

The Taproot podcast

Season 3, Episode 4

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Guest: Rishi Masalia

Transcribed by Joe Stormer

[Instrumental theme music]

**Ivan Baxter:** Hello, Taproot Listeners! I'm Ivan Baxter. We are back with the second half of season three - rested, refreshed, and ready for some new conversations that dig beneath the surface of a scientific publication.

**Liz Haswell:** And I'm Liz Haswell. And it's a good thing we are rested up because today's guest, Dr. Rishi Masalia, has a lot to say. We talk about a recent paper where he analyzed of sunflower abiotic stress response AND he helps bust the myth that you should not express speak up and advocate for change until you have established your career.

**Ivan:** A policy known as *STFU*. To find out what that means, listen to the episode, which starts now. [Instrumental theme music] Our guest today is Rishi Masalia, who is the director of bioinformatics at Leafworks Incorporated, which is a herbal genetics company. Rishi got his bachelors from the University of Arizona as a double major in biology and molecular cellular biology before moving to the University of Georgia, where he got his PhD in plant evolutionary genetics. While in graduate school, Rishi did (if you will pardon my French) a literal [bleep]-ton of outreach work. He co-founded three (yes, three) groups at Georgia. They were SPEAR [Science Policy, Education, Advocacy, and Research], a group to help train students in science policy advocacy; the Athens Science Observer, an organization to train students in scientific communication and to help them disseminate their work; and the Athens Science Cafe, a public science event organization. He was also an ASPB Ambassador – which we will talk about soon - and so it's really great to have him on The Taproot. Rishi, welcome to the

Taproot.

**Rishi Masalia:** Hi, thank you for having me.

**Liz:** Yeah, we're psyched to have you, Rishi. So the paper we're going to talk about today is entitled "Multiple genomic regions influence root morphology and seedling growth in cultivated sunflower (*Helianthus annuus* L.) under well-watered and water-limited conditions". It's a PLOS ONE article from September, 2018. So, Rishi could you give us a brief summary of the paper?

**Rishi:** This is a paper that came out of my PhD dissertation – work from the University of Georgia with John Burke – and overall my dissertation focused on cultivated sunflower seedlings and their response to abiotic stress conditions – so environmental conditions. Mostly I focused on drought as is illustrated in this paper, but I dabbled in a few others – salinity and low-nutrient being a few of them. But in this paper, we used what's called an association mapping panel or diversity panel for cultivated sunflower. That was developed in John's lab and it has nearly three hundred cultivated sunflower varieties or genotypes. We grew these up under well-watered and water-limited (or control and stress conditions) to note phenotypic differences under stress, as well as identify genomic regions associating with seedling growth traits as well as root morphology traits. So one of the cool things that we saw that was really highlighted well in this paper was this deeper rooting phenotype under water-limited conditions, so under all genotypes, or just rooting deeper in all the pots they were growing in. Whereas those genotypes grown under control conditions tended to have more lateral root growth near the surface of the soil. And as for the genome-wide association study – or the GWAS study – we identified quite a few associations or associated regions. Many corresponded to the growth traits above- and below-ground that we're measuring. And diving into these associated regions, not only did we find relevant genes associated with our traits, but there was also evidence of pleiotropy across multiple traits - so the same reason affecting multiple traits - as well as numerous environmentally-independent genetic effects. So essentially the alleles or associations we were identifying with some of the traits had

consistent effects across environments. And this paper along with some others that have and some that are coming out of John's lab as well as other collaborators will serve as a nice resource for plant breeders and other sunflower researchers.

**Ivan:** Can you tell us a little about how you got to sunflower? What brought you to choose that as the organism you wanted to study?

