Shanning:
Hi everyone. I'm Shanning. I am a MD PhD student at Boston University in the graduate program for neuroscience. I'm hosting today's episode of Vitamin Phd Pathways to academia. Today our guest is Dr. Steve Ramirez, an assistant professor in the psychological and brain sciences department. Steve completed his Undergrad at BU and went on to do his PhD across the river and Sumo Tangalle was lab at MIT a few years ago. He came back to his alma mater as a faculty member to establish his future lab and research right here at the callaton center for integrated life sciences and engineering. I remember the first time I read his first paper in nature on using light, also known as optogenetics in the neuroscience field, to stimulate a region of the brain responsible for memories. In his paper. He showed that after tagging the cells responsible for a fear memory, he can reactivate that memory simply by shining light on the cells.

My first response was, wow, this is really awesome. I then looked up his name and found his website and when I first opened his website I was struck by how much personality he had instead of a list of degrees and accolades, his first page was a very down to earth story about his inspirations and how he got to where he is. He also has a philosophy page highlighting the three key points that he lives by as a scientist. 1. Good science anywhere is good for science everywhere 2. We stand on each other's shoulders, not on each other's feet. 3. Let's all be a little bit less wrong one data point at a time. Such interesting points for me. I was really impressed by his passion for science and very excited that he can join us for our podcast today.

Shanning:
Welcome Steve to vitamin PHD. Would you please tell us a little bit about your journey in academia?

Steve:
Yeah, so my journey is a little bit of a roller coaster in academia. So I started off in high school really not knowing what I wanted to do with my life because I was really interested in medicine. I was really interested in writing and music and Shakespeare studies and astronomy, basically everything under the sun. And I was kind of an A, B and C student. So I thought, I'll kind of just declare undeclared as a major when I started off. So when applying I was choosing either between BU or Cornell and I was two seconds away from going to Cornell on a scholarship for playing the piano. I'm a city person. So when I visited Ithaca, no offense to Ithaca, but I just can't imagine my life here ever really.

So I ended up coming to BU with my two best friends that I had known since seventh grade and we roomed together all four years here and they were my social rocks when it came to trying to

figure out what it is that I wanted to do with my life. I was encouraged to do research on something and the idea of it was interesting. So I was encouraged to join the lab and I did at the med school that I didn't particularly like. And I thought if this is what science entails, I don't know if I really want to do it. But I ended up interested in a million different things and there was a day in the lab where a centrifuge broke and I had to go across the street to find another centrifuge to use.

And there happened to be another student there that I took organic chemistry with. And we started talking about what's your major? What are you interested in? And I basically told her that I was interested in humanities and science and the works. She said I think I know somebody that might be able to help. So you should go and talk to this guy and see if you can get any, any advice. So I would go and end up talking to Paul Lipton who would become the director of undergraduate neuroscience at BU and become part of the first class to graduate from BU with a major in neuroscience. So Paul gave me this advice: if you like astronomy, if you like hamlet, if you like Beethoven's fifth, if you like how biology works, then why not study the thing that's achieved all of those, which is the brain. So it's a little bit of cheating because I can study the most interdisciplinary thing that happens to have achieved everything that's ever been achieved. So at that point, Paul redirected me to Howard Icanbom's lab, which I ended up joining and I loved it because it was there. There was this comfort blanket of comradery there that made me feel really like I was a part of a team, which was one of the things that I loved most about science or that I would learn to love most about science. It was the kind of place where if something works out, we would go across the street and have a beer and celebrate and if something doesn't work out, then we would still go across the street and have a beer and celebrate or commiserate.

So it did provide a comfort blanket of people that have your back. It was a relationship with my work where I didn't go in on day one and I was like I love neuroscience, this is what I want to do for the rest of my life. I love memory research! It really did grow on me and I learned to fall in love with it. Where towards the end of my undergrad here I was just like, okay, well I think I like it enough to really give it a chance. I think I have a pretty good idea that this is something that I could see myself doing at least for a few years. So Howard Icanbom encouraged me to apply to Grad school. And one of the labs that he pointed me to was Sosima Tomygawa's lab at MIT.

Steve: (04:04)
So at first I thought, well I don't, I don't really know if I want to apply to MIT because my GPA was good, but it was not a 4.0. And according to my GRE, I can barely speak English or do

basic long division. So I just thought well I'll do it because I at least have the research experience and my dad was gonna yell at me if I didn't apply. So I applied.

