

The Taproot podcast

Season 4, Episode 4

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Hosts: Ivan Baxter and Liz Haswell

Guest: Scott Barolo

Transcribed by Joe Stormer

[Instrumental theme music]

**Liz Haswell:** Welcome back to the second half of season four of The Taproot podcast. I'm Liz Haswell.

**Ivan Baxter:** And I'm Ivan Baxter. In the last episode of season four, we talked with Scott Barolo, who had tons of great advice for potential graduate students. In fact, he had so much good advice that we split our interviews with him into two episodes. If you want to hear more about who Scott is and about his paper using mastermind to teach scientific reasoning, go ahead and listen to the last episode.

**Liz:** In that last episode, we discussed the process of deciding to go to graduate school and then applying to graduate school. In this episode, Scott talks about the next steps – doing the interviews and eventually choosing a school. He says that graduate programs will tell you who they are and we discuss how to hear what they're saying

**Ivan:** And with that let's get to the episode.

**Liz:** Okay, so you send in your application to five places you're very excited about, you've written this beautiful essay or two essays and you get a bunch of invitations as invitations are probably coming in like December, right?

**Scott Barolo:** I can't speak for all schools, but in our case, we make our invitations in December.

**Liz:** Okay. And then people are interviewing in January and February – maybe into March, but probably not. Interviews are amazing, right? I mean, I remember all of my graduate school interviews which were well over a century ago. I remember them all vividly because each program had such a unique personality and it was so present, so obvious what each school had to offer, what its personality was, what the city and the geography was like. I remember just being such an exciting time where I felt like I could picture myself in each of these places and what what things would be like in each place But it's also soooo stressful and you don't really know what it's going to be like and you're not sure what to wear or to say or what each interaction with the faculty member is going to be like. So Scott, demystify that whole process a little bit for the listeners.

**Scott:** Okay. Well first I'd like to comment on something that you just mentioned

Liz which I think is so important, which is this school and the program is going to tell you who they are when you visit and you should listen to that because it can't be hidden. The nature of that program (the culture and the climate of that program) is going to come out during the interview and you really should pay attention to that. Don't focus on just trying to get in because half of that interview process is them evaluating you. The other half of that process is you evaluating them; don't forget to do that. The interview process . . . first to get technical about it. What happens at Michigan at least is that when we invite you to come interview, in our case we'll give you a choice of two dates usually that you can choose from and we ask you to name a few faculty that you would be interested in meeting during your visit. And then we will do our very best to schedule interviews with them. In our case, you will meet with five faculty for a half hour, one-on-one interview. In almost every case it will be somebody that was on your list of faculty you wanted to meet. So you'll know before you arrive who those faculty are; you'll have plenty of advanced notice. You should look them up on the web and get a sense for what kinds of research they do. Maybe read some of their work and think about what kinds of questions you might want to ask them. The interview itself is in most cases unstructured; you just come in for a chat. But a lot of the time is spent on either the recruit talking about their research, the faculty member talking about their research, or small talk. The proportions of those vary widely depending on the two people involved. There's usually no structure other than we're going to be talking about research a lot, although I have had interviews where we never got around to talking about research because the conversation led to other areas and that's okay too. You need to be prepared to talk about your own research; and if you've done multiple types of research over the years usually we'll focus on one and it can be the one that you're most interested in. Usually I'll ask which is the one that you'd most like to talk about? So be sure to brush up on that, especially if it's been a little while since you were doing that project – not just the technical details (although those can be important), but why were you doing those experiments? What was the question behind the research program? What was interesting to you about it? And ideally you'll get into what you learned from that project – not just what the results were, but what you learned from it. That can be something about cilia or it can be something about how you learn or how you deal with failure in the lab or how you work best with other people. But ideally you're learning things because that's who we are trying to recruit people. Not necessarily the most knowledgeable people, but the people with a great capacity to continue to learn

**Liz:** For curiosity, right?

**Scott:** Yes. I would say curiosity is a big one. I tend to feel that one's a little overrated, personally, because I feel like that can be gamed for a number of reasons. I think that it's a little overrated. I think people have a variety of different motivations for wanting to do research and I don't want to be too judgmental about which of those are good reasons. I'm always looking to see what the student learned from any experience. It's all about the capacity for learning.

**Liz:** I like that emphasis cause I feel like the capacity for learning, everybody has access to that, right? And there are so many ways to demonstrate it; there's so many avenues to explore that capability. There's so many lines of conversation that you could have about it.

