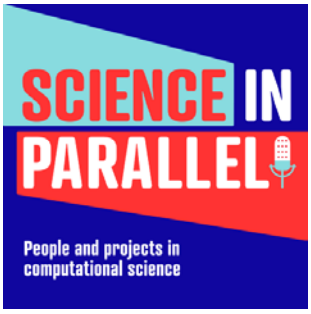

Season 1, Episode 3 transcript

Quentarius Moore: Ask Questions and Apply for Everything

Speakers: Sarah Webb, Quentarius Moore

Sarah Webb 00:01
Hello, I'm your host Sarah Webb. And this is Science in Parallel, a podcast about people and projects in computational science. On today's episode, I'm speaking with Quentarius Moore. He's a Ph.D. student at Texas A&M University and a fellow in the Department of Energy Computational Science Graduate Fellowship program, commonly called CSGF. He completed both his bachelor's and master's degrees in chemistry at Jackson State University in Mississippi. Quentarius and I first talked last year for an article that appears in the 2021 issue of DEIXIS magazine. This time, we talked about the power of mentors, life lessons from working in concrete with the grandfather, and embracing the unexpected, including his emerging career in computational chemistry. I'm really happy to welcome you to Science in Parallel, Quentarius. Thanks for being here.

Quentarius Moore 00:56
Thank you so much, Sarah.

Sarah Webb 00:57
Tell me a little bit how you first got interested in chemistry and in computation, and these pieces of your work that are now a big part of your graduate research.

Quentarius Moore 01:08
I think my story is one that may be strange, but I'm sure it's not unfamiliar with a lot of people. You know, high school I didn't-- chemistry, I liked it. But poor student habits, you know, I would do great on tests but not really focus on the homework because I would go play basketball and play video games. But once I got to college, I decided to stick with chemistry because I knew I liked to solve problems. I was able to join a few programs, which allowed me to have mentors, which were a great help for my development throughout undergrad. And so the first program I was introduced to, we had this mentorship where we had a cohort that was a graduate student, a junior and a freshman, which would be me. and the graduate student, she did computational chemistry. And so that was my first introduction to computational chemistry. And so going through that with her, it really helped my matriculation because when I needed help with different courses, or just advancing her work, I really feel a responsibility to, you know, bring up my end of the deal with this cohort and aiding her research. She's still a mentor of mine. Now, even when I went through my master's at Jackson State and currently at Texas A&M,

Sarah Webb 02:20

What was it like to get involved with the computational part of this? You were mentioning that you'd had an interest in video games and things like that. So it's not like computers, were not something that you were spending time with at all. But you were spending time with them in a new way, right?

Quentarius Moore 02:34
I'm pretty tech savvy. I'm the kid that when you go to your grandparents' house they want you to look at tech stuff. So I'm that person everyone asks how to fix this, how to fix that. But I never knew much about coding or anything like that. So that was a very new experience, learn how to use Linux, and essentially using scripting to your benefit. Because you see it in movies and stuff, you think you have to be this very genius, and you need maybe a bit of money to afford certain things. But it really wasn't that bad. And it's really cool to know that you can control a lot of things through just simple coding. And it's something that anyone can pick up.

Sarah Webb 03:11
Clearly, you didn't come in thinking, Oh, I'm going to be a computational chemist. But here you are, right. How did you get from where you started to where you are now?

Quentarius Moore 03:21
After the beginning of that peer mentoring process, I actually was introduced to another student who came in as a graduate student, his name is Chris Copeland. So Amina Muhammad and Chris Copeland were basically my mentors all throughout undergrad, So he would help me a lot with coursework. So we became colleagues, explored different conferences. And we were big at Jackson State, the students in particular, we were big on like going to almost any conference that we could, because we wanted to present our research, but also experience things because you get to see so many different people that you don't see at Jackson State. I always assumed once you get a chemistry degree, you become like a lab technician or something. I had no idea until I expounded past Jackson State and looked at what other people do.