And there's actually this random background story, but I applied and there was a day in December where I actually had food poisoning and I was in Warren Towers eating. I used to mix lucky charms and captain crunch. So I was just eating cereal cause it was the only thing that I could eat. So I opened up my phone and I got this email from MIT saying I was admitted. I immediately went to go call my dad and I had a raspy voice from getting sick so much so I was just said dad. And then I dropped my phone in the bowl of cereal before phones were milk proof. So I could just imagine on my dad's end the last thing I hear is my son's raspy voice and then the line just cuts. So I have to go back to my dorm to tell my friends, can I use your phone cause my dad probably thought I died.
But at MIT I was just at that point I knew that I liked memory research enough and imposter syndrome was very real throughout basically my entire time there.
Because science is hard and there's a lot of brilliant scientists everywhere. And then I kind of had to learn very quickly to put on the blinders and just focus on my work because if not, if I compared myself to everyone else around me, then it was going to be a great exercise in feeling like a butt and it's not a good thing. Towards the tail end of my PhD though, I thought I could see myself running a lab and I could see myself being a coach of a team. So I'm just gonna just go all in with it. So through a series of serendipitous events, I ended up becoming a fellow at Harvard, which was where I actually was able to apply for this big grant from the NIH that really helped me start off the lab and that was sort of Willy Wonka's golden ticket for starting the lab. And then after that, the very last leg of that I was at the NIH gave a talk the day before and I was working on my talk and actually saw Howard Icanbom at the bar. And he was working on his talk too. And he was on my thesis committee and we had always kept in touch since my undergrad. We start chatting, “how are you, how's life, how's the lab?” this and that. And then he said I wouldn't really be doing my job if I didn't tell you that BU has an upcoming opening faculty position in neuroscience and you should apply. I wasn't planning on applying that year.
I didn't really feel ready, but I thought you know what, I'll just do it andam only going to apply to BU and see what happens. And then it worked out and I loved it because I knew the program in and out. BU had always felt like home. I'd have lived in Boston my whole life and was born and raised here and everything. So coming back here was a pretty lion king circle of life feel. And now we just had our two year anniversary for the lab and it's Kinda wild to reflect on the journey. But it started here. Now it's fun to be back here too.

Shanning:

So it sounds like, Steve, that you also have a huge passion for music. Do you still play?

Steve:
Yeah, I do still play. And it's funny because it started off as, I guess it wasn't love, hate, it was a hate, love relationship with music. because when I was five, I used to go to Sears with my parents. we would go to the mall every Friday and I would, I would see a keyboard and I would just start banging it. Cause my five year old brain was, wow, I hit this and it makes noise. that's it. So then my dad, in a brilliant move, kind of reverse incepted me and he was just, oh, your birthday's coming up, you should get piano lessons. And I was like, Oh yeah, this is a great idea.

So for the first half a decade, it was absolutely miserable because it was just learning the scales, learning how to read sheet music, it felt very forced and it just felt like homework and it really just was not fun. But I figured they say that you either have an Aha moment or a series of Aha moments. When you're learning a new language, instead of just learning the subject verb, you learn how to string together new words into new phrases, into something that's never been said before. So I think it was in junior high where I kind of had this feeling. I was in one of my emo phases and after listening to my chemical romance or something but whatever you remember just my first breakup or something. But I remember going back home and I was just, Oh, you know what? I just want to play and see what happens. And then I, it wasn't an Aha moment per se, it was more a, Oh wow, you're your brain and fingers have the capacity to create something new instead of just reading sheet music, which I enjoyed. and still I, I really enjoyed just listening to songs and then trying to replicate them on the piano. But I think when that moment hit of, okay, I can actually go and start playing something that's never been played before, that was cool. That was actually this feeling of, I dunno, at first it was an outlet in high school. and then throughout college and Grad school it just became something that I really genuinely enjoyed doing. the way that I genuinely enjoyed doing science where it didn't feel like homework. Now if I'm reading a research article on a topic that I'm particularly interested in, it feels exciting. It's Like I'm about to catch a glimpse into something that had previously never been seen before. And I feel that way, when I'm playing the piano or just trying to build new music, you get to now hear something that's never been heard before.

Shanning:
So I'm sure your journey has not been a breeze at every step. Would you mind telling us more about your struggles and how you overcame them?

