Maggie:

Hi listeners! Welcome back to Carry the One Radio. I'm Maggie and I'm here with another episode of our Young Scientist Spotlight where we interview up-and-coming scientists about their research, their lives and everything in between. Today I spoke with Eva Danielson, she's a graduate student originally from the United States who's working on her master's degree in Sweden. So we met at a time that was late for her, and very early for me, to talk about her tuberculosis research, the children's books she writes and how baking is actually pretty good practice for working in a lab. Stay tuned!

[CTOR Tag]

Eva:

My name is Eva Danielson, and I am a second year master's student at Linköping University in Sweden. I am studying the effect of trained immunity on host defense against mycobacterium tuberculosis.

Maggie:

I'd love to just kind of break that down a little bit. Why don't you start by telling us a little bit more about tuberculosis and why it's interesting?

Eva:

Absolutely. We can do that, cause tuberculosis is actually, it's one of those things where whenever I tell folks back home that I'm studying tuberculosis, they go, oh, isn't that fixed already? And no, it's not. I really wish it was. But unfortunately tuberculosis cases have actually been on the rise the last few years. So for those who don't know, tuberculosis is a very dangerous pulmonary infection. It's a bacteria that gets into your lungs. And what makes it dangerous is that tuberculosis can actually hide in your cells and go dormant for years, sometimes even decades. So you think you're better and then you go about your life. But at some point 10 years down the road, you catch a flu. And all of a sudden it gets way worse because it's actually the tuberculosis coming back. And if you don't catch it quick enough, it can be very difficult to treat. I mean, it's hard enough to treat even if you catch it right away. So if it lingers for too long, it can have a really detrimental effect on your health and have a pretty serious mortality rate.

Maggie:

And how do you usually treat it?

Eva:

Tuberculosis is usually treated with antibiotics because it is a bacteria, but those antibiotics have to be given over six to nine months. So it's not like where you go into the doctor and they give you a 10 day prescription for antibiotics. These are different types of antibiotics that are given first to get rid of the fast-growing stuff then to get rid of the middle-phase stuff. And finally, you're on a long-term antibiotic to get rid of the stuff that may be hiding in your cells. But the problem is that a lot of times people will start taking the antibiotic, feel better and then stop taking their medicine. We all know people who've done this, some of us have done it ourselves, but with something like tuberculosis, it's incredibly dangerous because what happens is that the bacteria that grow back more often than not will now be tougher than the antibiotic you gave them the first time around. And we are having a really big problem with antibiotic-resistant strains of tuberculosis. So we are running out of medicines to treat it. And the

medicines that we do have, have pretty serious side effects, which is not fun when you have to take it for nine months.

Maggie:

For sure. So now the research that you do focuses on how the immune system deals with tuberculosis. So is it particularly interesting compared to other diseases? Is it unique in any way?

Eva:

A little bit, a little bit of it is that tuberculosis is unique because it can go latent and it can hide. There's also these things called granulomas that it can form, which are absolutely disgusting little clusters of an immune cells with a cheesy rotten cell center. Absolutely disgusting.

Maggie:

Like the worst kind of gusher.

Eva:

Oh God. I can never have a gusher again! But the other thing that's interesting about tuberculosis is less the way our body reacts to the disease and a little bit about how BCG, which is the vaccine that we take to protect against tuberculosis works on us because we don't know, but it does work sort of, and it also works on other stuff.

Maggie:

So there is a vaccine and we know that it works, but we don't know why.

Eva:

Yeah. The vaccine is called the Bacille Calmette-Guerin vaccine BCG it's named after three French guys whose names I have probably just butchered, but the vaccine itself is derived from another bacteria that has similar sort of outside markers, the way most vaccines are- it trains your immune system to recognize those markers and then attack. The weird thing about the BCG vaccine and this happens to other vaccines as well, is it has something called heterologous effects. And it also induces something called trained immunity. Now, normally when you get a vaccine, that vaccine is priming certain cells, mostly T-cells and B cells to recognize the disease and fight back. There are other types of immune cells called innate immune cells. These are like your first line defenders. Think of them like Pac-Man. They don't really care what they see. They just eat it. But for some reason, the BCG vaccine actually makes them better at not just identifying bacteria, but also identifying other diseases like salmonella, genital warts, bladder cancer. And we can't really understand why yet, but we are trying to figure that out that whole process is part of a heterologous effects, but also something called trained immunity, which is most of what my research looks at.

Maggie:

Okay. So how does the vaccine create this trained immunity? Do you know what it acts on?

