

The Business of Doing Science ...view with Alaine Keebaugh, PhD

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SPEAKERS

Heidi Bolduc, Podcast Intro, Alaine Keebaugh, Lindsey Laytner, Karoun Bagamian, Podcast Outro



Podcast Intro 00:04

Welcome to the Business of "Doing Science" podcast, brought to you by Bagamian Scientific Consulting. On this podcast, we discuss different aspects of pursuing science-related careers and just how science is actually done beyond the bench, so stay tuned to find out more.



Karoun Bagamian 00:24

Hello, everyone, I'm Karoun Bagamian. And I'm joined today by my co hosts, Lindsey Laytner and Heidi Bolduc. We're very excited to kick off our inaugural episode with our friend, Alaine Keebaugh, who has a very interesting story of her career transition from academia to industry. To start us off, Heidi has little background for us on the history of a PhD. Thanks for joining us, and let's get started.



Heidi Bolduc 00:45

Thank you Karoun. So, we are going to be exploring the evolution of advanced degrees. And that really the question here is, did you know that originally advanced degrees were not required to become a professor in the United States? In fact, graduate students had to go study in Germany overseas for about three years in order to obtain their PhD. This was all the way back in the 1850s. And it was only once Harvard and Yale launched their first Ph. D. program about 20 years later. So around the 1870s that PhDs slowly began, began to become more accepted. Then in 1919, the Rockefeller Foundation decided to establish the first postdoctoral fellowship program. The goal of it at that time was to provide recent graduates with the opportunity to continue to build their teaching, and also their research skills so that they could hopefully take on tenure track positions. So really, the goal at that time was to, you know, produce professors from their participation in that fellowship program.



Karoun Bagamian 02:02

I had no idea.



Heidi Bolduc 02:05

And providing this type of advanced training also made sense, really, as well, when you look at the changing landscape of the United States, following World War Two, at this point, undergraduate and graduate degree programs, so pretty much any college degree was expanding like crazy as returning soldiers came home and also returned to the workplace. So fast forward another about another 30 years, and by the 1980s, highly educated people became more common. And therefore the education requirements for certain careers, you did see that they did begin to increase. So high profile jobs such as those in foreign policy, international intelligence careers like that, now expected candidates to hold advanced degrees. However, the interesting thing about all of this advancement meant that there were more candidates competing for a surprisingly small number of professorships in academia. So fast forward to 2021. And now, there are a lot of statistics and research out there that says less than 1% of PhD graduates actually end up working as tenure track professors. Wow. Many of those people go on to work in research related positions in industry. So most of the time, people bounce around, you know, they might like try to work in academia tried to do a little bit of this little bit of that. But ultimately, a lot of them well, the vast majority of them do go on to work in industry. And this is why we feel it's very important to discuss making this tradition, or excuse me, transition from academia to industry. In fact, we even have a guest speaker today, who is here to tell you about exactly that, and tell you a little bit more about her personal transition.



Karoun Bagamian 04:04

Thank you, Heidi. Yeah, I had no idea about any of that. That's really interesting. And I can't believe that it's that low at this point. Because, uh, you know, I've heard figures thrown around and less than 1% it's really low. And it's funny, because sometimes I feel like that's viewed as a traditional trajectory of what a PhD does. And when you're in grad school, that's what is shown to you, even though more programs are showing the wider, you know, range of careers, but that's crazy that it's only in less than 1%. Totally, yeah, there's like



Lindsey Laytner 04:36

no prep, you know, for that, why 90 95% of people that are, you know, trying to get out in the workforce



Heidi Bolduc 04:46

And I checked multiple sources and that well of what ends up happening. Sometimes people like, try to stay in academia and then they just, like don't or can't, so...





Karoun Bagamian 04:59

And that's exactly why I asked Alaine to join us today. So I know Alaine from my graduate degree. We met in graduate school. And I know her story, but she's going to tell us all her story because it is an interesting one. And it was one of the earlier transitions I saw. And I was, and I thought was pretty great. And I know that it wasn't exactly where she thought she would end up, but it has worked out pretty well for her. So, hi Alaine!



Alaine Keebaugh 05:30

Hi, ladies. Hey, Karoun. It's really nice to talk to you again. It's been a while. That's right.



Karoun Bagamian 05:36

I'm, I'm doing well. And I'm really, really looking forward to talking about this with you. So the first question, sorry, sorry, you were saying something?



Alaine Keebaugh 05:47

No, I was gonna say I'm excited to I'm glad that you all invited me. And I too, am shocked by the number of less than 1%. Right. I was expecting it to be around 10%.



Karoun Bagamian 05:59

Yeah, cuz that's what I used to hear too. But it makes sense. Because I bet you every year, more and more people are getting those degrees. So it just reduces, you know, there's less jobs. So, the first and most important question is, like, what do you do? And even more important-how did you get there?



Alaine Keebaugh 06:20

All right, so the official title of my job is Therapy Consultant for deep brain stimulation. And what that what that is, is, I have a sales position for a medical device company, Boston Scientific. And I basically assist in all aspects of patients who have Parkinson's disease, who are going to be implanted with a deep brain stimulator that will help treat the motor symptoms of that disease. So I get to do things from be in the neurology clinic with the neurologist while they they program these devices to being in the surgery, while the neurosurgeon implants the devices, to various other things that, you know, involve patient education, community outreach, all kinds of things. It's a really cool job. It's it's really fun. And it's, uh, you know, I feel like it's a privilege that I get to do it. The other question of how did I get there, as is quite the path, because as you said, it is definitely not, I didn't even know this was a job available when I went to grad school, right. So, I've never even heard of this. If you had told me this was a job that people did, I would not have believed you. So it's definitely quite a winding path. But it's, it's, it's a journey that was really fun the whole way. So I'm definitely excited to share that with you all.



