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Speaker 2:

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Michael Holtz:

Welcome to Further Together, the ORAU podcast. As ever, it's me your host, Michael Holtz from the communications and marketing department at ORAU. And I am in the middle of a series of interviews with NASA postdoctoral program fellows. And today is another one of those episodes where I am talking to Rachel Harris, who is indeed a NASA postdoctoral fellow, ORAU, FYI, manages the postdoctoral program for NASA. And we love this program and I love talking to the fellows about who they are and about their research. So let me welcome Rachel to the show. Rachel Harris, welcome to Further Together.

Rachel Harris:

Hi. Thanks, Michael.

Michael Holtz:

So Rachel, where are you in your fellowship?

Rachel Harris:

So I am a NASA Postdoctoral Management Program fellow, so NPMP.

Michael Holtz:

I got you.

Rachel Harris:

And I am, I guess, a little over seven months in to my fellowship. So my position is out of NASA headquarters in Washington DC, and it's more on the strategic planning and policy side of things. So my background, of course, is in research and I have a PhD in geosciences with the specialty in biogeochemistry and environmental microbiology. But I decided that I wanted to see how the sausage gets made, and so I applied for a management postdoc position to see what things are like under the hood at headquarters.

Michael Holtz:

Well, cool. Well, how is that going so far? And I say that from... I am a cancer policy advocate in my life outside of work. So I know a little bit about how the sausage gets made in Washington, so... Anyway. Just what's it like being on that... More on that aspect of life at NASA?

Rachel Harris:

Well, so I thought I had a good understanding of what NASA bureaucracy looked like before applying for this position. I served on several NASA review panels and different administrative groups, science groups, et cetera, that been chartered by NASA. And so I thought I had a good sense of what it looks like from the inside. And since starting my fellowship in May, I feel like I've really seen the inner workings and I'm still really learning how everything is interconnected in many different ways and all of the checks that go through to make sure that anything that we bring forth to share with the community is really vetted and supported by divisional leadership. And so I guess I'll say I'm learning a lot about all of the work, the hard work, that goes into just in to getting things like research programs up and running and making opportunities available for feedback from the community. And so there's a lot that headquarters does behind the scenes, I guess, that you as an individual researcher in the community might not be as mindful of. So there's the case of the federal government is slow, but it is thorough.

Michael Holtz:

Right. Absolutely. Is there anything that has been surprising to you?

Rachel Harris:

Surprising?

Michael Holtz:

Being on more the management side of life in the science world?

Rachel Harris:

I think seeing, I guess, the politics of it even transferring into DC. I remember my very first day in-person. I showed up to get my badge and I was... I come from an academic background and I did my PhD in the geosciences department. And so I had colleagues walking around the floor without shoes on. You go to conferences and people are in cargo pants. They look like they just got off the Appalachian Trail. And so I was like, "Okay. I'm not going to dress down, but I'll dress sharply and black jeans and a nice blouse. That'll be fine." And so I showed up on my first day of work and I was wearing that and then I had a bright orange osprey backpack that I carry my computer around and my notebooks, et cetera. And the security guard asked me, "Are you going camping after work?" So... It was eye-opening for me of, "Oh, the dress code is a little bit more formal than this." And so I do feel like even at NASA, at headquarters, you dress nicely for work.

Michael Holtz:

Right.

Rachel Harris:

So that's been a change.

Michael Holtz:

Got that. As you said, your education and you've got degrees in the sciences. Has science always been something that's been of interest to you, Rachel?

Rachel Harris:

Yeah. It really has. I mean, ever since I was really little, grew up and I loved being outside. My dad had a huge vegetable garden. And from being really, really little, I always wanted to be out there with him and digging up dirt and watering the plants and drowning them and making mud patties essentially. And so that's a love that I've always carried with me ever since. And I think just like pretty much every child out there was endlessly fascinated by dinosaurs and...

Michael Holtz:

Sure.

Rachel Harris:

And I even wrote a letter. I guess there was an essay contest that was hosted by the Museum of the Rockies in the mid 90s about, "Do you know paleontologist when you grow up? If so, let us know." And they'll pick some winners and then they'll go out and dig dinosaur bones with Jack Horner in his group for a week and...

Michael Holtz:

Stop. That's so cool.