Eva:

Sort of, we don't know. I don't know the specific mechanical markers, like most will work on a specific antibody or receptor, but we do know that it enacts its trained immunity effects through epigenetic

changes. Every time you say that to someone they're like, it's changing your genes and it's like, no, no epigenetics. I, I know it's a small prefix, but it's a very important prefix. You actually had someone on the podcast. It was a paleo-virologist. I think she was?

Eva:

And she explained it beautifully. She used one of my favorite examples, which is that your DNA is essentially a cookbook and your body is making recipes from this cookbook in the form of proteins. But while she used post-it notes, as an explanation for mRNA taking the recipe from the cookbook and then making the protein from that epigenetics is more like you scribbling in the margins of the cookbook saying, make two times this or no, bake at 350 instead of 325. And those markers are part of what changes our response.

Maggie:

Okay. So, so the DNA itself isn't changing. There's just some notations being added to it.

Eva:

Exactly. The DNA underneath remains. Absolutely the same. What changes is something called methyl. Methyl are these tiny little molecules that get tacked onto the DNA. And you can think of them like pencil marks through the cookbook, wherever there's methyl your body can't read that recipe. So if you have methyl on top of a gene that for example, the BRCA gene, which we know causes breast cancer, if you have that gene methylated, you are not going to get cancer. But a lot of times those methyl markers end up being on things that are useful and then our body can't make those things. It causes problems. It just depends on which bits our bodies have decided to scribble out.

Maggie:

I see. So the vaccine, the tuberculosis vaccine that you work with is scribbling out certain genes in these immune cells.

Eva:

Yeah. Or erasing other scribbles.

Maggie:

Oh, okay.

Eva:

It can go either way. There's hypo methylated and hypermethylated hyper is lots of methyls. So everything scribbled out, hyper is less methyl. So somebody erased the scribbles and you can read that bit. And what we're looking at is the changes. Did this section have scribbles before and it doesn't anymore? Is this section supposed to have scribbles? That's what we're measuring.

Maggie:

That's really cool. So how like permanent are these epigenetic changes?

Eva:

That's the fascinating question that we don't have all of the answers for, because what's interesting is that theoretically these changes are- they're constantly happening. Our body is constantly taking notes of things that are around us. So if you are doing nothing but eating fish every day, your body is taking note of that and making epigenetic changes to try and compensate for the fact that you're obsessed with fish now. But when our gametes are formed, when ours sperm and our eggs are made, those methyl markers are stripped away. And yet oftentimes you'll see hereditary inheritance of epigenetic changes. So theoretically they're supposed to stay in us. They're supposed to just be sticky notes in the margins that are helping our bodies to try and figure things out or get things wrong, whichever, but we do know that they can be inherited, which we're still trying to figure out, but is a fascinating concept, cause it actually goes back to something that got laughed out of science decades ago called genetic memory.

Maggie:

That is really cool. So these epigenetic changes these scribbles in the margins is that known to happen with other types of vaccines or is that really unique to tuberculosis?

Eva:

It's not just vaccines. That's the thing. Our body is taking notes in the margins for all kinds of things. Vaccines, previous infections, dietary changes. I mean there was a famous study where survivors of a famine in Poland, two generations later, their ancestors had a much longer lifespan and a healthier metabolism, which unfortunately led to a lot of studies saying that caloric restriction was a good idea. And it's like, well sure for your great grandkids, but in the meantime you should probably eat a healthy, balanced diet. But when these epigenetic changes happen to our frontline immune cells, that's what we call trained immunity.

Maggie:

How do you study methylation or epigenetic changes? Like how do you look at that?

Eva:

There's a couple of different ways. Most of what I'm doing in the lab at the moment is actually more microscopy-based. I am infecting cells and then we study them using something called an Incucyte, which is like a time-lapse camera, but for cells. But at the end of the experiment, what you do is you harvest up the cells that you have, and then you can either basically throw them in a cellular blender and collect up all the DNA. Or you can do something called single cell sequencing where you map out the DNA of an individual cell. And you can look at either the methylome, which is where the cells have methylation on their DNA, those scribbles, or you can look at something called the transcriptome and the transcriptome sometimes can be more helpful. Cause that's not just where the scribbles are. That is actually what recipes from the cookbook your body made. So is your body making 40,000 bundt cakes, but only one sheet of chocolate chip cookies? Like that makes a difference in how the cell functions.

Maggie:

OK, cool. And are there times when you would want to do the blender versus when you would wanna look at one cell at a time?