**Scott:** I should also say that in my program (just to pick an example), it's a pretty highly ranked program and we do not have any kind of cutoff in terms of students should have a publication or anything like that. Most of the students that we accept aren't an author on any papers.

**Liz:** Well maybe we can talk a little bit about like what not to do in that one-on-one interview. It's scary to go in when you don't know where it's going to go and actually (to be frank), when I'm conducting those interviews, I am also super nervous and scared because I'm never sure what I'm supposed to be doing either. Am I supposed to be asking this person about their research? Am I supposed to be telling them about my research? Am I supposed to be selling them on the program or deciding if they're a fit? And I guess the answers like all of those in thirty minutes. What do the students want to *not* do in those meetings besides fall asleep?

**Scott:** That's actually an issue because energy management is kind of a challenge on those interview days.

**Ivan:** It is a draining process.

**Scott:** It's intense all day and you really do to pace yourself and make sure that you eat when you get an opportunity to eat or manage your metabolism, however it works best for you. There is a danger of crashing in the early afternoon for sure. What to not do? Some mistakes I have seen are students who try to play it cool and act like they're not very interested. I think most of the time that's probably people covering up for feeling insecure, but whatever the reason it's not a great look for an applicant of any kind – certainly on an applicant to graduate school to seem as if you're not really that into the school or the idea of doing research. I've seen students who (again) they're probably insecure, but they put off a very arrogant vibe as if they basically understand how this whole biology thing works and they just need to get a few more papers and get a PhD so they can move on to get their Nobel prize. Maybe that's true and in some cases it is true, I'm sure. But as with any kind of hiring process, people are looking for people they would enjoy working with. The kind of solitary, misunderstood genius might be really good at research but they are not generally speaking enjoyable to work with. So that would be a tone to avoid, I would say in general. At least that's true here at Michigan; we don't go much for the lone genius.

**Ivan:** I think in terms of preparation beforehand, knowing your own stuff but also ideally having looked into the person you're talking with enough that you have at least one question in your mind already can be very helpful so that you know you're going to ask them something if the conversation gets off the rails. I tried to do this for a faculty interviews, as well, when I was interviewing for faculty positions and it was meeting a lot of people.

**Scott:** Absolutely. It's a great idea to have a question in your back pocket; it doesn't have to be a great question. You don't have to ask that question if another question occurs to you. I would also say you can write that question down. I wouldn't think less of a student who referred to notes when they were asking me questions about my research. That wouldn't bother me at all.

**Liz:** Not at all.

**Ivan:** If a student pulled out notes that they had prepared to meet with me, I would be very –

**Scott:** You're right; that's a good sign (not a bad sign) and so don't worry about that. If you're like me, just the act of writing it down is going to help you remember it, right? But there's no shame in pulling out notes – quite the opposite. So prepare a little bit for asking your interviewer about their research because I'll tell you at least the secret of my personality is I love enhancers – DNA sequences that turn gene expression on in beautiful patterns. And if you think enhancers are interesting too, [laughing] I think you're smart.

**Liz:** Yeah, and every PI is exactly the same. If you're interested or curious or just have a question about our research, you're basically saying you're interested in me and

**Ivan:** [Joking tone] You like me! You really like me!

**Liz:** [Laughing] I am obviously the most fascinating person to myself.

**Scott:** But it's not just that. It's not just that you like me; it's that you have recognized how interesting the coolest thing in the universe is and only a smart person would recognize that. So you don't have to know anything about it; it can be a very basic question. But just the fact that you're asking a question about it says this person gets it. They don't get the topic; they get how cool it is. If you get the opportunity to do a mock interview before you start going out on grad school interviews grab, that chance. Some programs will do that. I know some prep programs, for example, will do that for their students. If your program doesn't offer it, a mock interview is just you sitting down with a faculty member or somebody pretending to be a faculty member and doing a fake interview. I think those can be incredibly valuable for getting over the nerves and just helping you to visualize what that conversation is going to be like. It's so hard to imagine until you do it.

**Ivan:** One other option for mock interviews might be your scientific societies. I know ASPB has a lot of networking opportunities at its annual meeting and I certainly think you could probably find people who would be willing to conduct a mock interview at the annual meeting.