**Rishi:** So sunflower, in general, is a pretty awesome plant. I guess in my humble opinion. Commercially, sunflower hovers between the third and fourth most sold oil seed crop in the world. So, agriculturally, it's very relevant. It's also globally recognizable, so whenever I speak about sunflower, people have a very clear image of what I'm talking about without me having to describe it, which is nice. So as a study organism for a new graduate student, it's a pretty awesome one to work on just for those two reasons alone. But coupling that with abiotic stress work, *Helianthus* is a pretty interesting genus to work with. While *Helianthus* species grow in a lot of different environments – you know, tops of sand dunes, standing water, coastal shores, ditches, you name it - they grow there. And cultivated sunflower is known to have a robust, deep-rooting phenotype making for an interesting strategy to avoid a drought.

**Liz:** So this is pretty far out of my wheelhouse so I'm not entirely clear how you're getting information about – you're doing one big experiment but you're getting information about watered versus unwatered, rare and common alleles, information about environmental conditions. I don't understand how all that's coming out of the one experiment. Without getting to GWAS-y, can you explain?

[Laughter]

**Rishi:** Yeah, so what we're doing or what we did was we had a diversity panel of cultivated sunflower genotypes. So these are diverse sunflowers from all around the world – some that are used commercially, some that are used for research purposes. And essentially we just grew all of these genotypes up with replicants in a control condition – so conditions that were well watered – and in a drought

condition – conditions that were not well-watered. And we were looking for visible phenotypic differences – so differences in growth rate, differences in seedling vigor traits (height, stem diameter), as well as a lot of root morphology traits (rooting length, different types of area or different types of total root length, different traits like that). And then looking to see for the GWAS part or it – the genetics part of it – to see what rare or common alleles were present that were also associating with some of these traits that were associated with these traits in some individuals in the population and not in other individuals in the population.

**Ivan:** So do you eat the sunflowers at the end of the experiment, Rishi?

**Rishi:** Not those ones. We typically do what everybody else does - go and get David Sunflower Seeds.

[Laughter]

**Ivan:** So one of the things that's interesting to me is shortly after you published this paper you started your new position, which is an industry job. While it's in a very agriculturally-relevant crop, it's still pretty much a basic science approach. You're doing things in the greenhouse, you're not going out in the field. This is not an elite breeding population where you can really say this snips and this can be used in a breeding approach. You're really sort of in more of a removed population. So did you feel like this work that you did here really prepared you for your job?

**Rishi:** Let's see; how do I answer this? I think the answer to your question is both yes and no. So I'll start with the yes. The company I'm at, it's called Leafworks. I am the director of bioinformatics. So what that means is I'm responsible for managing those who do - as well as actually doing - a lot of the programming. And bioinformatic analyses that the company does. So because my dissertation was so bioinformatically heavy, you know doing the genome-wide association study or other parts of my dissertation where we're doing RNA-seq data. All of it was dealing with programming and even my undergrad background

at the University of Arizona with Mike Barker was bioinformatic heavy. That really helped me train for the job that I have – like technically prepare for the job that I have - regardless of the plants that we study at the company, versus the plants that I studied for my dissertation. The “no” aspects is that Leafworks is an up-and-coming company – so we're a start-up – so as a person who works for a start-up, I wear a lot of different hats. So generally I oversee all of the bioinformatic analyses, but I also oversee all of the information technology (so the IT stuff) as well as communications and marketing, none of which my dissertation really prepared me for. [Laughter] So the answer really is sort of a yes and a no.

**Liz:** And you went straight in from PhD; you didn't do a post-doc.

**Rishi:** Technically, I did like a two-month post-doc. Like a very, very short post-doc.

**Ivan:** In your PhD lab.

**Rishi:** In my PhD lab, yeah.

**Liz:** And I think that's interesting. My impression had been that, back in the early 2000s, yeah you could jump right into a great position in biotech right out of grad school and really a lot of my grad school classmates did that. But that now days you needed a postdoc to make that happen. But that doesn't sound like that's the case, in your case.

**Rishi:** Yeah, I would generally agree with the statement that you just made, Liz. For me, it was one of those things where I knew some folks from graduate school who were starting a company and they had just asked me if I wanted to come onboard, and I jumped at the chance. So definitely a rare situation that I sort of fell into. Yeah, if I hadn't been given this opportunity I definitely would have postdoc'd for a lot longer, potentially switched into industry, maybe Big Ag or maybe another start-up. But it definitely would have been a longer path to get to where I am.