Eva:

Yeah. It, it really depends on what kind of cell population you're working with. Unfortunately, or perhaps fortunately, cause I really don't wanna get tuberculosis. Tuberculosis is what's called a BSL3, it's bio safety level three. Now that's the same level as COVID. So we share a lab with all of the COVID people, which means that they've been hogging all the cool equipment for the last year and a half. But in the meantime it means that whenever we have samples, we have to basically drown them in ethanol or isopropyl alcohol, or make sure that everything in there is very, very, very dead before it's allowed to leave the lab cause you don't wanna accidentally start another plague. So it's, it's very tricky for us to perform these kinds of tests because we have to find a facility that is willing to take our samples. In which case the blender method, most people are more okay with because if there were any bacteria in the sample at the end of it, they are now genetic juice.

Maggie:

So what does a typical day in the lab look like for you?

Eva:

For me, it's a lot of waiting for my supervisors because I have not yet finished my BSL3 training. So even though I'm allowed to do the experiments, I'm not allowed in there by myself.

Maggie:

Got it.

Eva:

So I have to wait for someone else to be available, to be like, can we go look at my cells? But basically if I have, I have either wet lab days or dry lab days, if I have a wet lab day, that means that I'm running an actual experiment, you know, with gooey things that are wet where I'll get some blood bags from the blood bank, isolate the immune cells and then get them ready to be infected. Once they're ready to be infected, we put them in our Incucyte and then that machine will take pictures of them however, often we want for as long as we want, which on the bright side means it generates terabytes of data. And on the downside means that it generates terabytes of data, which we then have to sort through. So for every one day I have in the lab, I have probably 10 days sifting through the data. We're getting better about learning, how to use artificial intelligence and machine learning to make that part of the process easier, which is phenomenal, cause I'm not gonna stand there with paint and individually count cells, which would've been how they had to do it before, but it is still a lot of processing.

Maggie:

So what are you looking for in these pictures?

Eva:

At the moment we're actually looking for a non-phagocytic cell type, but normally when we're looking at these pictures, we are using something called GFP mycobacteria, which is green fluorescent protein. So they glow green under the microscope when they're hit with a certain type of laser. We can actually measure the amount of bacteria growth by looking at how much green is in the picture. We can also create these AI produced masks that count how many cells there are. And then we can sort of see between cells that have been given the BCG vaccine or cells that haven't been given the BCG vaccine, who's fighting better, who's winning against the tuberculosis, who's losing, are there differences in how they're performing, are they reacting in different ways? And we can use a lot of the automatic

measurements to make that part easier. But a lot of it is just staring at pictures because however smart a computer is, it will only look for what you tell it to look for. So if you don't know what you're looking for, the computer's not gonna find it.

Maggie:

Right. where do you get the tuberculosis that you infect these cells with? Can you like buy it?

Eva:

Well you can't, but yes we can. We actually have it in the freezer. You, you create different strains. They create these at various assorted labs and typically you'll have a culture that you're then like defrosting and taking a little bit of and then refreezing. And so you're propagating this bacteria over and over and over again. And we have a few different strains. We have one that is not dangerous at all. So I can work it on a regular lab bench. We have one that we have to have in the BSL3 lab. And then we have one that is antibiotic resistant and I'm not allowed in the room when they're messing with it because if it gets loose, it's bad, scary. But yes, you, you buy it from a lab that produces it or generates new cultures. And then we just keep those cultures going.

Maggie:

Does it go bad?

Eva:

Actually, yes. You wouldn't think that's a problem that labs have, but we have a chronic issue and it's not just our lab, but there's something that we call sort of like the spring sickness, where for whatever reason, our tuberculosis just doesn't want to grow. It's like, no I'm taking spring vacation. So we do get annual variations in our cells. And that's something that like you have to be aware of as a scientist, if you're doing these experiments a lot, if you have experiments that are continuously showing lower values or not growing as well, knowing when they're happening is kind of a big problem.

Maggie:

That's crazy. I didn't think that a bacteria would know what time of year it is.

Eva:

Yeah. We have no idea why it's doing that. My theory is the ambient temperature when it's being defrosted is different. And another theory that the people in the other hallway had - they're in inflammation and allergy. So they just keep blaming it on pollen season, But they blame everything on pollen season.

Maggie:

So I'd actually like to shift now and talk a bit about your life pre tuberculosis. Cause I know you've had like quite an interesting career path to get here.