**Scott:** Yes! If you're currently in a lab, you can ask your current research mentor to do a mock interview with you if there is no other resource for that. Or you could potentially even do it with your peers – other students. You could set up fake interviews and just ask each other about your research. Just get used to talking about it. You'll start to realize where the weak spots in your knowledge

are.

**Ivan:** Those meetings are very important, but there's so much more that goes on in an interview. You should be spending a lot of time with current graduate students, and that is also an incredibly important step for your decision – less for the grad school's decision.

**Scott:** Okay, so there's a lot to say about interactions with the students. Ivan, I'm really glad you brought that up. Try to pay attention to whether the program is trying to put you in a room with students or trying to keep you away from current students, right? That tells you a lot about how happy they think their students are. Talk to those students; ask them questions. It's all part of the evaluation, I will say, because some programs ask their student hosts what they thought of the the recruits. So when you're talking to a current graduate student during your visit, that's an interview.

**Ivan:** Good point.

**Scott:** So ask them questions to be curious about them. Find out about their research. Ask them what the culture and the climate is like at that school; hey're much more likely to give you a straight answer. They're very, very likely to give you a straight answer.

**Liz:** But this is also challenging for somebody who's an introvert, right? Somebody who doesn't want to go to the party after the dinner, who really wants to go back to their hotel room and gather energy for the next day. What would you say to somebody who knows they could gain this like extra advantage by participating in every event but also knows they might pay for it and really don't want to.

**Scott:** I don't think there's a huge advantage to those students who choose to stay up late and go out drinking or whatever with the student hosts at night. I don't think that has a big influence. If you have limited social energy to spend, I would focus that on the times that you're in interviews or between interviews when you're talking to students. Then if you need to go back to your hotel room and cool off after dinner, go ahead and do that.

**Ivan:** I would also say for some of these things that you want to learn, you are not limited to the interview time – especially if you can make a contact with a student, get their phone number, get a way to contact them so that you can text them and set up a time to chat later. You really want to get those kinds of things to get an idea of the culture and what's going on and how not only the program works but those individual labs. Because while you are choosing a program, eventually you are going to make a choice of a lab and that is so, so critical to being successful. If we think about the interactions you're going to have with grad students, postdocs, the non-faculty, what are the three big questions or four big questions that you think you should be asking them to really understand the program and the lab?

**Scott:** It's a good question.

**Ivan:** But jumping back to the faculty, I do think it's another question you can always ask is what's your lab culture like? I think that can tell you a lot about a PI.

**Ivan:** I think where do students from this program end up is a very useful question too.

**Scott:** Yes, where do students from this program end up is a good question to ask. I think if you're looking, at a highly ranked program, their placement rates are going to be very, very good. I don't want to reject the premise of your question, Ivan, but I'm hesitant to tell students what they should be looking for because I feel like students come into grad school wanting a lot of different things. There are some students who come in, they want to work and they want to work in a top lab on a hot research problem. They want to be left alone to do research as long and hard as possible, and not have to think about anything other than that. And if that's what works for them, I guess that's fine, right? For other people, the relationships and communication and mentorship are much more important and often much more important than the topic of research that the student is working on; that's valid too. There are students who come in and they want to work someplace where they feel confident they're going to be treated like a human being and not ostracized or treated with aggression or hostility; and that's totally valid too. I see all of those and many more in terms of what students are looking for in a grad school. And so what I would say is whatever is nagging at you (whatever question it is that you really want to ask about that graduate school), that's the question that you should ask.

**Ivan:** Is there anything else that we want to say about the interview process before we talk about deciding?

**Scott:** I would just like to add that I very often hear from students who didn't get an invitation or didn't get an offer wondering what they did wrong and unfortunately I often don't have anything to tell them because we are forced and most programs are forced to turn away many students who would have done great in that program, just because of scale issues. We can only make so many offers and we can only have so many interviews. So if you don't get an interview from us or some other top program, that doesn't mean you didn't belong there or that you weren't good enough. I wish that weren't the case, but that's that the system that we have.

**Liz:** Are you saying some parts of the process are just stochastic?

**Scott:** I wouldn't say stochastic because we do look at every application. We're not able to draw a cutoff line between the students who would succeed in grad school and the students who would not succeed; that's not the decision that we're making. We're not able to make offers to all the students who would succeed in graduate school.