Karoun Bagamian 07:41

I have one question before we move on to that, actually, for our listeners, that might be...you know, a lot of people hear about Parkinson's disease, but I'm sure a lot of people don't know exactly what it is. So what is it exactly? And how many people are affected by it?



Alaine Keebaugh 07:58

That's a great question. So Parkinson's Disease is a degenerative movement disorder. It's actually marked by a decrease in dopamine-producing cells in the brain. And it's interesting, because we don't actually know what causes the disease. We know about 10% of people with it, have a genetic cause, and then the rest of them we don't know. So it's likely environmental or some kind of, you know, gene by environment interaction. And it's actually becoming more prevalent. Yeah. So it affects one in a million Americans. And then, you know, if you look at it worldwide there's more than 10 million people affected by it. And recently, there was actually a book published by actually a one of the leading neurologists in this field out of the University of Florida right there in Gainesville, where you guys are talking about how looks like Parkinson's might actually become a pandemic, like it's on the rise that much. So, I'm sure many of our listeners will probably at least have someone they know whether it be a family member or friend. That's impacted by Parkinson's in some way.



Karoun Bagamian 09:06

That's right. I do I do know people that have it. Same



Lindsey Laytner 09:09

Same. My father, my late father, he got it towards the end of his life and was on medications for it, but we don't know exactly, you know, what the cause was..still to this day. So. Wild.



Alaine Keebaugh 09:26

Yeah, so I'll at some point in this interview, I'll tell you guys what Deep Brain Stimulation does for Parkinson's patients, but it's, it's truly a miracle. And it's just one of those jobs where you're like-wow, I got to be a part of that today.



Karoun Bagamian 09:38

Yeah, maybe when you're describing your...maybe when we talk more about like your current job duties might be a good time to talk about that. So, yeah, so let's let's talk about how you got to this amazing job in a really obviously important, you know, helping patients live better lives, which is amazing. So how about your educational history would um, I said, we're in the same program, but I didn't talk about specifics. So yeah, so tell us.

A

Alaine Keebaugh 10:11

So I, when I actually, the first university that I went to was University of Georgia, in Athens. And I think like a lot of people, I started out with the premed track, right, I was going to be a doctor. And, and somewhere along the way, I got a job in research and just fell in love with it. And so then I, you know, I changed paths a little bit, you don't have to change too much right? When you go from a premed major to research. And so I studied genetics at the University of Georgia. And then after that, surprisingly, my, my now husband, but boyfriend then, we decided that we were just going to sell all of our stuff. So we sold everything we owned, and I moved to Costa Rica. And we actually worked at a research station that was run by the University of Georgia. So we would, we had research projects that we did, and then we would have college study abroad classes that would come through, and we would help teach those classes. So my parents were very unhappy when we did that, right, because they thought I should be getting a job, or going to med school, not running around Central America broke and working for free. But what we did,



Lindsey Laytner 11:24

So awesome. So many levels.

A


Alaine Keebaugh 11:28

You know, we often laugh, we say, If only we knew how blessed we were back then to not have any money and not have a care in the world, you know. But yeah, we did that for three years. And it was during that time that I was like, wow, like, I knew that research was where my passion was, at least at that time of my life. You're gonna hear that I have a lot of passion all throughout my life. I probably overuse the word. That's right. So so we hitchhiked home. And in the three months, it took us to hitchhike home, I decided that I was gonna go back to graduate school, so that I could do research and run my own research lab, you know, and basically ask the questions that I wanted to ask not somebody else's questions. And so when I got back, I got I had to get a job, obviously, before I could figure out how to go back to school. And I somehow landed the coolest job for me at that time, at the CDC, working with vaccines, like we were developing vaccines for pandemic preparedness. So we were getting ready for a bird flu that hadn't hit yet. And so the first two weeks were really cool. I got to wear one of those biohazard suits, you know, and walked around like a marshmallow woman and, and did the research in there. And then after about two weeks, I realized that then all the novelty had worn off and having to shower and do your job out of an air suit for you know, eight hours wasn't really all that sexy anymore. Yeah. So during that time, I applied to various grad schools and landed on a Ph. D. program at Emory University, where I actually met met Karoun..her and I...Were we in the same, like, I remember us being in the same interview group.



Karoun Bagamian 13:20

Yeah, we were in the same cohort, too. Yes, that's right. Yeah.



A

Alaine Keebaugh 13:24

That's right! Yeah. And I remember I was sitting outside, like a porch, just talking and laughing and like, really just became, you know, like, instant friends, almost like we had known each other. And we really connected and I was like, gosh, I hope we both end up here together. And we did you know, and so, so we did that, and that the focus for that program was population biology, ecology and evolution, which as it might sound, is pretty broad. So we all kind of had different things that we focused in and mine happened to be evolutionary genetics, right. And so I studied how genes get lost and, and then how they get reborn in the human genome and across genomes and landed on this really cool disease called Lesch-Nyhan disease. And Karoun, I don't know how much as you want me to go into that, obviously, I'm very passionate about that, too. So I could talk about that for, you know, an hour, but I won't. Yeah. And so that led me to really be fascinated with the brain and how genes in the brain can impact movements and behaviors. And so after finishing my PhD at Emory, I went over to a primate center where they did a lot of neuroscience work, and continued to study how the genes interact with different neurodegenerative disorders over there. And my intent was, you know, to be really successful at writing grants and open my own lab and, you know, be on the cover of Forbes you know, the woman who changes the face of neuroscience research, maybe cures autism. And so I was well on my way to do that. And I don't remember really how it happened. But I read about deep brain stimulation for patients with Lesch-Nyhan disease, which was one of the diseases that we were studying. And we had actually found a protein that might be involved in it.