Quentarius Moore 04:05
So I made up in my mind, hey, I think I want to get a degree in chemical engineering. And so toward the end of my senior year, I'm like, well, I'll apply to graduate school and get a ChemE degree. So I applied to Florida A&M and Florida State's dual program. However, I didn't hear anything back from them. And so this is around April, maybe a month before graduation. So as I'm getting to that point, my grandmother passed in April, and I started staying with my grandfather for a bit. So I'm still waiting on Florida A&M/Florida State to contact me back. And they finally did contact me, but they want me to take this course over the summer, in order to make sure I basically qualified to attend the program. But they weren't paying for anything like lodging or whatever. I'm like, this is not going to work. I don't have a job for that. My family doesn't have money for that.

Quentarius Moore 05:01
So, interestingly enough, I think my catapult to really doing what I'm doing now started with being a concrete finisher with my grandfather. At undergrad, yeah, I did a lot. But I think that work ethic and just determination started with my grandfather. So after my grandmother passed, I would stay with him, you know, one day, stay with him the next day, the next week. And any time I would try to leave, he's like,

"Are you coming back?" And I was like, "I guess I have to come back. The man doesn't want me to leave." So he was very concerned about you know, what was happening, too. So he's like, "Well, why don't you come work with me during the summer?" So I worked with him hot Mississippi summer working concrete with this 78-year-old man. Surprisingly, he's still out there doing it. A lot of what he told me on the site, really, which still resonates with me, because he will always tell me, even though I'm the young buck, he would tell me, "Take your time. Take your time. Take your time." I'm trying to help him, but he's still telling me, "No, just take your time." And so he'd repeat that like all throughout the summer. Because I'm thinking, since I'm stronger, younger than him, I should do more. I should do it a bit quicker, just to help him. He would always say that.

Quentarius Moore 06:13
And one of the one of the best moments that I had that summer. I think this does relate a bit to peer-to-peer mentoring. My grandfather knew I wanted to start a garden. I had a shovel. I'm digging holes through this like 20-by-20 field. Well, I say little plot, and I'm digging and digging. I have a wheelbarrow. I'm shoveling, you know, cow pies from the pasture to... I'm thinking I'm gonna fertilize before I planting and all that. So I'm doing all day every day. Plant a garden. It wasn't a little garden. It's a huge garden. So it's gonna be tough. So I found a rototiller. That still didn't do much. So I went to sleep one one night after work and tending to the garden. The next morning, I woke up to just a tilled garden, you know, row upon row upon row of what you think a garden looks like before you plant. He took his tractor and tilled it for me, which really, it really touched me because I wasn't expecting it. He didn't say anything about it. I just woke up one morning at like 6 am. And I went up there and I'm like, "Hmm, I don't see any grass." He literally plowed and tilled the whole thing for me. And that really, I don't know, that just really resonates with me. As far as peer-to-peer. That's what happens with peer-to-peer. Like, they see you working and they see you determined. They don't have to tell you everything, but when you really need it, there's someone there to help you. So he really did that for me.

Quentarius Moore 07:47
And so towards the end of that summer, I realized, yeah, this Florida thing isn't going to work out. I have no idea what I'm going to do. I enjoy staying with my grandfather, and you know, doing the concrete with him. I think it might have been August already. So. So Chris Copeland. I don't know how we got on the subject. But he was like, "Yeah, Q, why don't you just get your master's in chemistry here?" So I applied and got into the master's program, and everything blew up from there. Honestly, everything blew up from there.

Sarah Webb 08:18
And then you came back to this environment with a different with a different life perspective, losing your grandmother, spending that time with your grandfather. How did you approach those years at Jackson State when you came back?

