welcome back to Carry the One Radio. I'm your host, Devika Nair, and today I'm thrilled to share the next episode in our Young Scientist Spotlight series with one of my favorite people, Stephanie Renee.

Stephanie is an undergraduate student at the University of Texas at El Paso. Having spent years working in non-scientific fields, she decided to go back to school a few years ago to pursue a degree in neuroscience and has dreams of becoming a clinical neuropsychologist. We cover life in a metastatic breast cancer lab, her love for the "squishy sciences" (more on that later) and weird medical history facts, and much more.

Stephanie is a delight, and I'm so happy I got to meet her in person last year at SciCommCamp, the same science communication conference that I met Michelle Jewell - the star of our shark episode from this past April (which I highly recommend listening to if you haven't yet!).

Alright, enough rambling from me - let's get started!

*CTOR tag*

**Devika:** Ok, so can you introduce yourself to our listeners?

**Stephanie (00:00):** So, I'm Stephanie Renee. I am an undergraduate neuroscience major.

**Devika:** Were you always interested in studying the brain? You know - take us back. What sparked your interest in science? We can go all the way back to grade school.

**Stephanie (02:26):** I remember enjoying science. The one thing that I do remember, and I don't know what grade it is, but we made peanut butter and jelly sandwiches and that was supposed to be the different layers of the earth, the crust and the mantle. And I think we were doing a Bill Nye experiment. We had to have been watching Bill Nye in the background when we did it. And I enjoyed that, but I never thought, "Oh, I want to be a scientist". That honestly didn't happen until a couple years ago. I worked in culinary arts. I went to school for culinary arts. Got tired of being poor. And then I went to school for advertising and graphic design. And, I worked in that field for about five years or so, but I eventually was like, I want health insurance and stuff like that, that's the thing that I want.

**Stephanie (03:27):** So I was like, I'll go into nursing because I liked the body. It seems cool, sounds fun. So I went through my pre-reqs for nursing. The last one was pharmacology and I realized after that, it's not so much the treatment that I enjoy - it's the learning all the things about the body. So I spoke with a mentor of mine, my first biology professor. And he was like, I think you do really good in research, yada yada yada. And so, he's the one who told me about the summer opportunity and I mean, it's been great. So I can't imagine doing anything else. Nothing gets me excited like science, like universal questions. I don't know. How could you not be in love with that?

**Devika:** More recently, though, you've been working in a lab researching alternative therapies for metastatic breast cancer. Walk us through a typical day. What did that look like?

**Stephanie (08:19):** Yeah. Usually, on like certain days we would just run westerns all day. So, you do the Bradford Western - run the gel and we would usually let the gels run overnight. Unless I just didn't want to go home or something, then I'd be like, okay, I'll sit and I'll wait. And then, that was basically all we did for a while. And then I started working with hybridoma, so cell culture. And, hybridomas are cancer cells

attached to a B cell, an antibody cell. So the goal was to get the hybridoma to start just making antibodies as it proliferated. And then we would put that into our study specimen, which is a mouse and then the mouse would be our little antibody factory pretty much. We couldn't get it to work. The hybridomas that we got were from another school, they sent it to us, and they just weren't working.

**Stephanie (09:26):** And then some days we would do the surgeries. So tumor resection, intracranial injections as well. So inter-cardiac, intracranial or removing a tumor or just feeding the mice, to checking them in the morning, early mornings to check them, to make sure everyone's doing fine. Or if they've bred recently, you have to make sure that you separate them within enough time. But our ultimate goal in the lab was to find an alternate treatment for metastatic breast cancer. So we were trying different compounds to treat breast cancer, as well as different ways to administer the common medications that people use. Just to see if there's a way that we could add a little bit more longevity to someone's expectancy, life expectancy with a metastatic breast cancer.

**Devika:** Wait so, what were the different ways you were trying to administer these compounds? Also what were the different compounds?

**Stephanie (10:42):** Well, I mean, a common way would just be your regular infusion. What we were trying was metronomic therapy. So instead of normally when you give chemotherapy, it's the highest dose that the person can withstand and then you wait a long while and then again, you're going to hit them with the highest dose again. So with this, we try smaller dosages at a more frequent interval to see if that actually makes a difference. As far as the compounds, basically the drug study that we're doing is they're just testing thousands of compounds to see ... I think they got it down to 17. And then from that, maybe whittled down to seven, I don't know all of the compounds and then I don't know if he [PI, I'm assuming?] would want me to say, but I know that turmeric is one of them that has shown a little bit of positivity. But it's not done yet, it's not finished yet.