Eva:

Yeah. It wasn't exactly straightforward . So I, I didn't start grad school until I was 30 and I didn't think that grad school was in the cards for me cause I, I went to school in the states where a master's degree can be tens of thousands or hundreds of thousands of dollars, which I did not have. Thankfully, my

father is Swedish. And at some point he pointed out to me that grad school is free here and I just hadn't known. So yeah. Now I'm getting a master's

Maggie:

So you in college did not study biology, right?

Eva:

No I didn't. And everyone's always really surprised to hear that. I was a super nerd. So like I ended up taking a lot of science credit. I took, you know the classics, bio one, bio two, chem one, chem two organic chem, anatomy physiology. Like I took a lot of science courses, but my bachelor's degree was actually in business administration because I wanted to get a biology degree when I was sort of younger. Cause I've always loved science, but I very quickly realized that without a higher education, it's very difficult to be employed with just a biology degree. So I, I went business instead because I figured at the end of the day I could at least find a job somewhere.

Maggie:

What did you do after college?

Eva:

Not business! Actually, I worked at a grocery store while I was in college and I just sort of kept doing that in the bakery section and as a cashier because it was a great way to pick up babysitting families. So I worked part-time at a grocery store and then later at a Scandinavian bakery and as a nanny and a tutor for a long time. It was funny because I, I worked for three years at a Scandinavian bakery. So when I eventually moved to Sweden, I could not speak a word of Swedish, but I could make dammsugare from scratch. So I fit right in

Maggie:

You let your food speak for itself.

Eva :

Exactly.

Maggie:

Working with kids, especially like in a tutoring context, do you think that's changed the way you think about communicating science?

Eva:

Oh, absolutely. I, I think it's something too that a lot of people who necessarily, especially the old schoolers, you know, who are in the lab and have been publishing to academic journals their entire career, but not necessarily speaking outside the academic community really struggle with because a lot of times our breakthroughs aren't necessarily relevant for the average person. Like most people don't care that we discovered this tiny bit of DNA has more methyl than this other tiny bit of DNA, but a lot of people are genuinely more interested when we can find a way to talk about the things that we are doing in a way that makes sense and relates to them and that they can just engage with. When you're tutoring, there's something called the Feynman technique, which is essentially that you're supposed to

break down larger concepts in a way that a 12 year old can understand. And you get a lot of practice with that when you're tutoring, but it's something that I really wish more scientists had more practice with because especially when you're going into a new subject area, that 12 year old explanation is really invaluable.

Maggie:

I feel the exact same way. So now in addition to your nannying and your tutoring, you're also a children's book author, right?

Eva:

Yeah. that was a sort of a fluke, but it was a happy fluke. You end up reading enough bedtime stories to kids for five years straight and the stories just sort of pop into your head by themselves. So about four years ago, I wrote a book called The Girl and Her Stars which is about a little girl who wanted to grow up and see her stars. And I was getting ready to put it into my desk drawer, along with all the other things that I had ever written, but something about that one felt different. So I finally knuckled down and I found an actual illustrator because I can't draw to save my life. And Clementine Petrova like is a phenomenal artist and she created the book that I dreamed in my head and I don't know what sort of sciencey psychic, witchcraft power she did to do that, but it was absolutely magical. And The Girl and Her Stars got published a few years back and I published five books after that. And then we were starting to set up school visits and library visits, and then it was February, 2020.

Maggie:

I know where this is going.

Eva:

Yeah. It's it, it feels a little irresponsible to like organize large groups of kids to meet in person when we're in the middle of a plague.

Maggie:

Right.

Eva:

So that whole thing sort of like took a backseat. But I, I have more books in the works that I really wanna get written, but I promised myself I would not work on while I'm in grad school cuz my brain can only handle so much. But I would love to start getting back into that, especially the more stemmy books, because like with The Girl and Her Stars, we had this really cute little craft where they made like a constellation projector and that was a lot of fun.

Maggie:

Oh that's cute. So they're like interactive.

Eva:

Exactly. Yeah. And I had a bunch of supplemental materials that I wanted to get online, like different activities you could do with them and things like that because one of the most frustrating things that we go through in education is that we know students learn better when they're engaged. We know this, we

know this intuitively. We know it academically, we know it statistically, when students connect with what they're learning, they learn better. Not necessarily faster, not necessarily more, but better. They start asking questions, they start taking concepts apart and putting them back together in new ways. But we treat engagement like a footnote objective. And if we know that they learn better when they connect with the material, if we just made engagement the priority, if we just bumped it up two or three slots on the list of things to get done, I feel like we would have an entire generation of more curious and involved learners. And not just for little kids either, the same holds true in high school. I mean, there's only so fascinating you can make certain things, but the expectation that it's boring, learn it anyways is a little bit 1950s. And I think we should be leaving behind.