Quentarius Moore 08:32
I got into this fellowship called the Louis Stokes Alliances for Minority Participation. And I got into specifically the subsection called Bridge to Doctorate. And what this program does is it basically funds students through their master's with the expectation that you go and pursue a doctorate. And so for those two years, at Jackson State, you know, it was really nice having another peer group of other

students doing the same thing I'm doing, you know. We weren't all chemistry or even, you know, we weren't all computational chemistry or even chemistry, because we had mathematics, we had environmental science, or computer science. And then you kind of had a bit of a cohort system again. So we did a lot of interacting with them. We went to a ton of conferences.

Quentarius Moore 09:18
And that was one way reason I even ended up at A&M in the first place. Because we're part of what's called the National Organization of Black Chemists and Chemical Engineers. And they have national conferences, when I found out through my master's that they have regional conferences, and they had one at LSU. So people from my fellowship decided to go especially the chemistry students, we decided to attend and present some work. So I go down there, to LSU. I'm presenting my work that I did at the University of Alabama when, in my undergrad. So I'm presenting my work. I'm telling the story about this experimental stuff I was doing how I used to sing to the instrument, and I used to play Bruno Mars, on Pandora every day and just you know, relaxing to it. Hopefully it works. So I get through the presentation. And you know, I'm just minding my business, because I'm pretty nervous when I'm presenting. So I'm just kind of, you know, winding down. And this guy comes up to me out of the blue. He didn't ask me about the work. He asked me which song from Bruno Mars would I sing to the instrument. And he's not a student-- I can obviously see that. So I answered him, and he was like, "Oh, that's cool. Can I show you what we do in my lab?" And I'm like, "Well, yeah, why not?" So he whips out his laptop out of his backpack, sits down, he's just showing me just slides of stuff that they do in his lab.

Quentarius Moore 10:45
And the cool thing about the fellowship is that they supposedly, they gave us a stipend, obviously, you know, to matriculate through our masters. And so as he's presenting, I stopped him, I'm like, "Hey, what are you doing this summer?" And he was like, "I don't know, what are you doing this summer?" I said, "Well, you know, if you can give me a place to stay, I would love to come to your lab for the summer, I think I can make a way to where I can take care of my own stipend. I just really just need a place to stay." So this guy that I was talking to is Dr. James Batteas, my current advisor at Texas A&M. We literally got hooked up to just some random happenstance where he was nice enough to come ask me: What song from Bruno Mars did you sing to the instrument? And it all blossomed from there. And things like that obviously wouldn't have happened if, if Chris or Amina didn't help me out. And especially if Chris didn't tell me, "Hey, go back to Jackson State."

Sarah Webb 11:43
Right.

Quentarius Moore 11:44
And what topped it all off was getting a DOE fellowship. That really topped it all off.

Sarah Webb 11:50
So tell me about the decision to apply for it. You still have to submit the application, right? I mean, you have to say, Okay, I'm putting myself out here. So what how did that happen?

Quentarius Moore 12:02

Through undergrad, just seeing us always go to conferences and apply for stuff. That's how I even got an internship at University of Alabama, it was a chemical engineering internship, and I'm a chemistry major, I was just like, I'm going to apply to every single thing I can find. I want to get an internship because I have no idea what I want to do. But this may help me, I may not get any of them. But I'm going to apply. And I applied to about 15 different things. And then, surprisingly, the chemical engineering one is what came through the advisor that I had there, he even actually posed this question. "You know, why not get your doctorate?" And I didn't have a reason to answer him why I didn't want to get my doctorate. And I really appreciate him, too; his name is Dr. Hung-Ta Wang. And so every time I apply to things, it's funny that I never really had confidence on getting it. It's like, let me just try. Because once you read it, you get intimidated on like, what it's about what do you have to do? And then you see kind of people who've been through it before you're like,

Sarah Webb 13:02
So this is now the CSGF, I guess.