**Liz:** It's the decision we're trying to make.

**Scott:** Yes, but we're forced to accept a much smaller number of students than

that. So it's not fair to any of us, but the important thing I think from the applicant's perspective is if you don't get an interview or you don't get an offer, you cannot interpret that to mean that you weren't good enough for that school. I can say that with complete confidence as somebody who's done admissions for many years now. Now, it might be true (right?), depending on the individual case, but you can't conclude from the fact that you didn't get an offer that you're not good enough.

**Ivan:** That's a good point, Scott. Let's go to the last step, which is actually deciding where you should go to grad school – assuming you have multiple offers. And my first thought would be hopefully (as Scott said) the grad programs told you who they were in the interview and maybe there is a clear fit for you and you should do that. But that wasn't the case for me. I ended up flipping a coin. What should you do after the interviews to help yourself decide?

**Liz:** Or the criteria you might use?

**Scott:** One suggestion I would have is to take notes during your visit. There might be a lot. It's very intense, it's emotionally draining, it's mentally draining and if you're like me, it'll be easy to forget a lot of the little things that happened during the interview just because you're mentally tired – not just the interviews but the whole experience. And so I would suggest writing down your impressions as you go. You can refer back to that later to get a sense of what it felt like to be there. It's not just a matter of getting into the “best school”. Very often people are deciding between two schools that are both perfectly capable of providing a top-shelf research experience. They've got the great faculty and good funding and a good research environment and all that. So when you're deciding between schools that have adequate resources to do research and great faculty and other people to work with, then for many people comes down to the environment and the climate and what it feels like to be there. I would just really want to tell applicants that it's okay to listen to that voice that's telling you this is not a good place for me; that's important too. It's very, very important not just to be with the best researchers in the world, but to be someplace where you can be successful, where you can feel safe, and you can be happy. That's important too.

**Ivan:** I think it's important to emphasize that the decal on your degree and the name of your advisor are actually very minor components to what will make you a successful graduate student and scientist. You need to have good mental health, you need to have be supported, and you need to be happy in your life in grad school. So the culture of the program, the culture of your lab, and the places where you're living also have huge effects on that. You should take all those into account in making your decision.

**Scott:** Absolutely.

**Liz:** I think that's right. I think the whole weighing out the ranking and stuff is not really gonna get you anywhere. It's really going to be more about a conglomerate of things. It's going to be where in the country is it and who are the faculty there, what kind of courses are they offering and what does the

program seem designed to be doing for their students? All of that has to weigh in. It feels complicated, but I feel like people often get a pretty good sense of what's fitting and what's not fitting. Even during the interview itself, you can see the students who are really invested like perking up during the process of the interview like, "Oh wow, I'm hearing what I want to hear."

**Ivan:** And there is an opportunity; you have time. I would say if there are few things you feel like you still don't understand, to follow up after the interview. There are going to be faculty who for whatever reason might not be able to be at the recruiting weekend you're at and you might be interested; having a phone call with them could be valuable. Following up with a grad student about culture can be helpful. So you shouldn't feel like the only information you can go on is the interview and the interview only, although that is obviously your best opportunity to ask many questions and get a feel for the place.

**Scott:** Well said.

**Liz:** We've sort of covered the whole process here but I feel like at every one of these stages there are unwritten rules. What are some of those things, Scott?

**Scott:** Well, when it comes to what you wear, biology is a strange discipline in that respect because absolutely all the rules about what to wear are unwritten. As a man in biology, I get such a pass on so many of those rules that I'm not even really qualified to talk about it. But I will say that we don't expect a high level of formality in interviews. If you wanna wear a suit equivalent, you can do that. It is certainly not expected and it's not very common.

**Liz:** It's not going to count against you. So if you dress business casual, you are safe.

**Scott:** Yes, and sometimes sometimes it's an issue for very young people who don't have a lot of dress-up clothes and those that they have often tend to be kind of like club clothes.

**Liz:** Yeah, it's hard to know how to talk about that, exactly.

**Scott:** Yeah, I'd really prefer to not be telling women how to dress.

**Liz:** Okay. What's something that's not written, not a known thing.

**Scott:** I would say don't be cynical or jaded about science. When you talk to people about it during your interview, don't be you don't want to disparage any particular model system. You don't want to be all negative about CRISPR or whatever because it's too cool. You don't need to strike an attitude about areas of science that people are working in because you never know who's working in this.