**Devika:** And these are all preclinical experiments?

**Stephanie (11:58):** Yes. They're all preclinical. But the drug study, as far as the compounds are done in the cells, so outside of the mouse, but the infusions, the metronomic therapy that's done in the live model.

**Devika:** Wow, I admire anyone who can handle cell cultures or work with animal models. I've personally never worked in a lab like that - and I think I made the right call. When I took a stem cell culture lab course, I was constantly contaminating my cells or breaking pipettes. I was the worst student in that class.

**Stephanie (12:51):** I love it. I tell people I love the squishy sciences. I could never do field work. I love hiking. I love camping, but I don't like my hands being dirty, with dirt and I don't want to be outside when I don't want to be outside. I couldn't do it, but I'm like, let me cut something up and take something out. And let me see it pulsate in the body and that's my jam.

**Devika:** So when you're doing surgery, you're resecting the tumor - you're working with metastatic tumors, so that means these cells are traveling to other parts of the body. For breast cancer cells, do we know where they're usually traveling to?

**Stephanie (13:38):** Yes, but we've seen that it normally travels to the kidney or the liver. We're using human breast cancer cells. And so, our model for metastasis would be - sometimes we do inject directly into an organ just to see what'll happen there. But sometimes you just inject the mouse and see where it does go. And sometimes the mice don't get cancer. Sometimes they do. Sometimes it takes weeks or days. Sometimes it takes months. Just like with people, it's variable, it's a toss of a coin.

\*music break\*

**Devika:** So it sounds like you're really passionate about this line of work - is this something you'd like to continue after undergrad?

**Stephanie (14:32):** If I stay in the lab, the cancer lab, I feel like me and my PI made a deal, but I don't know if I just made a deal in my head and he's not aware of it. It might be a one sided deal. But they need a PhD in the lab. And so, he wants me to continue to do my PhD. I want to do a PhD, but I want to do a PhD in clinical neuropsych. So that's the goal. And I also don't want to do it here, but I really enjoy - I admire and well, maybe not admire, but I respect my PI very much and it would hurt my heart to leave.

**Stephanie (15:23):** He's pushed for me and fought for me in so many different ways that I appreciate because no one else has before, especially in an academic setting, but I was like, well, if I can do something regarding the brain tumors, if I can just do my PhD involving the brain tumors and maybe figuring out if a different medication works with the blood brain barrier or something of that nature, if I can't do that or if I get enough courage, then I'm going to move to another lab.

**Stephanie (16:03):** ... not in the fall, but in the spring, there's a couple of projects. One guy is doing *Francisella tularensis* and how they found the *Francisella tularensis*, they've found out that it can go to the brain. And so, I think the next thing they're going to study is what happens when it goes to the brain. So how does it affect - I don't know if they work with gerbils, not gerbils, people, no one works with gerbils, but it's either rats, it's not foals like field mice, but I think it's rats. They might be working with rats. But they're going to study the behavior. And so, I would love to get into that because I do want to be more neuro-oriented, but if I can work on the brain, having the hands on animal experience is really helpful. I feel like maybe not a lot of people get that chance. And then, especially as an undergraduate and starting from the community college, I'm just grateful.

**Stephanie (17:24):** Just cause, well, here we go. It was about seven years ago, I would say, when is this? 2000? Five years ago? It's 2020, time has no meaning anymore. About five or six years ago, I got into some legal trouble, and it will just always be on my record. So, regardless of the person that I was before or the person that I am now, during the background check, you're probably only going to see this one thing. He took a chance on letting me into the lab because my application got held up after the background check and they had to speak with him and ask, is it okay? Do you feel okay with her being there? Because you have to get access to things, I have to get access to the vivarium and then just to the building and all this other stuff. So, I mean, I didn't do the horriblemest thing or anything like that, but some people will just always look at me like I'm trash and I'm like, I've never been in trouble before. I've never been in trouble since, but okay, go off - you know.

**Devika:** But it all worked out for the best. You just need one person to believe in you and give you that support and, I mean, look at where you're today. You're pursuing your dream studying the brain!

When did you know, though, that neuroscience was your passion? Was it a class or a professor?