Karoun Bagamian 15:23

Oh, that's interesting. Okay.

A

Alaine Keebaugh 15:26

So go ahead. Sorry.



Karoun Bagamian 15:28

No, I was like, that's interesting. I didn't know that. Like you worked on that at that time, too.

A

Alaine Keebaugh 15:32

Oh, yeah. Yeah, I took part of that with me. I also worked on on some stuff with autism and schizophrenia. But I found there was a there was a guy at the Cleveland Clinic who wanted to do deep brain stimulation on a patient with Lesch-Nyhan disease, and I got to go up there and watch and help him pick which target, because I was studying a region of the brain called the nucleus accumbens. So I got to go out there and be a part of that. And it was just the most incredible thing. So, these patients will Lesch-Nyhan disease have obsessive compulsive behavior, but it manifests in a self-injurious way. So they'll, you know, kind of actually injure themselves. So they'll bite their fingers, their lips, sometimes their tongues. And it's more of like, they don't want to hurt themselves, but it's like this compulsion that they have. And sometimes they'll even injure their caregivers. And so this particular patient really didn't have

any other options left, because he was going through puberty, and the mother was going to have to, you know, institutionalize because he was a danger to her and the other kids. And just seeing the impact of, of this particular procedure, you know, before he had it, and then how it impacted the family afterwards, was incredible. And for me, I think it just was this change in my head...And I was like, that's, that's what I need to do. Like, I felt like that was my calling. Yeah. And so for the next probably seven years...



Karoun Bagamian 17:00

Yeah, sorry. How did it change his? Or what was? What happened after like- before and after? Can you kind of paint a picture for us?



Alaine Keebaugh 17:08

Yeah. So, this is a little different than Parkinson's disease, which is what I do now. But in this particular case, and this isn't FDA approved or anything, so it was a study, but it treated the obsessive compulsive behavior of him. And so I was only privy to the first three months follow up. But but when we followed up and saw the mother, she was crying. The boy had not injured himself. And so she was able to care for him and actually keep him in the home.



Karoun Bagamian 17:39

Wow. That's amazing. Yeah.



Alaine Keebaugh 17:42

It was incredible. Like, I mean, the mother cried, I cried, the surgeon cried. It was just like, the most heartwarming experience, you know, I had ever had up to that point in my career.



Lindsey Laytner 17:56

Such an incredible impact on that person's life through that one procedure



Alaine Keebaugh 18:03

Yeah. And every time I would go back to the lab, I would just think of like, is the lab work I'm doing, is this going to be applied to make somebody's quality of life better? You know, and, and the answer was probably not. The answer, for me, at least, was not today, and probably not, you know, 10 years from now, maybe in your lifetime, maybe not. And that just that just stuck with me. And at some point along the way, I shared with some of the other people that I've worked with, one of which was a surgeon at the Mayo Clinic in Jacksonville, who's now retired. But this experience and well, that's what I wanted to do. And this opportunity came up with

Boston Scientific and I guess he remembered me in that conversation and, you know, made that connection happen. And then one thing led to another and share I am, you know, doing this thing that I first saw 15 years ago, but now doing it with a different disease state.



Karoun Bagamian 18:57

Wow. That's amazing. Didn't you have another didn't you work at another company in between, is that right?



A Alaine Keebaugh 19:03

I did. Yeah. That's what I thought. Like, I tried. I tried to get into this immediately right with another with another company who had this device on the market first. And basically, they were not interested in someone with a PhD doing a sales role.



Karoun Bagamian 19:21

This story, this is a good story. This is a yeah, please tell us about the sounds like it's gonna be good. It's really relevant. Yeah.



A Alaine Keebaugh 19:28

Yeah. So they told me that, you know, they appreciated the interest. But, you know, someone with a PhD wasn't really appropriate for this job that, you know, had to have skills that were transferable to being able to have real conversations with people. And in their experience, people with PhDs didn't have that. And, you know, I was like, Well, you could interview me, right? And we could, you could see, I think I would be really good at this, and they just wouldn't have it. And it's interesting because that was, you know, over 10 years ago when that happened. And I would say that the field is changing. Now there are a handful of PhDs in sales positions that are doing really well. And so I think I think as time goes on, we'll see that, especially some of these more advanced technologies, that's changing, that's changing. So more advanced degrees are more common. And it does take us, you know, it does take a special set of skills to do it. But that being said, not every person who has a degree in International Business is going to be a good salesperson, right? Yeah, that's right. And every PhD isn't going to be a good salesperson. That's why thankfully, we have a lot of different things that we can do out there. Fine the thing that is right for us.



Karoun Bagamian 20:39

One of the things that I remember so I remember this part of this story, which I remember, you told me that where they were not where after you work for that company, they actually wanted, they wanted you to recruit other PhDs, you know, people with PhDs that you knew that would be a good fit, because they realize that the skills that you brought to it, like you were an independent problem solver, which they did not necessarily see out of some of the other people that they had doing your job.



Alaine Keebaugh 21:09

Yeah. Yeah, that's right. So actually, so the first so the company I was talking about before, then never actually gave gave me the job a job. But I did, I did end up getting a job with a company called Clearpoint Neuro. And they were a company that was developing a way to deliver devices to the brain while the patient's asleep. So it's traditionally you know, brain surgery is done awake, so, and I had been doing things like that, but in in animal models, and so they too You're exactly right. They were hesitant to hire me, but they're like, we're gonna give it a shot. And yeah, like, it was such a great opportunity for me, I filled that role perfectly. And I think the bridge from having been an academic research to this new startup company, you know, had a new device that wasn't perfect. You know, there were there was a lot of room to make it better. And so it was actually a really good fit. And you are right, today, they now have, they have, well, they've hired at least two people that I've connected them with from Emory that I worked with at the Primate Center. And I know of another PhD that they hired while I was with them. And I haven't been with them for about five years. So yeah, yeah, you're right. So we changed the way that company looks pretty early on. And yeah, and I think that a lot of others following. Yeah. Cool. So if anyone's out there listening with a PhD, and you want to get in medical devices, just remember, I was told no, the very first time and, you know, here I am. So yeah,



Karoun Bagamian 22:43

Very successful. And having done it for quite a while now. Wow. We're a lot older than I remember.