Quentarius Moore 13:05
Yeah, this is the CSGF. I'm like, I don't know. But what I'm thinking is this will help me with my journey through this doctoral program. Because I don't have experience of what it's really like to go through a bigger school's Ph.D. program. It's a bit different, especially with funding and trying to have mentorship and just all the things you need to be a successful student. I had no idea how that works. But I told myself, I at least need a network, you know, a network of people to lean on to get through the program. So I went through the process of applying for it. So it really was just a testament of trying. And that's what I've seen with a few students, I've helped a bit with applying, I literally tell them, "I know you're intimidated, but just try it. Because I never in my wildest dreams would have thought I would get a CSGF fellowship." And even when you get it what's funny. That first annual program review they send you to everyone in your class is telling each other the same thing. Everyone had that same thought of, "I don't know if I really belong here, because I didn't think I would get it."

Sarah Webb 14:11
Talk about your Ph.D project and talk about the parts of the CSGF that have fed into that for you.

Quentarius Moore 14:18
The computational work that I'm doing here deals more so with friction, what's called tribology. And that's when you're looking at the effects of friction on the wear and tear of materials, which and what we want to look at is how can we in one way manipulate surfaces for their different tribological effects or properties. So how can we reduce friction? How can we reduce wear? How can we change the chemical reactivity of surfaces at select sites? That's a very good benefit for real world applications and also for the use of energy recovery. One thing that really helped me from the CSGF is actually the coursework. The coursework was the hardest thing I've probably ever been through my life. I do more dealing with coding. So the CSGF have really made me go outside my comfort zone with those math graduate courses and computer science graduate courses. And one in particular that I took, which I never thought I would see in my life, is that we took basically an artificial intelligence course. And this whole time, we're basically the premise of the course was we were doing these Pac-Man projects, we're doing these different AI techniques to program Pac-Man or even the ghost to do certain tasks or

like beat certain levels in a certain amount of time or, you know, with certain efficiencies. And throughout all this coding is kind of gave me a lot of I like further ideas for my research here, I want to implement more machine learning to our data analysis. So the AI course and my statistical analysis course, it really only got me thinking more, what more can I do. How can I add to my research?

Sarah Webb 16:00
Tell me about your work at Sandia, because I know that's been a big part of what you do, the work that you've done out there.

Quentarius Moore 16:08
I decided to do a practicum my first summer, instead of waiting, you know what they recommend, your second summer. So I decided to work with Sandia due to Dr. Batteas already having a bit of a relationship with Sandia with his previous student. And he recently gained a really a connection with Mike Chandross through their tribology work that they're doing, dealing with molybdenum sulfide, MoS_2, looking at its tribology properties and how it's affected by atmosphere, exposure to oxygen and other radical species. I go out there, my first summer, and it's interesting because I honestly didn't know that national labs existed. So going there was honestly pretty amazing. There, Sandia was very open and friendly because you can contact anyone. And so the coursework that I did through CSGF, you know, got me thinking about more so, not just like regular scripting, for data analysis, but like the machine learning aspect, other things are becoming very big in computer science. So I was actually able to reach out to another staff member at Sandia through the email network, and just pick his brain a bit about what he does, and through machine learning. And he was nice enough to meet with me, we chat, we still stay in contact here and there, like every few months. And just experience with Sandia is— it's very different. And you get to see all types of people doing all types of work, but how it flows together this interdisciplinary thing where you don't have to put yourself in a box. And the practicum kind of gives you a feel of the many things that a computational scientist is. You can basically have all the ideas that you can imagine you can actually take the time to try and connect those. You don't have to stick with one thing.

Sarah Webb 17:57
What are kind of the core science questions that you're working on now? What are the key questions you want to answer with the rest of the time that you're working on your Ph.D.?

Quentarius Moore 18:06
A few of the core questions that I have with my remaining time in my program is one still the work was an idea. We were looking at chemical reactivity effects of MoS_2 when it's exposed to different radical atomic species. And so one thing about MoS_2 is that it has very cool tribological properties, which you can think of as frictional properties. So we use that as a solid lubricant, and different machinery, and it's been around for a long time. But now when we think about you know, SpaceX and exploration, this is one material that can be used as a solid lubricant in space. You can't use liquid lubricants in space. So that's how you get around it. However, you do have to focus in on a bit of the drawbacks of using a solid lubricant like MoS_2 in space, because when you have to deal with storage. And how long, let's say, the satellite is stored before you launch it, what environment exposure does it have when you're

launching it, and also in space, how does radical, radical species affect, not just the structure, but the electronic properties of this material? And that all plays a role in tribological properties.