Steve:

Yeah, so there was, there was a handful. I guess I'll list three in this case, there's one with imposter syndrome, one withspeaking publicly and then one with being a minority in science. So the first kick in the butt from science that I really had was my very first day in Grad school. So we were in a class of about 16 people and we were doing the awkward icebreaker of telling us your name, a fun fact about yourself, blah, blah, blah. So my fun fact was that I once tried to eat this 39 ounce steak in high school for this competition. Yeah. It was awful.It was a dumb decision. But we would get the meal for free if we finished it, so on and so forth. So that was my fun fact. And then the person next to me said “my fun fact is that I am 17 years old and this is my first day as a PhD candidate at MIT.” And when I was 17 years old, the biggest concern I had in my life was who am I going to go to prom with? And then this 17 year old person is solving the brain as a phd candidate at MIT. What is happening? So imposter syndrome immediately kicked in because I was just thinking what am I doing here? How ? I feel the only reason I had gotten in was through my research experience, but again, my grades were, they were again good, not bad at [inaudible] and it just felt everyone around me was so much more accomplished than I had to learn really quickly to drown out the noise and not to compare myself to people to my left and to my right because it would just be a great example in feeling awful and I didn't want to do that.

So one of the hardest things was dealing with impostor syndrome because as soon as we start comparing ourselves to other people, we forget that their journey is very different and they're, whether it's their privileges or whether it's their luck, it's all very different as is ours. So everyone has their own unique trajectory. And, I think one of the hardest things I had to learn, especially throughout Grad school, was to just write out my own trajectory and not to look to the left or to the right because if not, then I was just going to perpetually feel inadequate. The second part, the second thing was with public speaking. So in high school, I remember I had to go and give a 30 second speech as to why I should be the next vice president for the science club.

Steve: (13:20)
Right? So during that 30 second speech, I, first of all, I panicked beforehand and had anxiety through the roof for 30 seconds and I was just visibly shaking and my voice was cracking and it was just, it was atrocious. This was the worst experience ever. So while I was at BU, I took a couple of classes in public speaking, which really, really helped. but I think it wasn't until Grad school that I came to the realization that it was throwing myself into the uncomfortable scenarios of speaking in front of people is exactly what would help me overcome that fear of public speaking.

So even now, for instance, after having taught a million times and talked a million times, I still get nervous and I still get butterflies for sure. But I use that as a way of just being excited where I know the material and I know my science and I know myself enough to be able to wear myself on my sleeves out loud and to think out loud. So I think that in that case, the public speaking part now has become… I was born and raised in Boston and I'm a Boston sports fan. So it's kind of what I imagine Tom Brady feels like in the Superbowl where it's like you've been there so many times that you have playoff experience and it's, of course you're nervous cause you care about it. But, you also are confident in yourself enough to be able to say, well I know how to throw the ball and I know how to play the game and I know how to go about and get the job done. Well, I think I feel that way whenever I'm delivering a talk or an interview or doing something in a public forum. This is a platform to go and actually do your job well and reach out to people and communicate your science ideas effectively. So the third part now was probably the hardest but also the most personal and it's with regards to being a minority in science. So I was shielded to a lot of this in growing up because I went to a public school in a pretty scrappy town and it was very diverse and I was around people that had either similar accents growing up or shared my skin color or from Latin America or from all over the world.

So I was around diversity, which I really appreciated. And then when I went to college and to Grad School and so on it wasn't really until some success started happening in the field for me and my team in science that I feel it's the haters gonna hate thing where people just come out of the woodwork. I remember complaining to my dad once about how people can be really mean. There's a saying in Spanish where people throw rocks at trees that bear coconuts. So it's almost like they're throwing rocks at something that is still bearing something fruitful. I don't know it's the Spanish equivalent of haters, gonna hate.

When we had our first series of papers out in Grad School, I would hear through the woodwork, whether it was at conferences in Grad school itself or just through, gossip that we got our first papers in and then people would start chattering and they'd say, "Steve only got into Grad school because MIT had a minority quota." Or when I got into the Harvard fellows program, it's, "oh well they probably had a minority quota."` Or when we got our first grants and they probably had a minority quota, or when I got invited to give talks at Stanford or whatever, it's oh well they got to fill in the diversity gap. And There's some people that kind of attribute your success to your minority status and if you think being a minority has made someone's life easier in science, has made someone else's life easier in science, then you don't understand why minorities aren't a majority. So it's a misunderstanding that being a minority has made it easier. And it's well it's been actually the complete opposite of that. So, when you hear some of these criticisms, if people criticize my science, I'm like, this is great let's talk about it. Let's talk about the work and

let's see what other controls we need to do, what experiments we need to do. But when they cringe, criticize your identity and then attribute your success to your skin color or your background, then you have a very backwards view as to what it means to be a minority in this case. So I would always get mad and frustrated and just kind of well this is hurtful but also it's disrespectful and also discouraging.