**Ivan:** But if I can go back, it sounded to me that you were saying that

*scientifically* the science component of your PhD, you felt like you were well-trained for your job, but there were a lot of external things that you didn't feel probably prepared you. And one of the things that I notice, I think, you spent a lot of time at grad school starting organizations on student training. Before we go into more detail about why you started these clubs, could you tell us a little bit more about what these two clubs were?

**Rishi:** Science Cafe, we started back in 2013 and then Science Observer was started in 2015. Science Cafe is a general science cafe. They exist all over the world but our model was we bring local scientists (either from the University of Georgia or surrounding universities) to a local bar. They talk about science to a general audience, do an intermission, and then it's like forty minutes of Q and A from the audience to the scientist. And then the Science Observer is a student group run out of the University of Georgia that is essentially a blogging group but they offer training and webinars and they partner with the local radio stations to basically give students the opportunity to practice their science communication skills.

**Ivan:** And we'll put links to these organizations in the show notes.

**Rishi:** Awesome.

**Ivan:** So obviously you didn't know exactly where your job was going to be, but you felt like there was a lack of training in some aspects of a student's career. Is that a fair statement?

**Rishi:** Uh, yeah, I think that's a fair statement.

**Ivan:** Talk us through when you came to that realization. Like when did this all start?

**Rishi:** Yeah, so that's a great question. So essentially we're talking about, you know, gaps of knowledge and gaps in graduate communication. And I think gaps exist in graduate education for sure. It kind of depends on who you are as a student and what career path and training you want to go down. So for me a lot of the gaps that I saw in my own graduate training was simply just a lack of

options. So when I was going through graduate school at a big R1 university like University of Georgia, you look for mentors and advisors to kind of teach you and advise you to what kind of career paths are out there and how to best achieve the training to go into that sort of career paths. And if you're at a big R1 university like Georgia, everybody you're surrounded with are R1 academics who have chosen the career path of following an R1 academic career path and that's the advice they can give you.

**Liz:** [Laughing] Yeah, we don't know how to give any other advice, right? We're in it.

**Rishi:** Yeah, exactly, right? And so if you're a person like me coming into graduate school who doesn't really want to do academia but still wants to be a scientist and still wants to contribute in a meaningful way, it's kind of hard to figure out what career path to choose when you're surrounded by people who have taken one career path. And so for me, the biggest gap of my graduate education was this lack of options and where to find advice for them. So my two biggest interests coming into graduate school and definitely grew as I was developing as a graduate students was 1) industry, agricultural industry, and 2) science communication. So for the industry aspect, one of the things I did was I knew I had to find mentors and advisors to teach me what I needed to do to get an industry job. And one of the reasons that I joined ASPB was to find those mentors because I knew that that would exist in that society. But for science communication (what Ivan alluded to in his question) there was not a lot of science communication or science outreach training at the University of Georgia. There were for sure a couple of classes here and there, but usually they would fill up really quickly and not have a lot of students - you know, not a lot of seats in the class. And so what myself and a lot of my friends did was we said, alright, well if this doesn't exist let's just create it ourselves and create a service and an opportunity for students after us to grow and learn without the hassle of having to create something themselves from scratch.

**Ivan:** This touches on something that we've talked about in multiple episodes,

about the idea that your advisor has to be the everything to you; that there's so many things that we need to be training people in and support that we have to have for students; and there's just no way that your advisor can do that so you have to have some structures around. So you guys [sic] just sort of created these structures. Was this difficult or easy to do? Is this something that a grad student that's at a difference university is like "Ah, I wish there was something like Athens Science Observer," at their university. Should they start that themselves? Is that an easy thing to do or is that something that you might not repeat if you were doing it again?

**Rishi:** Yeah, it is, let's see. I would always encourage students, if they want something at their university, to go search for it or create it themselves - regardless of the challenge of actually accomplish that. For us when we started both the Science Café and the Science Observer, we had no idea how challenging it would actually be. And there were definitely hurdles that we had to overcome, but I think at the end of the day it was totally worth it.