Quentarius Moore 19:12
So we're working on how can we actually control the chemical reactivity in the surface of MoS_2 before and after it's been exposed to water and atomic oxygen? And one further thing to that we want to look at with that is, how can we control these chemical reactivities using curvature? Because what typically happens with MoS_2 is that it's laid on a metal surface. So there's an interface and different types of metal have different roughnesses as you think of like hills and valleys on the surface. So how does that play a role, but also understanding how can we manipulate that and induce certain reactivity on the surface using curvature typically with reactions you know, you supply some type of heat, or some type of current to induce this chemical reactivity. And so we're looking at more of a mechanochemistry standpoint of how can we mechanically drive chemical interactions? So not just dealing with the wear and tear of MoS_2, but also how can we fine tune certain aspects of image to by using mechanochemistry? So that's one question with on the Sandia aspect. And that kind of follows me on to our second question, which deals with mechanochemistry, not just biology. So, mechanical chemistry sphere, we do have this new center called the CMCC, which we just got the center grant.

Sarah Webb 20:42
That new center is the NSF Center for the Mechanical Control of Chemistry. Quentarius' Ph.D. advisor, James Batteas, of Texas A&M directs the center, which includes nearly two dozen researchers from six institutions.

Quentarius Moore 20:57
And with that, we're looking at another 2-D material called graphene. So we're doing similar things with MoS_2 but we're doing a certain reaction with graphene, we're looking at its interaction with this radical molecule called 4-nitrobenzene diazonium. very reactive. So we're looking at what that is. Since graphene is more so atomically, a single-plane, 2-D material, how's the reactivity with it and what's called 4-NBD, changed through the use of out-of-plane strain. Because we've seen that you compressively strain, which is essentially squeezing of the plane, or tensile strain, which is stretching, the chemical reactivity doesn't change much. But we've seen that when you induce out-of-plane strain, which is kind of like poking a piece of paper from the underside of it. When you induce this out-of-plane strain, some interesting things happen with the chemical reactivity of graphene. However, it is vaguely understood exactly how and why that occurs. And so that's where the computational aspect comes in. So we're able to do experiments and also and validate models that I produce through our computational methods and also use those computational methods to drive more effective experiments. So it's like the synergy that we have in our lab. And so answering that second question would allow us to be able to selectively decorate graphene with certain materials, because we may be able to drive chemical reactions simply by inducing mechanical strain.

Sarah Webb 22:28
So you could poke and prod something and get it to change its chemistry.

Quentarius Moore 22:33

Exactly. And that's the thing with 2-D materials, they're very wonderful for their properties. However, they can be very stubborn when you're trying to covalently bond different molecules or atoms to it. And the reason why you even do that is because you can change these chemical properties to what best fits for the application. And so we want to essentially poke at one spot. Plop. And we can plop a molecule. That would be cool if we could do that as a simple deformation, and we can selectively place molecules where we want to.

Quentarius Moore 23:04
And then my last core question is looking at essentially, how can we advance material science through the use of machine learning and other artificial intelligence techniques? When you research past uses of artificial intelligence in materials science, it's very young in people's acceptance of using AI and machine learning, in materials science, in data analysis and all that, and what typically people talk about is using AI to do data analysis on images. What I want to be able to do is implement more image classification techniques for all of our surface science experiments, because what we're typically doing is we collect data from the chemical interactions that happen between our surface and our cantilever, our tip. We're recording those interactions, but we can record those interactions and turn them into an image, which is pretty cool to me. I want to be able to apply this image analysis to further amplify the data that we have, as far as, one, being more effective in the lab; two, being able to deduce certain changes in the surface as an effect of changes in parameters. And also, I want to be able to grow it beyond just research science, and more so as a public tool to teach regular people about what we do, and especially students because I didn't know anything about this. And it's nice to have that exposure. Obviously, you're not trying to convert everyone to like a computational chemist, but you want people to be able to understand what's going on and what their future looks like through this research that you're doing and that you're basically doing for everyone in society.