I've always been a kind of fight fire with water kind of person. Cause if you fight fire with fire, then the whole building burns down. But if you fight fire with water, then put out the fire kind of thing. And I'm kind of an eternal optimist and pacifist at heart. So for me it was, okay, so given the meanness that can exist in the world, how can I channel that and do something constructive with it? how can I actually approach it proactively and try to try to fix it? So for instance, one of the things that I tried to do pretty often both at BU and in our panels throughout the country and internationally is like any kind of panel or workshop on diversity in stem. And there's one in particular that I do before every society for neuroscience, our big annual meeting that we have each year where basically it's called the NIH blueprint indoor program. It's basically four or five speakers that come in that are minorities in stem share their experience, but they share their experience from a very raw perspective.

I can go up there and say, my parents came to the country in the late eighties to escape the civil war in El Salvador. And my dad snuck into the US got deported, snuck back into the US and made enough money to be able to bring my older brother and sister and mom here then they lived in LA. My mom hated it. They lived in New Jersey. My mom really hated it. And then they moved to Boston and I happened. And then I get to tell that story of what it means to have to leave a country because of a war and start a new life here.

So whenever you hear bias that exists in science or in the world my approach has always been to talk it out one person at a time and to fight it with reason and with logic and when in a peaceful manner too. Because I really do think that that works. Now it's glacial and it's slow and unfortunately it's not a problem that can be solved overnight. But the one thing I've learned to do is to be proactive about it and to do these workshops, do these panels, but it's a little more than just being there. It's being there and being so candid that some of the stories are uncomfortable, but when you get a room uncomfortable about a personal story of a hardship that you've had to deal with because of a bias towards minorities in stem, then I think people realize, Oh wow, it is a problem. And then I think it resonates a lot more. So I think that those three things collectively, I think I've at least helped shape my perspective on not just science, but what the world is and can be.

Shanning:
What are your favorite aspects about being in academia yet?

Steve:
There's a handful of things that I like about academia. My personal favorite is I love working with people that can nerd out with me about questions about the brain. I, I used to have this myth, and I don't recommend this for everybody per se, cause everyone's their own fingerprints, but I learned about myself that, in Grad school I used to pretend to myself that I could leave work at work and then I could go home and then I can just be a different person. I would go home and play Mario Kart with my roommates and play ping pong. But when I had downtime, I would still love reading papers and I would still love thinking about science.

I's not to say that everyone should do that because I think everyone should have a very well balanced type, but it shouldn't be science 24, seven because that's also very unhealthy. But I at least learned about myself . I really enjoyed being able to say, well I don't know what the next big question is. So let me read and talk to people in the lab and we can try to figure it out. So working together with people in the lab and having people that also cared about these questions about the brain or about memory. I loved that because it felt like, all right, we're in this together. That part is fun because we're in it together. It's easy to be , oh, when things work out, the celebrations are amazing. when we, I dunno, there's, when we get a paper in or when we get a big grant and we clink the glasses over champagne, you're like, this is such a milestone. And it literally would not have happened without everyone else actually there. Right. So that solidarity means the world to me because it's, I learned in Grad school, we worked with a small team within the lab and it was just , it was so much fun to be able to go and play softball together. We went dragon boating together or go and play. Yeah, right. We would go and attempt to ski together and things like that where it was just, I don't know, it made it fun. So one part is that it is like the people that I am, I know that it's not a nine to five job. And for me personally, I love the fact that it's not a nine to five job because there's some days where. it's so funny, me and my partner had this joke where, I'll leave work sometimes around five ish cause I do try to have a balanced life, but then, I'll go and I've been working on a book for a few years now and then I'll go somewhere, sit down and write.So it's like, oh yeah, I'm leaving work to go work. But then it's , but it doesn't really feel like work sometimes. And I enjoy that.

Shanning:
Alright. So what are the key aspects you think are important to think about for a graduate student who may be considering pursuing academia?