**Stephanie (04:34):** I've wanted to do neuro for a while I suppose. This'll actually - our school just got it. So this will be maybe the third semester of them having the neuroscience major. So prior to this, I was just like, I'll do micro because I love diseases. One of my favorite things. So I was like, well, I'll do microbiology. And I took a microbiology class, and it wasn't just cool diseases and what happens. It was telling me the pathways for this and this. And I was like, this is awful. It was not fun, but I still love diseases. I just want to literally only learn about the disease. But I had to have, I don't know, I guess maybe read a book or some ... Oliver Sacks, I was reading "An Anthropologist on Mars". And then I just got sucked into the brain. I have a whole bookshelf full of just brain books. And I don't know, I mean, it's the ultimate answer. If we could figure out the brain, then that's everything. I don't know. I guess I'm a megalomaniac. I don't know.

**Devika:** That's hard to argue against. I studied cognitive psychology in undergrad, so yes, the brain is the most fascinating organ.

But you have a very interesting and unique career trajectory. Do you think having that background in culinary arts and graphic design helped you get to where you are today?

**Stephanie (06:44):** Definitely, in certain ways. As far as me being sure of what I want now, because I've tried all the other things. So now I know what I want, and I'm able to put forth all of my effort into that instead of being wishy washy or - I'm also older, I'm 32, I think 31, 32, one of the two, I stopped counting. I'm one of those and it's just I have a different, I don't know, I have bills to pay. I don't get financial aid, so I pay out of pocket. So already it means more to me because it's not just, "Oh, well, if I don't do well in this class, that's fine financial aid will go in the summer". It's like, no, if I don't do well in this class, then I spent two months rent on something that I have to do again. Just my work ethic is different from a lot of the younger students that I see around me, but I was probably exactly like them when I was younger and tried to go to college before and it didn't work out well.

**Devika:** That's really great to hear - when you're older and have had more life experiences, you have more clarity in your academic and career goals, which for you, is to pursue a PhD in Clinical Neuropsychology, right?

**Stephanie (19:32):** I didn't even know it was a thing, because that's exactly what I would want to do. That's also what got me into neuroscience. I took a lot of Psychology classes and the other one with a 's', sociology class...it's been a long day. Sociology and psychology classes. And I was always good at them and it was always just super interesting, so that kind of helped. So I was like, man, if I could do that and deal with the brain, that'd be cool. And I was googling and some probably reddit. It's always reddit. Probably reddit, it told me that neuropsych was a thing. And then I tweeted about it and then like ants, so many people were like, welcome, this is what I do.

**Stephanie (20:32):** And I was like, where were you? There's people out there that do the thing. And then I googled jobs because I was like, well, if I'm going to do a PhD, is there going to be a job for me afterwards? And there's even jobs in my city and I live in a crappy city. I wouldn't imagine, but a lot of VA centers hire them. And then they get consulted out to other physicians and stuff like that. So, I guess it exists, and I guess it pays well. And I also guess there's jobs available.

**Devika:** You bring up a really important point. We need trained professionals at this intersection of psychology and neuroscience. And there's so much value in that perspective.

Also, speaking of brain tumors, I attend neurosurgeries at UCSF and almost every surgeon I work with has a neuropsychologist in the OR doing awake language and motor mapping while they're resecting tissue.

**Stephanie (21:56):** Some girl on Twitter. YES! (clapping) This girl on Twitter said that that's what she did. And I was, like Holy crap. That's the best I could see someone's brain while they're awake. And then be like, can you wiggle your toes please?

**Devika:** Alright, we need to make this happen. Come to UCSF and you can watch all the awake craniotomies as your heart desires.

\*music break\*

**Devika:** So, I wanted to ask you - how do you talk about science, the research that you do, to your family members? Is that something that you talk to them about?

**Stephanie (22:53):** I mean, of course I talk to them about it. You can't get me to shut up about science, something going on. I'm the queen of random facts. I love them. But people ask me what I do and trying to explain that to them. My mom told me the other day that she just tells ... what does she say that she

tells people that I just inject mice in the tail. She's like, that's just what I think you do. You inject them in the tail and then you cut them up a little bit. And I'm just like, mom, what are you telling these people?

**Devika:** But there's a reason why you're injecting these mice - your mom knows, right?

**Stephanie (23:40):** I mean, she has to know because I've told her a million times. When I explain it, I usually try to say, okay, scenario, if I was out at a restaurant or something like that, and I met someone and they asked me what I did - it's ... I want to say research because that's what I do. But that always leads to extra questions, and I don't want extra questions, because then eventually it's going to go down to I'm a cancer scientist. And then that's this huge thing.