Maggie:

Yeah. I honestly feel that for myself too. Like when I am in a class or somewhere where I really like am engaging with the thing myself, instead of just hearing about how it works. I remember it so much more.

Eva:

Yeah. And, and students do that in so many different ways. Like some people need to actually have a hands-on project. Some people need to like practice it theirselves, for some people it's animated videos. I know a lot of people in grad school who like live and die based on the animated versions, explaining what we're learning out of the textbook, because it's so much easier to understand when someone's visualizing it for you and you can actually see what's happening. But yeah, if we could just sort of shift the priority from like rote memorization to getting involved, I think that would make a huge difference at all levels.

Maggie:

Yeah, I think so, too. So for these children's book stories that you've written, where does your inspiration come from?

Eva:

It depends because I have a couple of different ones and all of them are different, but most of them you can firmly blame on two children who are no longer children. And yes, girls, I am bringing you candy so you can stop messaging me about it. Because I was reading them bedtime stories and a lot of them came from there. So The Girl and Her Stars came from that. They got puppies at one point in time. And we spent the first six weeks, they had those dogs googling what you could and could not feed a dog without killing them. And the next book was Pancakes Are Not For Puppies because no, you can't give your dog cinnamon. That's a bad idea. Don't do it. Please stop. And raisins don't do that. And then we had The Boy and the Colossal Cake, which was sort of a gender flip on The Girl and Her Stars and To Be Just Me, oh we haven't published that one yet. Spoiler alert! That one's coming. But it's honestly, a lot of them are the stories that I would've wanted to see when I was a kid and some of them have more STEM-based concepts. Some of them are just more connecting with the reader, but a lot of them are just either things that I would've wanted to read as a kid or things that I would've wanted to read to the kids that I babysat.

Maggie:

Yeah. So when you were a kid, did you have a strong interest in science?

Eva:

Yeah. I found a Campbell's fourth edition biology book at a garage sale and bought it. I was nine. I did not understand the vast majority of what was in that book, but it had some really pretty pictures of like cell insides. And I used to ugh, my poor brother. I would make him sit there and play school with me and then I'd give him quizzes on the parts of the cell, but I'd let him have the book. And he's just sitting there crying, like I don't want to, and I'm like but look how cool it is! I had not grasped the whole engagement thing at that point. I was just like, I think it's cool, you should too.

Maggie:

Oh, so this has been a, a lifelong passion.

Eva:

Yeah. I've always been a nerd. Like I think that's just, I came out that way.

Maggie:

Well, it's, it's so nice that you finally got the chance to like really dive back into science now in grad school. Did you find the adjustment to be strange? Having not been in school for several years?

Eva:

I thought I would find it stranger than I did. I think the problem was I had three different shocks going on at the same time. I started grad school, the fall of 2020. So we were still height of the pandemic. First of all, second of all, I just moved to Sweden, a country where I did not speak the language. I thought I would fit in because I was half Swedish. I was wrong. And I was totally unprepared for what an actual winter looks like because I'm from Florida. Add to that not having been in a lab since I was 20 and taking like Biology II. And that was the biggest adjustment for me was more the terminology getting used to sort of the way things were structured. Actually the bakery skills came in really handy in the lab though. My boss likes to tease that we don't need to get a robot to pipette 384-well plates because we have an Eva.

Maggie:

Yeah. I guess those precise, repetitive motions can come into play in both spheres.

Eva:

Yeah. You think doing a six hours lab experience is bad. Try doing a wedding cake.

Maggie:

Oh God.

Eva:

Yeah. I'm real good at holding a pipette real steady.

Maggie:

So now how much longer are you in this program?

Eva:

I have six ish months left depending on my master's thesis. We're trying to get the last bits of that done, but we have been trying to get this genetic component added to it and it, it just may not be possible at this point in time. But we keep pushing things back, hoping. And I think we're just at the point where we're gonna leave it aside for now, but yeah, I probably have about six months left, so I'll probably be done this summer. Not that I'm gonna stop taking classes. I already signed up for one for July

Maggie:

Lifelong learning, right?

Eva:

Yes, exactly. And it looks cool. It's in Copenhagen.

Maggie:

Ooh, nice.