Rachel Harris:

Yeah. And so I wrote an essay and it got selected. And so I got to go out with a group of a bunch of other seven-year-olds, seven to eight-year-olds, and we went out into the Morrison Formation in Wyoming and we dug up dinosaur fossils for a week with Jack Horner. And it was just... I think from that point, I was just absolutely hooked and still love dinosaurs, don't get me wrong, but I think my love for space and the work that I do now was really solidified watching the Spirit and Opportunity rovers land on Mars in early 2004, and essentially feeling like I grew up with them and came of age with them. And just thinking about geologic time and the early evolution of life and the search for life beyond Earth, it captured me. And so I feel like I've been very fortunate to have had pretty much a straight and narrow path of this passion that I've been able to follow my whole life and really get to explore.

Michael Holtz:

That sounds really cool. And I love that an essay contest was kind of the thing that solidified the fire for you. That's so awesome.

Rachel Harris:

Yeah. Yeah. And I'm really thankful for my parents too because I remember that they were the ones who pointed it out to me because it was the mid 90s, and yes, the internet was a thing, but being [inaudible 00:09:35]-

Michael Holtz:

Barely, right?

Rachel Harris:

Yeah. Kids were not on the internet around the clock. And so this was something my parents found and I mean, I was the kid who saved up her allowance to buy all of the physiologically accurate dinosaur models from the Smithsonian to play with outside. That was my thing. And so they recognized from a young age that I love dinosaurs so much that I would love to go and do something like a fossil dig. And so yeah, I'm just really thankful that they always encouraged a love for science and education.

Michael Holtz:

Yeah. Rachel, for you, what was the evolution from realizing you still loved dinosaurs but adding space to the mix to then decide that you wanted to be part of NASA?

Rachel Harris:

So as I mentioned a little bit briefly earlier, I mean, being in middle school, and it's an awkward age for everybody, and everyone of feels like they're their own level of social outcast. And I remember it was my sister's 13th birthday and... We're very close in age, her and I, so she's 13 months older than me, so we're almost essentially Irish twins. And so she was having her big 13th birthday party bash downstairs with all the cool teenagers, and I was not invited. I was but the awkward age.

And so I stayed upstairs and I was watching the coverage for the Spirit Mars exploration rover landing. And just I think hearing about not only the crazy kind of grape cluster airbag idea that was used to help get it and the Opportunity rovers to land but also we were going back to Mars to search for evidence of water. I mean, that was some brilliant marketing by NASA because the notion of follow the water to search for life is something anybody can grasp. And I think it just suddenly made a connection in my brain of there's a relationship between Earth and Mars in their histories that... There are hints that it's there, but we don't really know about and these rovers are going to start answering those questions. "And I want to know what those answers are. So I want to stay tuned." And I think the fact that... I mean, both of those rovers, they were operational far beyond their initial 90-day operations window. I mean, Spirit died, I guess, when I was a senior in high school. And so it all felt very poetic.

And the discoveries that were made by those two rovers, it had me hooked on this notion of there's so much about the early evolution of our solar system and the common history or ingredients for life that we can learn from a place like Mars because it has a rock record that Earth no longer has because it's a geologically active planet. And I just knew that I wanted to stay connected in that. And so, I mean, my research opportunities throughout undergrad and going into graduate school, I always stayed more on the biological sciences side of things and was studying microbes in extreme environments, extremophiles, and then getting to graduate school and realizing, "Oh, I actually am good at certain parts of chemistry, not just the organic chemistry that I was forced to take with all the pre-meds and undergrad."

A course like that made me think that I was terrible at chemistry and wasn't good at it and then it wasn't until graduate school when I took courses in stable isotope geochemistry or aqueous geochem where I could understand the applications relevant to my field where it all... I don't know. It just all came together. And so I was fortunate to have a PhD advisor who really encouraged his students to really try to undertake research projects that were relevant to the bigger picture questions that they were interested in. And for me, it was... Even though we are in a geosciences department that I was doing methane biogeochemistry work. The underpinning theme behind it the whole time was, "I want to understand the habitability of Mars and I want to understand what methane as a potential biosignature could mean not only on Mars but elsewhere."

And so it's always been, I guess, in my back pocket this whole time. And so it's been really incredible and, yeah, it's... I feel very fortunate and very thankful to really realize a dream that I've had ever since I was a little girl. It's been really incredible.

Michael Holtz:

That's [inaudible 00:15:42].

Rachel Harris:

Not that I wouldn't say no to getting the chance to dig up dinosaur bones again, but...

Michael Holtz:

Sure. Sure. Of course. Rachel, have there been obstacles that you've had to face to get where you are?