Alaine Keebaugh 22:49

We are. Don't give our age away.



Karoun Bagamian 22:53

I'm not, I'm not.



Alaine Keebaugh 22:55

They gotta hang around for a little bit longer.



Karoun Bagamian 22:58

Yeah. So do you think...did you think that there was any particular degree or educational trajectory that would help someone be good at your current job?

A

Alaine Keebaugh 23:11

You know, that's a really good question. And I've thought about that. And I don't, you know, I, when I think about the people that I work with, who are my colleagues across the US, I kind of think of us as like this motley crew. Right. So like, we all have different educational backgrounds. But there are some commonalities that that I see. So like, what are they, you know, we? So, yeah, so we all probably work way more than we should we have a really difficult time with balancing quality, you know, quality of life versus work life, because I think our work does bring us some of our quality of life. So we work way too much. The other one is that, you know, I think you have to be self driven, right? Like you have to, you have to find pride or take some kind of accountability in your work so that you're driven to kind of like, figure out what it is that you need. And that, that doesn't really make sense, the way I said it. So let me say it a different way. There's a lot of things that have to be done with this job. So right, we want to find patients that we want to help help the patients, you know, learn about the procedure, right? So they have access to it. Sometimes we have to help we help them find a physician that'll do it. Sometimes we're in the neurology office to figure out, you know, to help them figure out how to get the programming, right, or in the surgery. You know, and sometimes the device doesn't work correctly. Not often, but sometimes it doesn't, which is why we're there. So you have to be able to fix you know, to stay calm. And yeah, when there's a patient on the table, right, that got their brain exposed, and you got to figure out what's wrong. So it's just a lot of different hats, but I think if you liked that kind of thing, like if you'd like to always be doing something a little bit different, you know, you'd like to you continuously educate yourself and learn more about different things. So for me, that was one of the draws of this job is that um one, I'm never doing the same thing. But two, there's always something new in the field that I can learn. You know, and, and I think for me, the PhD helps, not not not necessarily the PhD, but being able to read primary literature, understand if it's, you know, a good study, a bad study, or at least what the caveats might be, or what the really strong points are, and then being able to take that to say, a new physician that I want to introduce this to and be able to have a conversation with him or her at their level. That gives me an advantage, in some cases, to be able to have those conversations. Yeah, you know, and then the other thing I feel like graduate school really helped me with in this job, which I definitely did not appreciate it at the time, is being able to talk science with, you know, someone who doesn't know as much as you do. So like, when I go home at night, I tell my husband about it, or I go tell my mom about it, you know, you really got to understand it, to be able to share it with them. And in this case, to really be able to help patients get access to the education that they need, you have to be able to translate what it is in a way that they can understand. And so, you know, I think my graduate school experience helps with that as well.



Karoun Bagamian 26:19

Yeah, cuz you also taught while you're in grad school, too, I remember that, no, you did a lot. Also, for our audience, she also gave birth twice, I believe.

A

Alaine Keebaugh 26:29

I remember, this is a funny story. So I remember I was nine months pregnant when I defended my dissertation. And my first pregnancy, you know, took two days for the baby to be born. So I remember, you know, Jim asked me, he's like, What are we going to do if you go into labor? You know, I'm like...I was like, we're not going to do anything. We're going to finish this because I'm

not coming back. I'll stand here in labor, it took two days last time, like, just bring me a chair. Luckily, that didn't happen. And you know, one of my fondest memories is when you all left, right? And I had the, like, the examination where they asked me all the questions, and then I came out to celebrate because I passed. You and all the girls had stuffed your stomachs.

A

Alaine Keebaugh 27:23

I need to dig that picture up. That was so funny.



Karoun Bagamian 27:27

Yeah, that was a good picture.

A

Alaine Keebaugh 27:32

And I remember you all looked way more pregnant than me. And, Karoun, if I remember correctly, you had a lump like a sideways belly? I was like, I can tell none of y'all have been pregnant before. Yeah.



Karoun Bagamian 27:47

That's a good one. That was funny. So I think you kind of touched upon this. But by saying that your workdays are not that similar to each other, but what would you say like a typical workday or a couple of different like, of your work days would be like, you know, just a mixture of what you do over the course of the day? So somebody would know what they might expect when they had your job if they had your job. Yeah.

A

Alaine Keebaugh 28:10

Great question. So maybe I can tell you about, like, what my week looks like.



Karoun Bagamian 28:15

Yeah, exactly. That's perfect.