Sarah Webb 24:45
You know, you have obviously a lot of science that you're working on now and ways that you want that science to reach the public. What are you thinking about in terms of future directions at this point, and what might be next for you after Texas A&M? Or are you still kind of going with the flow as you have with so many other decisions along the way?

Quentarius Moore 25:03
Yeah, that's a great question and the story of my life where I get to say, I'm not really sure. But what's different this time is I see the options. It's like Sandia, the national lab. I actually, I like it there. Yeah, I'm not sure exactly what I want to do. But I just see so many opportunities that I've come to realize that the best things are the ones that are unexpected. So I'm very hopeful that there's going to be something great.

Sarah Webb 25:31
You sound like someone who has embraced that all along.

Quentarius Moore 25:34
Yeah. Because I actually have a fiance and we're getting married soon.

Sarah Webb 25:40
Congratulations.

Quentarius Moore 25:42
Thank you. She's at A&M, and she's in the urban planning department. I enjoy teaching people stuff, but I just never saw me becoming a professor. So we've had that discussion where, hey, we both don't want to be professors. But if for some reason that was to occur or be an option, we really would love to become professors at an historically Black college or university. And just being able to teach students that will come from places like us or look like us. And for them to be able to identify and be able to just get a little bit of nurturing of, "Hey, you can do it. Or, hey, I got you, or these are the things that I've seen, that you could potentially look at, too." And it goes back to the whole mentor and peer-to-peer thing. I have no idea if that's going to happen. But that would be a cool option for me, other than working at a national lab, which is an amazing option to me as well. So those two on the table now. Anything else? If anyone emails me soon after this, I'll be grateful.

Sarah Webb 26:42
It's a wonderful full circle, right? Because you started out talking about the importance of mentoring and how important that was to you and, and the desire to give back.

Sarah Webb 26:52
[Music] I want to switch gears a little bit. What's your favorite element?

Quentarius Moore 27:00
I think my favorite element right now is bismuth, mostly because of how I told you before I had an internship at University of Alabama. I was literally basically using the oven to create these what's called bismuth telluride nanoflakes. And I feel like that's what jumpstarted all of this craziness.

Sarah Webb 27:21
It all goes back to bismuth?

Quentarius Moore 27:23
It all goes back to bismuth, Bruno Mars, bismuth. You know, the B's. I don't know what's going on here. James Batteas. But bismuth is what started all and so anytime I look at the periodic table, I get this, this pull toward bismuth, and if anyone has ever seen bismuth on YouTube where people create the crystals of it: very beautiful.

Sarah Webb 27:46
Do you have a favorite subatomic particle?

Quentarius Moore 27:49
I don't want to be basic, but I will say the electron because I have a love-and-hate relationship with electronics. Because computational chemistry that's basically. So a lot of times when we're looking at on the timescale that I do, such as density functional theory, I care more about electrons. I don't care about neutrons and protons.

Sarah Webb 28:10
Do you have a favorite computer or a favorite processor?

Quentarius Moore 28:14
So my favorite computer, which is very sentimental to me now, is the one I built because of the CSGF.

Sarah Webb 28:23
Tell me about it. Tell me about it.

Quentarius Moore 28:27
Never in my life would I have thought Quentarius Moore was building a computer, or anything like that. So the cool thing is that CSGF gives us basically an allowance, and I never used it. So I got the bright idea from the many ideas that I got from like, the coursework and just living life. I could build a computer to do all this machine learning and augmented AI stuff. I should do that. And, surprisingly, it went well.

Sarah Webb 28:55
Oh, good. What are kind of the key components of this machine?