Well, they just think that you're so smart. And I'm like, I'm a fool. I myself am a fool. And then it's just weird because some people are intimidated, some people aren't, but I'm like, it's not like, I don't know. I don't ... biochemistry isn't my thing. Like I don't know if I just, I don't know. But then now, after I say neuroscience and people look at you even weirder, so I don't know. I don't know how to tell people that I'm actually stupid.

**Devika:** That's all of us really. Anyone who works in science is thinking, "I kind of know what I'm doing, but who knows whatever I'm doing makes any sense".

**Stephanie (25:15):** Exactly. I'm like, I stayed at the lab till 2:00 AM once because nothing worked...like that's who I am.

**Devika:** Yeah, I know those days...and then we have less time for our other passions, which I know for you is science communication. You produce your own incredible science podcast called "Charlatan with Stephanie Renee"? Huge fan! Can you tell us more about that project? How did you decide to start your own podcast?

**Stephanie (28:34):** First, thank you. I appreciate that. How did I decide? I've always wanted to do something to share all this weird crap that's up in this mush brain up in here. And there was something that I ... Oh at first I wanted to do plagues because I have a book on outbreaks and it's like 30 chapters of just different outbreaks that happened all over the world. And it's amazing, but then it turns out there's a podcast called "This Podcast Will Kill You" and that's all about basically infectious diseases. And I love them. The two Erins are amazing. But I was like, can't steal their idea and Allie already does "Ologies". So it's like, should I even try to do anything? I don't know. So then I was like, nah, screw it, we're going to go ahead and do it.

**Stephanie (29:41):** And so, charlatan came up because I just love the weird things people did back in the day. And I have to remind myself that they did with what they could, but also why. Why did you think certain things would work? Like let's say I know what my next episode is, but a previous thing. When we now say 'don't blow smoke up my butt' and that's just like 'don't lie to me' or whatever, but it turns out back in the day when people drowned, they would take them out of the water and use a bellow, like the little bellows that you stoke fires with. They were connected to a hose and put the hose in the person's butt and light some tobacco and literally give them a smoke in the .... It was so popular that the way that we have fire extinguishers everywhere, they had those little butt enema things on the beaches everywhere. And then eventually someone realized that we could just do mouth to mouth and it's less gross. Let's do that instead. So it's like, why, why would, why? I don't know why, but it's interesting.

**Devika:** Okay, well that's something I did not know before. I wonder how often people find this information...are there a lot of journals or records from back then?

**Stephanie (31:37):** Some things I can find first person accounts of especially if they're dealing with white people doing something weird with black people. Usually they write that stuff down. I don't know why, but it's not funny. It's also funny, they're like, I want to remember how crappy I am. Well, they want their

generations of Jim Bobs to find it and look over it. So those things I can find either the actual written thing or someone else wrote an article about it in the twenties. And so you're like, "Oh, okay because most of the things I talk about happened in the 1800s or the 1700s". So someone writing about it in 1920, it's still like after it happened, but it's still old enough to, I don't know anything about it. So, it takes a lot of research to figure out in different perspectives because a lot of people say different things about the same thing happening.

**Devika:** So then how do you know what to actually include in your episodes?

**Stephanie (32:59):** I feel like some things don't make sense. They just don't make sense. And you're like, "This didn't not happen, Charlie, you're a liar". Because people want to boast themselves up all the time. You're writing about some procedure you did like you sutured this person up with only a piece of hair from a horse and it's like, no, you didn't, that didn't happen. But another person's like, they found a dirty needle in the alleyway and you're, we're going to go with that one. But if they both seem plausible, I'll usually try to say, some people say this or some people say this, but sometimes not going to lie, I just seem like, this is what it is.

**Devika:** Yeah, I think that's the best we can do, but I'm glad to hear you found your niche in the science podcast world. I personally don't know anyone who's doing what you're doing, and I'm excited for your next episode. Do you have a schedule or...?

**Stephanie (36:14):** Let's see, my podcast is named Charlatan. I don't have a schedule because I'm garbage. So just subscribe and it'll tell you when it's coming out.

**Stephanie (36:33):** It's a really short podcast. So it's only 10 to 12 minutes long. So, it's a nice little bite size weirdness for your day. My website is Steph talks science. It's not done yet in any way, shape or form. So, you can tune in. I'm trying to think of a fact. And the only fact I can think of is wombats' poop is cubed, but I feel like everyone says that.