A

Alaine Keebaugh 28:16

Like this week. So today's Thursday, right. So I'm going to start with what I did today, and then we'll work kind of backwards and forwards. So this morning I actually went in to the hospital I was at. Yeah, So yesterday, we implanted two patients with a deep brain stimulator. They both had Parkinson's disease. And then, so, they had...they got, you know, a lead, it goes into the brain that delivers the stimulation, and they also got their battery packs, which is implanted right under the clavicle under the skin, and that powers powers the lead. So this morning, I

went into the hospital, and the neurosurgeon that met me there in the patient's room, and we actually turn their devices on. And so that that was a pretty cool morning, like, those are my favorite mornings, actually, you know, the patient has this really bad tremor. And we'll we turn the device on and, and evaluate the patient and optimize it so that it gets, you know, those symptoms gone. They have, you know, they'll have more programmings after that. But yeah, so that's what I got to do today. So today was probably my most rewarding thing that I get to do in this job, right? Because these patients, some of these patients actually go from not being able to, you know, drink a cup of water because their hand is trembling so bad to then be able being able to feed themselves again, without having to have someone help them or dress their clothes. And sometimes they cry, sometimes a caregiver cries. I'm always telling myself, don't cry, Alaine, don't cry, Alaine. But if I do, it's tears of happy joy, right? So it's okay of course. So, that's what I did today. And then, you know, after I come home from a day like that, I also had like, I had a call with one of the girls on my team and my boss about some strategy things that we're trying to do down a little further south to get more neurologists to refer in to this particular clinic. Yesterday, I was actually in surgery all day with these two patients. And so those days are actually really cool too, right? Because I get to go in there and watch a surgeon do brain surgery, and he's on one side of the patient. And then there's the neurologist on the other side of the patient, because these patients are awake. And the neurologist is there, basically explaining to them everything that's going on, evaluating them, making sure that there's you know, nothing happening that he needs to let the nurse or surgeon be aware of. And then once the surgeon puts the device in, I get to turn it on. And then alongside the neurologist, evaluate how the patient's responding. And it's really cool, because they can do that, while the patient's awake. So we can see, you know, let's we'll take tremor again, and just use that as our as our focus. But, you know, if the patient has tremor, and then we turn the device on, and the terminal goes away, we know we're in a good spot. Yeah, we can also look at, you know, we can also turn it up. Yeah, we can turn it up high, and see what kind of, we call them side effects the patient has. So they may have tingling in their hand, or pulling in their face. And by doing that, we can actually map out where the lead is at, and the brain. So having that plus, you know, the clinical benefit, we can say if we're in the right spot or not. And the great thing is, if we're not in the right spot, the neurosurgeon can move it according to where, where the brain map tells us we are, and get it in the right spot before the patient leaves the OR. So, that was yesterday. So, that that's a really cool day, too.



Lindsey Laytner 31:39

Amazing.



Karoun Bagamian 31:40

Yeah.



Alaine Keebaugh 31:42

And then I've actually had a really busy week. So this was actually a really good example of it. So Tuesday, I was actually in Panama City Beach. And we had a support group meeting there. So, it was for Parkinson's patients. And this particular meeting, I just kind of helped facilitate conversations around deep brain stimulation. So all the people show up, I tell them a little bit

about deep brain stimulation, and what it is, you know, how it can improve certain symptoms of Parkinson's disease. And then we just had we just sat around and talked about it, like what what their symptoms are, could it possibly be a good fit for deep brain stimulation? And if they're interested, how would they get more information? And those are really rewarding days too, except for that I had to drive six hours to get there. Yeah, they're also really always so appreciative too, because, you know, they don't always know where to go to get this information. And I can't remember what I did on Monday. And I can't remember. And tomorrow, I have a girl on my team that I'll be riding around along with, we'll go be visiting neurology offices, just kind of checking in, making sure that they're all set. If they have any questions about patients they're referring to the surgery center, we'll answer those, and maybe talk a little bit about some new science that's come out.



Karoun Bagamian 33:06

Interesting.



Alaine Keebaugh 33:07

So yeah, it's kind of a diverse job. But I would say that, that this week, kind of, like, encapsulates everything that I do. A little bit of, of all of it. So and then there's some more a little bit of like, sometimes, you know, we'll have to deal with, with the business side of things. So like, hospital contracts, and billing for the devices and all of that. That's my least favorite part of the job. But it's, it's a part of the job that pays me so I get that done for that reason.



Karoun Bagamian 33:38

Yeah. Part of Job.



Alaine Keebaugh 33:41

Yeah, we gotta get paid.



Karoun Bagamian 33:43

Exactly. Of course.



Lindsey Laytner 33:45

Super exciting, though. I mean, like, what a rewarding career path.



Alaine Keebaugh 33:49

You know, it really is. I feel so fortunate to have somehow found my way here. And, you know,

wasn't the traditional way that people get there, but I wouldn't change a thing, because it's been rewarding the whole way. You know, everything that I've done. Like I tell my kids this sometimes like, I really, I feel like I just followed what I have fun doing.



Karoun Bagamian 34:10

Yeah. No, that's great.



Alaine Keebaugh 34:12

What do I enjoy? And luckily, fortunately, for me, it's worked out. You know, I have a good job. And...and so I'm very, I feel very lucky in that, in that respect.



Karoun Bagamian 34:23

It's interesting, because I know other people that have said, the same things that they feel like "and I know what happened for me too" which it's like, when you find something that works or like you find something that's right for you, things seem to kind of fall into place somehow, you know, and it sounds crazy, but like, it seems like it's a real thing sometimes. It's like, I don't know what that is. But do you do you feel like that kind of happened? I mean, you still have to work for it...



Alaine Keebaugh 34:49

Yeah!



Karoun Bagamian 34:49

But, you know what I mean? It's like, or maybe you're just more, you know, inspired like because you like it, you kind of go more in that direction. So you notice what's a good opportunity. But I've heard it from other people. So it's really interesting.



Alaine Keebaugh 35:03

I totally, yeah, I agree with you. And I feel that way. And this is probably gonna sound a little bit kooky. But, you know, I feel like if, if you have positive energy around what you're doing, then you're going to attract people to it. Right, and so...



Lindsey Laytner 35:18

I agree with you, too. Yeah.



Lindsey Laytner 35:20

Yeah. About loving what we do we attract people to want to do it, too. Or the people that, you know, patients see that, and then they want to learn more about it, or neurologists see that and hear that, and then, they want to work with you with with those patients, too.