Steve:
Yeah, I think in this case there's, there's a couple of layers to this question. I think that one, one question is of course the kind of work that you want to do and like the kind of research that you'd want to do. I think it means that it's good to find people that are like minded to you. in terms of goals, in terms of philosophies, in terms of more than just approaches to science but approaches to their own life And their own worldview. and to ask them for advice and to ask them for advice and to hear them out and how's their journey been? And what, what aspects of being a postdoc or a Pi were particularly challenging? What aspects were particularly rewarding? And then in that case, it's, it's two people talking that are more like each other than not. And then there might be nuggets of wisdom there that actually resonate. I think the second thing too is just the kind of what I mentioned before where if you want to be in academia, then one of the most helpful things I found is again, not to, not to look to my left and to my right and compare myself to everyone else because that's just going to be, you're always gonna feel like you're a grant behind a paper behind, a student behind, a class behind the, it's, you're always gonna feel like you're not doing good enough.

And the reality is that if you're in Grad school already, it's like you've already made it into the top 1% of the intelligentsia. It's you're, you're, you're asking questions for a living and you're doing, you're doing science, you're doing research. And and then again, it's not to say that it's all ponies and sunshine, but it's not all fire and brimstone either. There's always going to be a job out there for there's always going to be a job out there for you. It just depends on what resonates with you the most. And then the last thing I think in terms of bits of advice is that there's, there's gonna be, there's always hardships. It's not even academia, it's just life, right? there's, there's always going to be days that are , or that are the worst and that are very stressful or anxiety inducing. And I think that everyone has their own version of an outlet. And I know it's Cliche, but I think that everyone has their own version of something that is like a little bit of nothing, not even an escape, just that balances their life in a separate way.

Channing:
Yeah, absolutely. I go out ballroom dancing every night, every other day, if not every single day. And doing competitive dot. Ballroom dance has been really a joy in my life. also has really pushed me academically because it balances me because in the evenings when I don't have to think about work and I don't have to think about the experiments that didn't go well or maybe it did go well. I can be in a mental space where I just think about focusing on the techniques of ballroom dance and it's been incredible and I totally resonate with what you just said. what are some things that you wish someone had told you when you were in graduate studies?

Steve:
Yeah. I, yeah, so a couple of things. I remember reading there was a thread on reddit where there was an 18 year old that was asking for advice. I'm about to go to college. I don't know what I want to do with my life. Yeah., and then like a 23 year old chimed in and was like, oh no worries. I just graduated and I have a job but I don't know if it's what I want to do forever. And then a 30 year old time. Then being like, I just actually switched careers. don't worry, you always have the opportunity. And then a 40 year old, 50 year old, 60 year old, it kept going on and on and on until I ask somebody that was in their late eighties, chimed in and they were like, I think the one thing that I regret the most and pointed to a study surveying people that were I think over 70 being like, what do you regret the most in your life?
And then the most common answer was I regret worrying so much. So in this case, , and obviously that's easier said than done because me and you worry because we care about it, we care about our careers, we worry about things that we care about. But I think that one of the things that I wished that I knew beforehand was that it's almost like worry for an x amount of time. And then just again, we're saying then go ballroom dancing or play softball or let that go for the day. Because then tomorrow, the sun is gonna rise again kind of thing and you can get back at it to the science and so on. One of the things that I wish I knew beforehand too was that a field can be harsh, but it's a vocal minority.

One of the things that I wish I knew at least earlier on was that whenever it's harsh criticism or harsh feedback or somebody that's just being plain out mean it's not representative of the field and it's not representative of the world, it's just representative of that one mean person that probably also has their own trajectory that happened to lend them to have the personality that their currently at kind of thing. So I think that's so that, that's another thing too is that it's not that the world isn't a nice place, it's that there's only just a few people that don't have to ruin it for everybody, but it's a vocal minority in this case. And I think the last thing too that I wish I knew was that I wish I did more outreach from the beginning and I wish that I exposed myself from high school on to the kind of outreach that's possible into the kind of ways that being a minority in science can make a difference. I also wish I learned to cook. So as a Grad student on a Grad student stipend, I was basically ham sandwiches and scrambled eggs all day. So that's a skill I'm still trying to acquire.

Shanning:
I feel that. Well, thank you so much for joining us on vitamin PHD.

Steve:
Thank you so much, it's my pleasure.

Shanning:
Thank you for tuning in to this week's episode of Vitamin Phd Pathways to academia featuring. Steve Ramirez. To get the latest episodes of Vitamin Phd, be sure to follow us on Spotify or apple podcasts. You can also connect with us on Twitter at Bu Vitamin Phd. Learn more about our team, learn more about our team, and send us your feedback by visiting our website, BU.edu/VitaminPhd See you next time.