**Liz:** Are those things still running, now that you're not there anymore?

**Rishi:** Yeah, both of those are still running, both the Athens Science Café and the Athens Science Observer.

**Liz:** I think these types of groups are super exciting. Like the students here at WashU have a group called BALSA [Biotechnology and Life Sciences Advising]. It basically is a group of students who are willing to do consulting for local biotech companies. So they get experience putting together whatever you put together as a consultant. I don't have any idea. And then the companies get a cheap or maybe even a free consultant. And so that's been going on for years and that's 100% student-run. And so this feels like a new thing. Fifteen years ago, graduate programs only offered training in moving on in academia. And then about ten years ago, students were complaining that graduate programs weren't serving all these other career options, and then graduate programs failed to respond so now graduate students are doing it themselves. It's kind of cool.



**Rishi:** Yeah, I would definitely agree with that trend. It's something that at Georgia and it's talking to friends at other universities, it's something that I'm seeing at other universities as well. For Science Café, it's something that I've had the very privilege to help other students (my friends at other universities) start their own Cafés. So I would agree with Liz that students are taking it upon themselves to start these endeavors and get this training if it's not provided to them.

**Ivan:** So Rishi, did you get any feedback from your department, your institution about starting this? I mean, from my perspective I think that would be great but I'm not sure all of my colleagues would see it the same way.

**Rishi:** Yeah.

**Liz:** Or a graduate advisor, cuz every hour you're doing that you're not doing your thesis work, right?

**Rishi:** Yes. So there was definitely both positive and negative feedback from Georgia, my department. I will say from the start, that my advisor John Burke was super supportive of all of the outreach endeavors that I did. He kind of had a policy all along of as long as you're productive and doing what you're supposed to be doing, you can do whatever you want in your free time. So nights and weekends is when I would do a lot of this outreach work. So John didn't have a problem with it at all and definitely encouraged me to keep going. And as far as both the positive and negative feedback - so I'll start with the negative feedback because there wasn't really that much, or at least if there was we just ignored it and kept going. But there were definitely faculty members as well as colleagues at University of Georgia who would come up to me and say, "Oh, well you're wasting your time doing this outreach stuff. Why are you bothering with this? You should be spending your time in a lab and finishing your dissertation." But then the other feedback we got was very positive from the University itself. So we actually, when we started for the Science Café in 2013, we were given funding by the University's office for the Vice President of Research. And then the UGA Graduate School was also very supportive of these endeavors. And it was one of

those things that was kind of funny. Over time, as the organizations that we were creating became more and more successful, all of the negative feedback just stopped. And those who were negative would then come back up to us and say, "Oh you're doing such a great job. We love what you're doing. Blah blah blah." So we saw this whole flip from people.

**Liz:** That's interesting. I can see how it's just something new that the conservative structure of academic science just struggles with. We really have to be pushed in the right direction.

**Ivan:** So I mean I think that this is great and I think that it's great that you're sort of spreading the word. But one of the things that your approach started with was very local organizations and that would mean that you'd have to replicate it well in hundreds of institutions across the country. Which is sort of daunting and-

**Rishi:** Harder.

**Ivan:** Harder. So this is one of those places where I think that there's a big role for scientific societies to play. And I'm wondering if that's part of the reason that you started doing ASPB, other than the outreach to finding industry mentors as well.

**Rishi:** Yes. So as I said, my initial involvement with the ASPB (so the American Society of Plant Biologists) back in 2016, was purely selfish. It was my first major conferences as I went to the annual meeting in 2015 in Minneapolis and I basically went there looking for advice and advisors and looking for training. And I got it and it was great. And as I started to develop as a graduate student doing more of this local outreach. I thought, "Yeah, you know, I should take these ideas and bring them to the society that I work with the most" (which is ASPB), and see if I can help other students on a broader scale. SO one of the things that I helped do with ASPB that I continued on for them were round table discussions that happen every year at the annual meeting to give students a look at different avenues of career paths or different types of career advice, things like this. Something that I also help at the annual meeting for the Society is this elevator

pitch contest.