Karoun Bagamian 35:34

Exactly.



A Alaine Keebaugh 35:35

Yeah. Right. Yeah.



Karoun Bagamian 35:38

And people can sense when that's genuine interest and skill and stuff like that, I think. You know, like, because I know, I encounter that as well. It's like, you know, we're not, it's like, people detect authenticity and passion and stuff like that. So I think when you find something that's the right fit for you, and you're able to transmit that it really helps so and clearly, I mean, you have found the right fit for you.



A Alaine Keebaugh 36:03

Right? Well, and you know, it's funny, because it makes me think of of you as well with what you're doing now with the science writing and the podcast. And yeah, you know, the social influencing, because I remember when we were in grad school, we called you our social ambassador. Friends with everyone you knew, you knew what everyone's projects were...everyone's! You were welcoming to everyone. You know? So it's like youâ€”I mean, I don't know if you'll be your guests on your own podcast, but you know, you have thatâ€”a similar story, it's just you ended up in a different, different career but the same kind of path...



Lindsey Laytner 36:37

Master connectors.



Karoun Bagamian 36:39

Yeah. On a later date me, Lindsay, and Heidi will also be talking about our own trajectories, we'll be interviewing each other, so...



Karoun Bagamian 36:52

Yeah, thank you. So I think you've touched upon some of these, some of these, like in your discussion, but we'll just kind of go, you know, we don't need to delve too much into it, I think because like you talked about a little bit. But just in general, like, I think you said, for example, being able to communicate science—“which of your skills that you have, or I guess your traits that you felt came in most handy for your job? You know, what I mean for this job? Is one question.



Karoun Bagamian 37:11

yeah, yeah. Awesome, I will definitely tune in for that.



Alaine Keebaugh 37:20

Yeah, that's a good question. So—I think multitasking has been a good, good trait, right? Because I'm always doing several things at the same time. Yeah. And just being self motivated, and driven, you know, to do that, whatever the next thing is that you need to do, whether it's from the business development side, from your patient education side, or just, you know, clinical follow up. Yeah, being able to handle doing all of that, at the same time, has been helpful. You know, I do think, so one of the things, I think, that sets me apart from my colleagues is the fact that I am, like, data driven. So, you know, if I can collect some numbers, and put them in an Excel sheet, like I feel at home, you know, like, I feel very warm and happy. And so whenever I can, I will collect data. And so, sometimes this data can actually be beneficial. So, you know, one of the examples, the recent examples I have is that we recently came out with this lead that stimulates but it, it points it, it can point in a specific direction. And so actually let a couple of the center's use use this new lead for a year. But then I went back and collected the data over the past years and said, okay, are they using a directional feature, more than they were using this omni directional feature, because you can still do it, you know, the old traditional way, or you can use the new enhanced feature. And it's kind of been an argument in the community of is, does it really matter, right, we have this new thing, but does it matter. I was actually able to collect the data, and do some statistics on it and put it in this pretty little graph and show that actually, it does matter. And I won't quote the numbers, because I'm, I'll probably get in trouble with someone somewhere for doing that. But, but for sure, it matters, you know, and yeah, yeah, it matters. Look I have the numbers. And then, you know, one of the things I was on a call with today was, you know, talking about touching more neurologists. And, and, you know, we were talking about, well, what is the cadence that that we need? Or how many times you actually have to talk to someone before they remember you? And I was like, "Hey, guys, you know what, we need to come up with a way a survey to do to ourselves, write a cadence survey and then graph it with all these different neurologists that we're touching and see, we could answer this question with data." And everyone just looks at me and they're like, you know, they first give me that look like another spreadsheet. I'm like, "I'll do it". And they're like, "Okay." I was like, "If I create the sheet, please fill it out." I personally will analyze the data, and I think that's one thing that sets me apart from a lot of people in my field is that, one, they don't really care about the data, right? And two, it just doesn't make them feel happy to be able to run statistics on something that they've collected.



Alaine Keebaugh 38:33

Yeah, you're getting to, you know, carry over your science training and everything into this

Yeah, you're getting to, you know, carry over your science training and everything into this.
And

A

Alaine Keebaugh 40:20

That's right.



Karoun Bagamian 40:21

And you get to do the things you want to do, which is smart, you know, I mean, it's, that's great. Like, "Give me the numbers." I totally get it, yeah.

A

Alaine Keebaugh 40:29

I know. And I will say like, if, if you just say this real quick, for anyone out there that's thinking of this career with a PhD like, I do, you know, I hate to like toot my own horn or anything, but I can read the science, right, and really understand what what were the analyses that were run? What what does it mean, you know, are is what they're saying, really supported by the data? And I can have those high level conversations with neurologist or with any physician really. Yeah. And I think that is a really, that's I have found that really useful that I think even in the field didn't know it could be a useful thing out in the field.



Karoun Bagamian 41:05

Yeah, see, there you go. Exactly. That's like an example of what I'm talking about. Yeah, that's interesting. It makes sense, but you know, you don't even realize it like it wasn't expected. Or, let's say, that might not be something that people realize we're going to improve it that much. And now, you know that, you know, having those skills.

A

Alaine Keebaugh 41:23

Right. Yeah. And I think there are a lot, a lot of transferable skills that we pick up, you know, in graduate training that we don't even necessarily put labels to, until until we need to. There's probably many more of these. That way, that's,




Karoun Bagamian 41:38

It's funny that you say that, because that's kind of what like we're trying to do with this podcast, try to figuring out because like, one that I know is, you know, being self motivated, or being really good at problem solving, and stuff like that. But like, there's other things like that communicating science, you know, or not knowing how helpful that is, like just realizing, right, you know, so that's kind of important to figure out, that's one of the things we want to figure out. So thank you so much for those examples.