Eva:

They're gonna be mad at me now that I said it that way. I'm sorry. It's not Copenhagen. It's Copenhagen.

Maggie:

Is Copenhagen the like Americanization of the name?

Eva:

Yeah, exactly. It's kind of like this, the, so the school I go to is called Linköping university because the is Linköping but if an American reads that when you have it written down, they're gonna go, oh Lin-koping! Yeah. The letters don't work that way in Swedish. Which explains why I haven't learned it yet.

Maggie:

So do you have plans for after your masters?

Eva:

I would like to be paid to do science. That is the number one goal at the moment. Legitimately speaking, when I, when I graduate with my masters, I really want to start taking more science communication courses. That's what I'm gonna be looking at in Copenhagen, then I am probably going to have a position with the lab where I'm working now because we're working at setting up our BSL3 facilities. So the lab where we have the COVID and the TB, we're looking at setting that up as something called Sci-Life Node, which is essentially like part of a research network so that we can help other people trying to do this level of analysis because the instrument we have the TimeLapse camera, the Incucyte, we're the only one that has it in a BSL3 facility. So if you wanna do what we're doing, you kinda gotta go through us. We figure we may as well rent it out, basically.

Maggie:

Yeah, that sounds really cool. Like you'd be helping other people do their science and kind of getting them onto your level

Eva:

So you can kinda of see like what research is going on, help other scientists, other researchers. And the other thing is that the Incucyte is a little, it feels sometimes like fiddling with Instagram filters, you know how sometimes when you're messing with it and you're like, oh, better, better, better. Nope. Terrible. A lot of times the Incucyte can feel like that. Like, oh, it's getting better. It's getting better. Nope. Nope. Stop looking at the stuff on the side. I don't want that, look over here. You're trying to tell a computer where to look and it does not understand what you are saying. So hopefully I can help steer people into getting their computers to listen to them.

Maggie:

So outside of the research, outside of the authorship and everything, what else do you like to do?

Eva:

I haven't had free time in a very long time, but I really like, I loved kickboxing when I was in the states and I haven't been able to do it in a really long time so I would love to get back into kickboxing. I have two little nephews in the states, that I haven't seen in ages, so I really wanna go visit them. Oh. And I have three rats in the next room.

Maggie:

Pet rats?

Eva:

Yeah. They're rescues from the handling course. The lab does this thing where you have a course where you get trained on how to appropriately handle rats. And at a certain point they retire the rats. So they have spares lying around. So I now have three rats. Well, for now. They're bred to grow tumors. So they have an imminent shelf life. But yes,

Maggie:

But you're giving them a good home for now.

Eva:

Yes, I'm giving them a happy retirement at the very least.

Maggie:

That's really nice.

Maggie:

So where can our listeners find you if they wanna know more about you and what you're up to?

Eva:

If you wanna follow me for science stuff, you can always check me out on Twitter. Eva K Danielson. I use the same name on LinkedIn and for the kids' book stuff, if you wanna check that out, you can always check out the nerdy nanny on Instagram or thenerdynanny.com. I also do a little bit of scicomm stuff there, but I try to keep it below a certain level because I don't think a whole lot of eight year olds are gonna be super into methylation patterns.

Maggie:

Only the cool eight year olds.

Eva:

Yeah. They're gonna be like, “look, it makes a pretty picture!” like yes, it does.

[Credits Tag]

Maggie:

Thank you to Eva Danielson for such a wonderful interview. If you’d like to know more about her, you can find her social media information in the show notes. And another thank you to our Patreon supporters: Anne Colton, Mark Kunitomi, Katheryn Batchelor, Carly Van Orsdel, Meryl Horn, Levi Cai, Stephanie Redmond, Paul Breslin, Karuna Meda, and Columbo Ahmed. If you’d like to support the show and science communication too, just a dollar an episode goes a long way. If you liked this episode and want to hear more, you can find Carry the One Radio on Spotify or wherever you get your podcasts, or head to our website at carrytheoneradio.com for more information. Thanks for listening and stay curious

[Outro]

Maggie:

Thank you so much for meeting with me. I really enjoyed getting to know you a bit more.

Eva:

Absolutely. It has been fabulous. And I've been watching your little doggo clock in the background entire time and so cute.

Maggie:

Isn't he? Look, I have that one. And then I have like a little flower pot that shaped like a Frenchie, they're friends

Eva:

That's adorable. So are they they're like looking at each other?

Maggie:

Yeah.

Eva:

Good, good. You should always have more than one pet so they can keep each other company.

Maggie:

Exactly.