Rachel Harris:

Yeah. Absolutely. I mean, so I grew up in rural Appalachia, in the mountains of northwestern North Carolina. Really quiet place. It's not in a part of the country where education was really emphasized or glamorized. And so I'm very thankful that my parents were so supportive of us as kids, emphasizing the importance of education and having it be a means to take you places and fulfilling the American dream. And I feel like I've lived two lives in two different worlds coming from a beginning like that. And it's always really interesting to step back into that world when I go visit home.

In graduate school... I mean, again, going to graduate school was something that is also in and of itself just a family first. I mean, talk about imposter syndrome. I mean, I'm sure everybody has it, but...

Michael Holtz:

Sure.

Rachel Harris:

Yeah. I went through some health scares as well in graduate school that required me to take some time away in my third year. And I ended up moving across the country for about a year just to try to take care of myself and see if I could get to a place where I could continue my PhD. And I found myself supported in a lab at the Scripps Institute for Oceanography, which is affiliated with UCSD. And I found myself being able to work in a lab there for a little while. And it really, on multiple levels, really helped me heal and get to a much better place where I could come back and finish my PhD. So I'm very, very thankful for Doug Bartlett, who was the leader of that lab at Scripps, and, yeah, just his mentorship over my career, for sure.

Michael Holtz:

Awesome. Sounds like a great guy and someone who helped you navigate the whole imposter syndrome and the, yeah, getting passed.

Rachel Harris:

Absolutely. Yeah. Yep. Absolutely.

Michael Holtz:

If someone were following in your footsteps, Rachel, what would you tell them? What advice would you give to a young up and coming scientist, someone who may be hearing this and says, "Well, I want to do what Rachel's doing."?

Rachel Harris:

I would say, "Listen to your gut and also, 'No,' is a complete sentence." I think that there are so many opportunities to... I think I find myself continuously wanting to say yes to opportunities because there's just so many exciting things to work on out there and you want to be able to contribute and not let people down.

And I think that something that I'm actively working on right now is also just learning to prioritize your personal health, your mental health, and allowing yourself to have some work-life balance. I feel like it's one of those things where when you see a friend or a colleague struggling with something or they're up at obscene hours trying to put in a ton of work on something that feels thankless, of course it's easy to tell them, "Get some sleep. Take a day off. Take care of yourself," but then when it's you in your own shoes doing that, it is... No, you have to pull in all-nighter to get this done because someone's going to be disappointed in you. I'm rambling a little bit, but it's just, I guess, yeah, the... Be kind to yourself. Get some sleep.

Michael Holtz:

Yeah. Right.

Rachel Harris:

[inaudible 00:21:20].

Michael Holtz:

But I do understand what you're saying is we're better as physicians, so to speak, than as patients, right?

Rachel Harris:

Yeah. Yep. Absolutely.

Michael Holtz:

"Do these things because they're good for you, but I'm not going to do them for myself necessarily."

Rachel Harris:

Yep. Yep. Yep.

Michael Holtz:

Rachel, last question for you. What brings you joy?

Rachel Harris:

So I mentioned earlier. I love gardening. It was my first introduction to science and some of my happiest and earliest memories. And that is something that I've always done my entire life. No matter where I have lived, whatever tiny, dingy little apartment I've lived in, I've tried to have a grow light of something at least.

Michael Holtz:

Nice.

Rachel Harris:

And now I'm very fortunate to live somewhere... My husband and I bought a house during the pandemic. And the first thing we did it was... The ground was literally frozen outside. The first thing we did was starting digging post holes to build a garden fence. And it's just a place where I can listen to my own medicine and take time to just step away from work and get my hands dirty and get into the soil and just stop and take things slowly and appreciate something small and miraculous, like a fresh pepper growing or something. And so just taking my knowledge of microbiology or soil geochemistry or whatever and transferring that into the garden and then, at the second level, bringing that produce inside and fermenting it or pickling it or canning it, whatever, just getting back to the basics. That's kind of like my meditation, and it's something that brings me a lot of joy.

Michael Holtz:

Awesome. I love that answer. I was just watching a documentary about gardening yesterday and the notion that gardening is one of those things, as you've demonstrated, that can make you happy for a lifetime because it gives you such pleasure. So thank you for sharing that. I really appreciate it.

Rachel Harris:

Yeah. Thank you.

Michael Holtz:

Rachel, it has been a joy to spend this little bit of time with you and getting to know more about you and about what you're doing at NASA. And I hope that I can have you back at some point to talk about things you've learned and what happens next for you would be great.

Rachel Harris:

Yeah. Absolutely. Love to. Thanks so much for the lovely chat.

Michael Holtz:

Awesome. Absolutely. It's been great. Thank you so much.

Rachel Harris:

Yeah. Thank you, Michael.

Speaker 2:

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