 Alaine Keebaugh 42:05


Yeah, and I think your podcast is gonna bring a lot of awareness to graduate programs on like, what, you know, because when we were in grad school, they brought in, you know, professors that spoke on what they were doing in their lab as like, research options, right. But this podcast, I feel like is gonna really open the eyes so that maybe grad students will have more options and more exposure to different career paths than they might have in the past.

 Karoun Bagamian 42:33

Yeah, and that's, that's the thing. So like, we want to start with what we know, which is like science based transitions, and PhDs. But, you know, just in general, how many people have gotten a bachelor's degree and then did something completely different, we're even going to do some of that kind of stuff down the line when I get people to know about that. Because in reality, these days, everybody changes their jobs so much. And then there's a lot of angst around it sometimes and right, actually reality and it's like, being flexible and seeing what's out there. But people don't necessarily tell the things that we're that's what we're trying to show like different aspects of what's out there. Right. So

 Lindsey Laytner 43:08

I think a lot of people it'll be, yeah, go ahead. I was gonna say, I think a lot of people don't even realize what skills they have. Especially for graduate students, especially like new PhDs a lot of times, it's like, okay, I have this now, what can I actually do, because I can't get that faculty position, you know, I need to go do a postdoc or I need to go do this, and that. And it's like, you actually have a lot of skills. Yeah, you just need to sit down and think about those that you're really passionate about, like Alaine's, you know, passion around, you know, neuroscience and just kind of going for it, you know, and those skills.

 Karoun Bagamian 43:46

Definitely. And the same across the spectrum. People learn a lot of things during their bachelor degree and their master's degree that they don't even realize, you know, and, and, you know, you can really expand on it in different directions. So, along these lines, was there any skills that you didn't have that you wish you had before you started the job?

 Alaine Keebaugh 44:06

Of course not. I was perfect when I started.

 Lindsey Laytner 44:11

Hey, I'm not going to argue with you. It sounds like it's true.

A

Alaine Keebaugh 44:14

You know, they're probably, I can't think of any right now. And I know that when I first started this job, I learned a whole lot about business development, and like how, you know, to work with hospitals for contracts, I mean, things that I had no idea about, and luckily, you know, my company just had really great support.



Karoun Bagamian 44:37

Yeah, that's good.

A

Alaine Keebaugh 44:38

And they helped me with that part. But you know, I don't know that like, if I had learned it before the job, I would have even bothered learning it, right. It wasn't something that I was very interested in.



Karoun Bagamian 44:50

Yeah, but because it was applying to something you're interested in, then you have the motivation to learn it. I'm like that, too, so I totally understand. That's exactly right. Yeah, I'm like that too, I get it.



Lindsey Laytner 44:59

You made that connection, and it became interesting.

A

Alaine Keebaugh 45:03

Yeah, so one thing I do wish is that I could speak Spanish fluently. So like we have had, you know, and I lived in Central America, so I can speak, speak some Spanish and understand some of it. But you know, I can't actually have a conversation about deep brain stimulation in Spanish. But it would be really cool, that's the one thing that would be really cool to do, because we've had to have translators and stuff come in. But yeah, yeah, that ship sailed, you know, I don't have the capacity in my brain to learn another language at this point, but I wish I could.



Karoun Bagamian 45:35

So, um, yeah, I think I'm just gonna ask like a couple more questions, because, you know, we've, we've kept you for so long. So, and you've said, so many really intriguing things that I think you kind of touched upon. So I think you touched upon this, but let's like, make it a little more, you know, formalized, which is, what are some personality traits or characteristics that

would make someone a good fit? Or ill fitting traits for your job? So like, you told us a couple: self- motivated, you know, work a lot, you know, stuff like that. Yeah. But what are something that, like, you know, if, for example, for a job as a writer, if you really like people, and you only write, that, you know, you might not like that, you know, like, it's hard because you need to interact with people—like that kind of stuff. So like, is there stuff that, and they could be things that maybe people will evolve over time, but maybe wouldn't be, you know, either a good fit, or an ill fit, whatever you comes to mind.

A

Alaine Keebaugh 46:31

Right. Well, you definitely have, I mean, I would, that's a really good, good question. I interact with people all day long. So you definitely need to be someone who, like likes people. And it's in different, you know, it's in different capacities. So if you're interacting with a physician, you might be talking about science or something that's related to patient care. Whereas if you're talking to a patient, you might be trying to help them, you know, work their device from home or educating them. And then, my goodness, you know, the corporate America has so many phone calls, they're always gonna call with somebody about something. And it's funny that you ask it, because, like, I used to think I was an extrovert, you know, back like in grad school, you know, we'd go out and party and have fun and do all these things. But, but nowadays, I'm realizing that maybe I'm not, right. So like, after a full day of like, interacting with people, I really enjoy coming home, and just having everything be quiet and kind of calm, but that could also be my age, you know,



Karoun Bagamian 47:32

I think, I think it's a combination of things, because I've experienced this too. I think it was part of it is definitely I think age is a part of it. And also when you have a job where you are expected to interact with people, even if you're an extrovert, or you're if you're an extrovert, or an introvert or whatever you are, I think your batteries need to be recharged. You know what I mean? Like, I think that when you interact with people all day, it's hard to keep that up. And I think it gets lower as you grow older, I know that I have experienced the same.