**Liz:** Yeah, I remember that.

**Rishi:** So this is pretty popular now for ASPB but essentially it's a ninety-second pitch of your dissertation. Kind of stemmed from the three-minute thesis competition that happens nationally, or internationally. I don't know if it happens at WashU.

**Liz:** Yeah, absolutely. We even stole the elevator pitch idea for some of our Center for Engineering MechanoBiology training stuff.

**Rishi:** Nice. Yeah, elevator pitches are extremely useful and very hard to do. One of the things I helped students to do as well as anybody who wanted to walk in and do one of these things is we give them a little bit of training and then we film them doing their ninety-second elevator pitch.

**Ivan:** So I think this is a really interesting topic and one of the things in terms of society that was most remarkable to me at the last Plant Biology meeting – other than of course the great Taproot roundtable that we had -

**Rishi:** Yeah, absolutely.

**Ivan:** A moment where you stood up in the town hall meeting and made a really interesting statement that caused everyone to look around. Instead of trying to summarize it, why don't you just tell us the story of how you got to the point where you were standing up and challenging everybody in the meeting?

**Rishi:** Absolutely. So for reference for the town hall meeting, essentially what I was saying was that the leadership talks about early career representation and talks about early career members and the future of of the Society, but doesn't really include early career members or “the future of the Society” when they're actually having those conversations and so the story of me actually standing up in the town hall meeting started a couple of days prior to the town hall meeting. And this is the town hall meeting that took place at the annual ASPB conference in Montreal in 2018 and so that story basically starts with then President-elect

Rob Last. He basically sent me an email saying, "Hey, we're having this ASPB Council meeting and I would really like you to attend," as a "provocateur", which apparently is somebody who talks for about five minutes, brings a very challenging or provocative idea to the session, and gives people a way to discuss whatever they're talking about. So this ASPB Council meeting, which took place ahead of the ASPB annual meeting, it's a big group of folks (about 30 to 35 people) whose general job it is to lay out the vision for the direction of the Society, the way that the Society should be going. And then that vision or direction is then later voted upon by a much smaller group of individuals known as the Board. So when I was slated for five minutes as a provocateur, I basically got there that morning, sat down and listened to the conversation that was happening, and for most of the morning (about four, four and a half hours), everybody in the room was talking about the future of the Society; about how the younger generation or the early careers folks have started to do things differently than previous people in the Society had; and how everything was changing and how they needed to adapt for the future of the Society. And it was a very weird place for me to be, I guess at that moment in that council meeting, because I was the youngest member (I'm not even a member of the Council); I was the youngest person in the room. I was the only person probably under 35. So I definitely fall under the category of "the future of the Society". And it was weird that nobody was really talking or looking at me. So when it was my turn to speak near the end of the morning session right before lunch, I said something to the effect of, "We've been talking about the future of the Society for four, four-and-a-half hours, yet as the only young person in the room (somebody who clearly falls in the category of *future of the Society*), no one has asked me a question; very few people have even acknowledged my presence in this room. So my provocative statement for this council is: rather than talk about us, why don't you include us in the conversation and give early career members a voice and representation in the ASPB governance?"

**Ivan:** [Chuckles]

**Rishi:** And I was met with just straight-up dead silence.

**Liz:** Really? Oh my goodness!

**Rishi:** Yeah. It was super awkward. And it was dead silence and [laughter] it was a lot of heads down or avoiding eye contact and the moderator of the session is just like, "Ahhhh, I guess we'll break for lunch." And then we broke for lunch and it was really interesting because a lot of people then came up to me at the lunch break and then started talking to me. So circling back to the original town hall meeting which took place days later in the timeline - standing up and really relaying the same information to a broader audience.