**Ivan:** Always be excited about plants; let's just stipulate that.

**Scott:** Well, that's just good sense in general.

**Ivan:** We've talked a lot about toxic cultures on the podcast. Is there any tips for detecting a toxic culture at a grad program or in a lab that we haven't talked about?

**Liz:** If people are bragging about how many hours they're working, that can be –

**Ivan:** “We're a hardcore program!”

**Liz:** This is something to admire; we're a hardcore program. People here work really hard, like “I work x hours a week.” That's probably something you want to take a hard pass on. And definitely any harassment, get out of there for sure.

**Scott:** Yes. If anything like that happens and you can observe that and you can observe how others react to it that, that's a big warning sign. Can I add one?

**Ivan:** Please do.

**Liz:** Yes, please do.

**Scott:** I would say, just come right out and ask for what you want. If you're visiting a school and you're talking to the director of the program or a student or whoever, and you just say, “What are the resources here for queer students? What is offered here for latinx students?” Whatever it is. “How easy is it to find affordable housing here on the stipend that you get.” Whatever is on your mind, just ask it. If you're talking to a student, you'll generally get a straight answer. If you're talking to a faculty member, you will often get a straight answer or sometimes you'll get a certain amount of humming and hawing and derailing that'll suggest that they don't know the answer or they don't want to tell you. Just come out right out and ask. You'll learn something, regardless. It doesn't harm you as an applicant to say, “What are the resources here? What is the environment like here that's going to support me and allow me to be successful?” We want students who are thinking about things like that. We want students who are thinking ahead to, “How can I be successful in the long-term?” Those are the kinds of students who are successful in the long-term.

**Liz:** It really takes knowing yourself and what you need and want out of the program to get the most out of the interview process, and that's asking a lot. I'm not sure I was in a position to do much more than sort of have a vague idea about what I wanted, but I feel like the applicant's work we get in our program here which is called PMB (that's plant and microbial biology) every year it seems like they have a better and better sense of themselves – of where they're going, of what they're going to do with their degree. They seem much more capable of asking these questions of themselves and so then when they come into interview, they're much more self-aware than I think maybe my generation was. I don't know. Do you feel that same way, Scott?

**Scott:** I think we have a lot of students coming in who have a strong sense of what they want to do. For example, we now have students entering graduate school who know from the beginning that they don't want to continue in academic science. They come in with a notion that they want to do a career that requires a PhD, but it is not the professor track. I think that's increasing. But I do want to add though that you don't need to know what you want to do with the rest of your life. You don't need to have it figured out whether or not you want to stay in academia or not. A lot of people change their minds. Even a lot of people who

come in knowing the answer to that question end up changing their minds during the course of graduate school and that's okay, too. But I do think it's important to have some kind of sense of what you want from the experience before you start. It's ideal if you have a sense of what is going to help you succeed, because then you can ask for that. I see a lot more early-stage researchers asking for asking for what they need, which I think is a very positive development. Among other things, it helps us give them what they need because if they can articulate it, then we know what it is and we can go out and try to get it for them.

**Ivan:** While, I hope that this has been as helpful to students who are actually applying as it has been for me to think about advising students who are actually applying. This has been a really great conversation. Scott, thank you so much. Can you tell people how they can get in contact with you if they have follow-up comments or questions they wanted to direct you?

**Scott:** Sure! You can email me at sbarolo@umich.edu. That's also my Twitter handle, if you want to contact me on Twitter, @SBarolo. It's been great talking to both of you. I really had a great conversation. I enjoyed it.

**Liz:** And Liz, how can people contact you to follow your steps through grad school.

**Liz:** They can follow me on Twitter @EHaswell

**Ivan:** You can contact me @BaxterTwi, and you can follow the podcast @TaprootPodcast. Scott, thank you so much.

**Scott:** Thank you.

**Ivan:** So we just kicked off the second half of season four but before we get to any more episodes, there is these things called the holidays and we're going to take a break for those as well. But we have four awesome episodes lined up for you in January and [slowly] we hope you will listen.

**Liz:** I like that last part. We. Hope. You. Will. Listen.

[Instrumental theme music]

**Ivan:** The Taproot podcast is a production of the American Society of Plant Biologists. Mary Williams is our producer. Editing is done by Katie Rogers, Ivan Baxter, and Liz Haswell. Katie Rogers also helps us with the writing of the blog posts and other social media. Joe Stormer does all of our transcripts. Thank you for listening, and we'll have another episode for you.