A

Alaine Keebaugh 48:03

Another. Yeah. Another part of the job is that like, you know, I feel like I'm always moving, right? Like, I'm always on the go. Yeah, which I love. You know, I cannot sit still to save my life. So like, I love writing, but I don't think I could be a writer because I don't think I could sit still long enough. So So you know, that I think that's a character trait is, you know, enjoying the constant move constantly being on the move, is another one. Believe it or not, you know, a good team player. Yeah, you there's a lot of different people that, that you have to work with. So working well with others, and, you know, not letting things bother you too much, and just kind of letting it roll off your shoulders. That is a good quality.



Karoun Bagamian 48:48

Yeah, and I definitely hear that you need patience, because it's like patience to help patients, you know or things like that. Because it sounds like sometimes you're trying to explain things

you know, or things like that. Because it sounds like sometimes you're trying to explain things to people that might not understand or, you know, you...

A

Alaine Keebaugh 49:00

Yeah.



Karoun Bagamian 49:01

I imagine, you know, you might have to do the same thing, couple, you know, over and over again. So like you need to understand, right, well, and also be patient and probably calm for them. So yeah.

A

Alaine Keebaugh 49:11

I love that. You got to have patience with the patient. Well, because, you know, some of them are coming, calling you from the nursing home. Yeah, you know, and they might be 90 years old, someone else might be 45. And then somebody else might have a bad phone connection, and somebody else just might not get it. You know, so yeah, you got to have patience for the patient. Yeah, but the patients are also what bring the reward.



Karoun Bagamian 49:35

Yeah. And then so, one of the things that I would that I'm going to ask most people, I think, which is, what would be the top three tips that you would give to someone interested in pursuing your career path?

A

Alaine Keebaugh 49:49


Okay, that's a great question. So first thing I would, I would say is one, be persistent, like know you're probably not going to get the first or maybe even the fifth or tenth job that you apply to. But, be persistent, because once you get your foot in the door with that first device job or pharmaceutical job just sort of getting getting in there, it gets a lot easier. Once the door is open, it's open, especially after you've proven yourself. The second piece of advice I would give would be, you know, network, talk to anybody and everyone you can and let them know, that's what you're interested in, because you never know, who's going to be your advocate to help you get that first position. And quite frankly, if it wasn't for people around me that advocated for me to get this position, I wouldn't have gotten it, I wouldn't have even known about it. And then, you know, my third piece of advice would be go after what your gut tells you to go after, you know, if it's, if you feel like you love it, and it's gonna make make you happy while you do that, then go for it—no matter what it is.





Karoun Bagamian 50:51


I like that. Those are..that's some good advice. And then I came up with a fun question that I'm


going to ask, and I'm going to tailor it to the person that's, you know, and actually, they asked me a version of this in my qualifying exams, but it's a fun question, I promise.


 Alaine Keebaugh 51:07
Oh, no! I'm gonna have flashbacks!


 Karoun Bagamian 51:09
No, no, it's fun. It's fun. I said, name three people, anyone in history or the present, that you would like to have a beer with?


 Alaine Keebaugh 51:19
Oh, boy. Okay. You know, I would like to have a beer with Oprah Winfrey.

 Karoun Bagamian 51:27
Oh, I like that. That would be cool..

 Alaine Keebaugh 51:29
Yeah, I think for a lot of different reasons. I have a lot of things I want to talk to Oprah about. Yeah. The second person? You know, I would like to have a beer with Jim Thomas. So that's the guy that was my advisor for my PhD. And yeah, we went different ways. And I haven't talked to him in a long time. He would be a good one to reconnect with.

 Lindsey Laytner 51:54
That's really sweet, actually.

 Alaine Keebaugh 51:55
And then a third person. Yeah, let's see the third person. I want this one to be this. I think it's on the tip of my tongue but I can't quite decide. I think I think Neil Armstrong.

 Karoun Bagamian 52:12
All right. Oh, that's cool.



Alaine Keebaugh 52:13

Yeah, that would be that would be my third person. All right.



Lindsey Laytner 52:17

Cool. All right.



Karoun Bagamian 52:19

Awesome. So, um, so for our listeners, that's going to conclude the interview, we are going to include some of the information that Alaine gave us...some information about resources, we will also probably include, we do we're going to be doing this for all the positions we talk about, including if there's resources either we'll provide or the guests will provide that might give you some information about the topic. And also some information about what the salary range or what you can expect monetarily for a job in this industry. So Lindsey, and Heidi, do you guys have anything else you want to ask Alaine?



Lindsey Laytner 52:57

No, I think we covered quite a bit. And I just think that everything that you're doing, and the things that led up to your career have been super interesting and really inspiring. Because, you know, it's like, hey, just keep at it. Be persistent, stay motivated, you know, look to the skill sets that you're building, and find that thing that really, you know, drives you. And yeah, I think that that's, that's really key that you have the skills and that if you have the drive, you can make it happen.



Heidi Bolduc 53:35

Yeah, exactly. I agree. I feel like it was a really inspirational story of, you know, as you mentioned, being told no, but not letting that really stop you and just, you know, getting to do what you love. So it's a great story.



Alaine Keebaugh 53:53

Thank you all so much. I was really a pleasure to be here. And an honor to be asked to do this. And I love getting to hear Karoun's laugh. It's been a while since I've heard that. There it isâ€”it's my favorite!




Karoun Bagamian 54:07

I love having you as our as our inaugural guest. Because as I knew I knew it, I knew it would be great. And thank you so much. We learned a lot. And your story is very inspiring. It has inspired me in the past. So that's why I had invited you. And also you know how to tell a good story and


we really appreciate that. So, thank you, and we appreciate what you're doing. Yeah,

 **Alaine Keebaugh 54:29**

Thanks again for having me ladies. Yes.

 **Karoun Bagamian 54:31**

Yes. All right. So thank you. Yeah, it's such a pleasure. Yeah, we look forward to the next Business of "Doing Science" podcast.

 **Podcast Outro 54:45**

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