**Liz:** [Laughing] So this is all news to me and I guess what I've seen over the last year was this #ASPBForward and the ASPB Ambassadors I guess (or maybe that's a different program). To me it seems like in the last couple years they've REALLY rolled out some stuff where they're interested in some young people. But I guess that ASPB Forward - that came from that initiative? Rob is really taking this on as part of his charge.

**Ivan:** Well, the Conviron Scholars and the ASPB Ambassadors are both great programs (including some of the people who help us with this very podcast), but they're not really including people in the governance. But what I saw as the immediate result was within a couple months they agreed to actually put an early career representative on every standing committee. Is that right, Rishi?

**Rishi:** That is absolutely true.

**Liz:** And has that happened?

**Rishi:** It is in the process. So we had to do a call for early career members to apply to these committee seats and I believe that people are currently looking over applications for that right now. But yeah, Ivan is correct. One of the biggest things that came out of this annual meeting was actually opening up seats on every ASPB committee - so this is Women in Plant Biology, International Affairs, Minority Affairs, Publications, Science Policy, all of them - and having a seat dedicated to an early career member; which is amazing. And I would

definitely like to point out that I am not the first person to say that early careers need to be more involved in the governance. There's been a growing body – including myself – for the last couple of years who have been trying to say the same sentiment. I think one of the things is that it was just coming to a head at the annual meeting in 2018. My voice was one of the loudest. But Liz, to your point: I think Rob Last has really taken this idea under his wing and under his charge to make the governance more diverse in their voices, which is really appreciated.

**Ivan:** That sound like a really positive development. Did you get any negative feedback on that?

**Rishi:** Weirdly I did not. I was 100% expecting it.

**Ivan:** Encouragingly, maybe, you did not?

**Rishi:** Encouraging. Let's say encouragingly. That's a better way to put it. I was expecting blowback.

**Liz:** Yeah! Because I feel like one of the things that happens (there's a couple things that happen in this “we want young people to have a voice”) is like, “Well, young people don't know how things are,” and “Young people should focus on their training.” And from the young person's side, this idea that like you shouldn't rock the boat because it could blow back on you. Back in the day, when I was pre-tenure, I would check in on this Chronicle of Higher Education forums, which are just so complain-y; it's like the worst of academia. But there was an entire thread under the tenure-track forum that was just STFU (that is “shut the [bleep] up”) until you have tenure. And it was just hundreds of messages long about people who were convincing each other, “Don't ever stand up for anything in faculty meeting; just don't say anything. Don't get involved in any spats or anything until you get tenure. And once you're safe, then you can say that stuff.” But it's like, I've seen in my own department, it's like young people standing up in extremely contentious situations and speaking their truth, saying what they really believe and saying what they think is going on and it's really powerful. So

it sounds like you really tapped into some of that. How did you NOT shut the [bleep] up? [Laughing] What's your headspace that lets you do that?

**Rishi:** I think it's essentially what you brought up. It's, you know, speaking my own truth. This is my own opinion and I'm entitled to my own opinion and voicing my opinion. The Council meeting at ASPB and the town hall meeting are supposedly safe spaces in which a person can voice their opinion and talk openly about thoughts that they have and directions that they'd like to see things going. So I'm a firm believer in the fact that you should never shut the [bleep] up. You should always say what you believe in, you know, say your opinion. As long as you're doing it in a respectful manner (that you're not disenfranchising other voices), you SHOULD be encouraged to speak up because academia or science, societies especially, are all communities and in a community of people who have like-minded ideas and are interested in the same things; it should be a safe space where you can voice your opinion without the fear of blowback. I understand that's not realistic. Like people definitely receive blowback.

**Ivan:** I was going to say: it's obvious now in our culture, in our world, that things are not okay. And so there is less ability to pretend that, "Things are okay; don't rock the boat," when things are not okay. And the people who are in power have not changed things and probably will not change things unless they are pushed to do it.

**Rishi:** I think one of the biggest things, Ivan, for your statement that people who are in power don't want to change things, I think part of it too is perspectives. So from the perspective of somebody who's in power – let's say older academics – the system worked for them. And so from their perspective, the system should work for everyone else. Yet it clearly doesn't. And from their perspective, nothing needs changing. And so I think if you're an early career person or if you're young faculty or anybody, really, who wants to see change, you have to speak up. Anybody. You could be an old career faculty member and still want change, right?