**Devika:** Wait, what?! How?

**Stephanie (36:59):** Yeah, did you not know this?

**Devika:** Oh my god, no! This is news to me.

**Stephanie (37:17):** Like little Minecraft poop.

**Devika:** Ok. Well, now I know what I'm going to do after this.

**Stephanie (37:22):** Right. And I don't know why it's cubed and I have questions about their butt, but like... (trials off)

\*music break\*

**Devika:** So, I want to ask what are your thoughts on science education and research training as an undergrad?

**Stephanie (38:14):** It is a thing. I think it's obviously different for everyone. I seriously started going back to college at around 26, 27, so it was different for me. Community college, you learn the same things as you do at university. So I don't know why people have weirdness around that, but they do treat you like children at community college more often than not, they are a child. I see, Oh my gosh. Do you know that they have high schoolers that are in college as well and then they finish high school with an associates degree and they're 17?



**Stephanie (39:13):** That wasn't around when I was younger. I mean, it's a great thing, but I'm just sitting in class and this other person can't even drive yet. It's really weird. But what I've seen as a problem is that there's resources out there, but no one talks about them. And I don't know if it's because my school is underfunded - my community college. Had I not went to my professor at his office hours and had him existential crisis of, "I don't know what I want to do. Do I want to be a nurse or do I want to go into science?" He wouldn't have told me about the possible opportunity to do research at the university, and I wouldn't have known anything about it. So then what I think, what I see-

**Stephanie (40:29):** No, no, no. I feel like at a community college level, the resources that are out there aren't really given to you and you would think that they would promote certain things more because it's all grant money. So if you get the grant money, you'd be happier. But I also think professors are so inundated with other things. They have to go to meetings. They want you to be on this board. They want you to write this paper, yada, yada, yada, that they honestly can't really care that much about your future. And that's not to say that they don't care about you, but they're not getting what they need to do the job that technically they're supposed to do. Had I not gone to my professor asking him what I should do with my life, he would have never told me that there's that opportunity to do research.

**Stephanie (41:44):** And I just never would have known. I just never would have known. And I live in a city that's the population of black people is 2.7, so I don't have mentors. I don't have other students that look like me, in the spaces that I occupy, anywhere that I go. You can count how many black people are at the zoo with you or at another place. So I mean, and that's neither here nor there, but it does alienate people because a lot of initiatives are focused on something else or are focused on a majority race or something of that caliber. So it's like, should I apply for this scholarship? I don't know.

**Stephanie (42:41):** I don't know if I'm ... it says minority, but does that just mean Latinxs? Am I a part because there are a lot of initiatives here for Hispanic students, because we're a majority Hispanic, we are right next to the border, right next to Juarez. Which is great, but I'm just like, can I get a scholarship too? I mean, I'm happy that someone has a place to feel comfortable if it's not me, let it be someone else. I would never want to take that away from anyone, but I do think especially at a community college level, we need to do more with letting kids know what the heck to do outside of your class. I don't know. I don't know. **I think you're frozen again. Can you hear me?**

**Devika:** Definitely, there's so much work ahead, and this is a really important conversation to have. Where can we find you, Stephanie?

**Stephanie (02:48):** ... you can find me on Twitter at OsmosisReads. And if any of you are in neuropsychology, hit a girl up and tell me what the steps... Because you can get a PhD in psychology, and then there's a PsyD, I don't know what that is. And then will a psychology PhD work? Does it have to be clinical? Because there's not many clinical neuropsychology programs. There's clinical psychology, and then maybe you specialize maybe. I don't know, I don't know nothing about college.

\*music transition\*

### *Credits*

**Devika:** This episode was written and produced by me, Devika Nair, with editing help from the rest of the CTOR team. Many thanks to Stephanie Renee for taking the time to speak with me! And be sure to follow Stephanie on Twitter at OsmosisReads and subscribe to her podcast Charlatan. There will be links in the episode description.

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you think by leaving a review or comment. And, you can find more episodes on Spotify, Apple Podcasts, or wherever you get your podcasts.

We hope you all are staying safe this holiday break and we will see you in the year for more episodes! And as always, stay curious.

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- Dorica Theme (for the intro)
- Balti or Loopy (for the credits)
- Hundred Mile (transition)
- Bundt (transition)
- Palms Down (transition)
- Borough (transition)
- Dusting (transition)