Quentarius Moore 28:58
I'm very practical. I like nice things as other people do. But I can be very you know, I'm not saying I don't want to say frugal, but reasonable. So you know, you see the shiny things-- Intel processors and this and that. I went with AMD because I wanted my allowance to stretch a bit further and still do great work. And so I have this AMD processor called a Threadripper, which is really cool. Because instead of just focusing on the machine learning aspect, I can actually do some of the computational work on my workstation through CSGF before I port it to the supercomputer at school. So my little brother helped me build it as well because during the pandemic last summer, he came and stayed with me in College Station. He didn't do a lot but he would hold things. I let him screw drive stuff in. And somehow we got it together. It was a pretty fun time, and I never thought in my life that I wouldn't be building a computer. And it wasn't that bad.

Sarah Webb 29:52
Well, I just love that this was a pandemic project and a bit of a family project too. I mean, it's just awesome.

Quentarius Moore 30:01
And that was very fun, and then just piecing the parts together from different places. Like I say, I like to solve problems. So I was like, I have X amount of dollars, let me solve how I can afford these different components. So there's a lot of eBay, Amazon, you know, PCPartPicker and all that.

Sarah Webb 30:20
I love it. I love it. I wanted to ask you what piece of advice that you would give to young scientists or people who are scientist interested? What do you pass along if people ask you?

Quentarius Moore 30:35
I think the number one thing that I think a lot of people wouldn't say is, "don't be afraid to, quote-unquote, bother people." It is okay to go cyberstalk someone for their email address and ask them, "Hey, I like that you're doing this? Do you mind talking to me?" So at least I have the gumption and confidence to just say "Hey, I'm going to try. I'm going to ask." So that's my biggest thing. Always ask for help. And to go beyond that is just find people in. Because if someone emailed me, I would be happy to help them. If they email say, "Hey, Q, I'm in this program, I'm thinking about this and that." I'd be delighted. But on the other side, you think, "Oh, this person isn't going to have time for me or doesn't care what I want to do, this and that. Anything you're doing in life, if you need help, ask for it. And if you see someone you're interested in just communicating with, just try and just talk to him. Email them.

Sarah Webb 31:31
But we all need it right there. All of us have things we don't know.

Quentarius Moore 31:34
Yes, and we all do not have like mentors and peer-to-peer help. Not everyone has that. So sometimes you do have to go get it. But once you get it, it's like a snowball effect. Like when I used to think about networking, I always thought about like job stuff. Uh, I don't want to network or like this is intimidating, because this is all about job stuff. I don't feel ready. But networking has more to do with just a peer-to-peer thing. Like if you need help on something, you have people that you can connect with. And it's not really about just career paths and stuff. It's really about mentoring-- that's what networking actually is. Now that person may be able to get you a foot in the door for applying somewhere. But ultimately, that person is moreso, a mentor and a resource for you.

Sarah Webb 32:18
And with that, I want to wrap up, and I want to thank you, Quentarius. It was lovely talking with you today, and I really appreciate your time. It was a great pleasure.

Quentarius Moore 32:29
Thank you so much, Sarah. It's always fun talking to you. Actually. I don't talk about myself much and it's always an enjoyable experience just chit chatting. I get it from my grandmother.

Sarah Webb 32:41
Well, that's good. I'm glad we could do it. Appreciate you, too.

Sarah Webb 32:46
For images of Quentarius' computer and his 20-by-20 garden in Mississippi and more information about the NSF Center for the Mechanical Control of Chemistry, check out this episode's show notes at scienceinparallel.org. If you liked this episode, please share it with a friend or colleague and subscribe wherever you listen to podcasts. Science in Parallel is produced by the Krell Institute and highlights computational science with a particular focus on work by fellows and alumni of the Department of Energy Computational Science Graduate Fellowship Program, which is celebrating its 30th anniversary

in 2021. Krell administers this program for the U.S. Department of Energy. Our music was written by Steve O'Reilly. This episode was produced by me, Sarah Webb.