**Liz:** Gosh, even MID-career faculty.

**Rishi:** Yeah, it's one of things where if you see a need for change, nothing will happen unless you say something, because otherwise people won't know that there's a problem.

**Ivan:** One of the things is I think it's easier to foresee that you can step up and effect change in society without necessarily experiencing as much blowback as it is maybe at your institution. I mean, I think that's one things for your graduate programs. You have reasonable support in your department but we've talked a lot about how graduate students are in a precarious position with regards to their advisor, to their committee, to their department, and so the consequences for them can be -

**Liz:** Huge.

**Ivan:** Huge. So I think we should recognize that I think it was great that you stood up, but you you also did that basically as a minted PhD with a job, not challenging your direct people who had power over you.

**Rishi:** Yeah! Right, absolutely. I was gonna say that earlier. It's like one of those things where I had the freedom to speak up because I had my degree in hand and I already had a job. I was just waiting on my start date. So in terms of blowback, you're right. There wasn't a lot of people that could lord power over me that I was talking to. So for a lot of my friends in this society and around the country, it's really hard for them to speak up - just because of this power dynamic that graduate students in particular don't necessarily have a lot of power over their own lives, and like how they can voice their opinions. They have to wait until they're in a safer, "safer space" - which I don't think is right. But if you want to have a better situation, you have to try to challenge power dynamic in a respectful manner. And hopefully it doesn't blow back on you, but that's the risk, I guess.

**Liz:** Yeah, and THEN it's the job of all those mid-career and old-career people who want change to protect the young people, as best we can.

**Rishi:** I think it's one of those things too, to that point, Liz. If you're a graduate



student now and you're advocating change, pretty soon you'll be a new career faculty member if you stay in academia and then a mid-career faculty member. So you usually don't lose that fight and so as graduate students become more willing to speak up as you move forward in your career, you're right that you can protect those that are younger than you or earlier than you in their career stage.

**Ivan:** So if we thought about advice for young people, is it, [tentatively] "Maybe shut a little bit up until you get your PhD"?

**Liz:** [Laughing] "Shut a little bit up."

**Rishi:** I think the advice is: it's different for every person because it's dependent on their comfort level as well as their own relationships within their own departments (so their own relationship with their advisor or their society or whomever they're challenging), so it's definitely not blanket advice. But I think my advice to early-career folks or mid-career folks or anybody who wants to challenge the "system": I think you are well within your rights to voice your opinion as long as you are doing so in a respectful manner (that you're not disenfranchising other voices) and you're willing to hear other perspectives and have a conversation about something. As long as you're not shouting and having only one mindset, I think it's TOTALLY open for you to voice your own opinion.

**Liz:** I love this sort of message of: courage, but you decide. But what they're gonna hear (a good fraction of the time) is, "Well, we've never done that," or "That's the way it's always been." How do you keep pushing when you know you say, "I'm up in arms about XYZ," and then the response is, "Well, yeah I understand that but we've always done it *this way*."

**Rishi:** Personally, one of the phrases that I hate the most is, "Stop complaining. I did it this way therefore pay your dues and do it the same way." It drives me crazy. And so I think for that, again it comes down to perspective. If you're an older, established career scientist, you have to be willing to listen to those who are talking to you. And if you are one of those people who are trying to change the

system, you have to be willing to meet people halfway and work on change over time. Change usually doesn't happen in large increments. But I think another thing that people can do (if you're worried about blowback or you're worried about not knowing how to voice your opinion), something that you can do is work in groups, right? If you feel this way, chances are you're not alone in feeling this way – either locally or nationally. And you just have to find those who share your opinion, band together, and create some kind of platform to voice your opinion to those in power.

**Ivan:** I hear Needhi Bhalla from our last episode saying, “Find your people and start from there.”

**Rishi:** Yep.

**Ivan:** So Rishi, we've covered a little about the various ways you might want to speak up in your local institutions, but a society is a little bit different of a structure. When you looked to try and effect change within a society, was it clear to you where to start working?

**Rishi:** ASPB has (I don't know if other societies have the same thing but), for ASPB, there's a very heavy lack of transparency within the society. So the governance of ASPB is not well-communicated to the membership. And so as new programs come online or as new decisions are being made, none of the membership really knows what's going into those decisions; none of the membership knows why decisions are happening. One of the things that the Society can do to approve, you know in the vein of ASPB Forward, is to increase the transparency of the decisions that are being made at a society level, or maybe a committee level. One of the things that I hear somebody mention at a town hall meeting was: lack of transparency on funds and where the funding goes. So if you pay registration for an annual meeting, what does that money actually go to? Or if you're paying to have your work published in a journal, how does that money actually come back to the Society or what is that money used for in the Society? Is it used for travel grants? Is it used to fund other programs? Nobody really knows.

**Ivan:** Or it's hard to know. I think some of that actually in tax forms, if you want to look at some of those things. But I think that's actually quite true of many of scientific societies, because they are all in general run by scientists unless they're a huge corporation like the American Chemical Society and a lobbying group. But they're largely run by scientists that it's not their full-time job, but they also have full-time staff who actually do the day-to-day running and actually have a lot of influence on decisions as well. It's not the easiest thing and it's not something we're used to spending a lot of time thinking about. So, Rishi, what's the next steps? What do you think the next steps are for you to effecting change?

**Rishi:** I think there are quite a few steps that I think myself and other people can take. Some of the quick ones: continue the ASPB Forward movement that Rob Last has started, continue challenging the governance to make sure that people are more transparent, that they including different voices within the governance itself. One of things that I am doing personally, I am actually running for ASPB President-elect this cycle, so for 2019. If elected, I will then become President and have the ability to actually enact the changes that I've been talking about, and help increase the voices in the governance and more importantly representation of early-career members or industry members or international members who are part of the Society but don't really have a voice or a real representation in the group.

**Ivan:** Well. That would certainly be an interesting change. [Laughter] Well Rishi, this has really been a great conversation. I really appreciate you taking the time to talk to use about what happened and how you've done all these different things to try and make your mark on improving your communities. With that, can you tell us if anyone has feedback or thoughts that they wanted to share with you about the episode, how would they get in touch with you?

**Rishi:** Yeah, absolutely. So first, thank you to both you – Ivan and Liz – for having me on The Taproot. Loved being here. And for you audience members who want to get a hold of me for feedback and follow-up, you can contact me on Twitter; it's @RishiMasalia.

**Ivan:** And Liz, mid-career scientist that you are, where can people contact you?

[Laughter]

**Liz:** You can also find me on Twitter, @EHaswell. What about you, Ivan?

**Ivan:** You can reach me, @BaxterTwi. And you can reach the podcast, @TaprootPodcast. And with that, we will talk to you next week. Thank you again, Rishi.

**Liz:** Yeah, thanks Rishi. Great convo.

**Rishi:** Thank you! Bye, everyone.

[Instrumental theme music]

**Ivan:** The Taproot is brought to you by the American Society of Plant Biologists and the Plantae website. It is co-hosted and edited by Ivan Baxter and Liz Haswell and produced by Mary Williams and Melanie Binder.

**Liz:** By the way, Melanie is leaving ASPB for greener pastures. Wait, actually that's the wrong metaphor because she's LEAVING work on plants. Anyway, Melanie, you will be sorely missed.

**Ivan:** Absolutely. We get editing help from ASPB Convivon Scholar, Juniper Kiss. and social media and blog post writing help from ASPB intern Katie Rogers. We are very excited to have Joe Stormer helping us out with transcripts for Season 3. If you liked this episode, tell your friends and colleagues, and be sure to subscribe on iTunes or in your podcast player of choice. Thanks for listening and we'll bring you another story behind the science next week.

[Instrumental theme music]