- When I give, like my talk on the mosquitoes, the adults are housed in a way, in a cage or in a bucket. They're all contained. Mind you, people, you know, people assume that the insects are flying around. They just flying around.

- They're just flying. You're just catching them with nets all day.

- Exactly. Yeah, yeah, yeah. We get bit. It's no big deal.

- [Announcer] This is the "ORISE Featurecast." Join host Michael Holtz for conversations with ORISE experts on STEM workforce development, scientific and technical reviews, and the evaluation of radiation exposure and environmental contamination. You'll also hear from ORISE research program participants and their mentors as they talk about their experiences and how they are helping shape the future of science. Welcome to the "ORISE Featurecast."

- Welcome to the "ORISE Featurecast." As ever, it's me, your host, Michael Holtz, from the Communications and Marketing Department at the Oak Ridge Institute for Science and Education. And we have another great conversation with another great ORISE Fellow today. Matthew, I'm always excited to have these conversations with you. Welcome back to the "ORISE Featurecast."

- Thanks, Michael. Yeah, I'm super excited about this conversation in particular. It's always good to talk, you know, to our research participants and learn what they're up to. And I'm excited for another conversation today.

- Absolutely. So let me quickly bring into the room Elle Winfield. Elle, welcome to the "ORISE Featurecast."

- Hi. I'm happy to be here.

- We're so glad to have you. So if you would, I know that you are doing a fellowship at the Department of Defense. Talk about your research, what you're doing in your fellowship.

- Sure. So, right now, I'm actually doing a fellowship with the Walter Reed Army Institute of Research.

- Okay.

- Which is a DOD entity. So what you said makes sense.

- It all, it all covers, right?

- They all come under the same umbrella. Right. So, yeah. So for one year I was an ORISE Fellow at this location with the Entomology branch. And after that one year was up, they decided they liked me so much that they would keep me on for one more year as an Army Educational Outreach Program Fellow.

- Nice.

- So I do the same tasks, but just a different program.

- Okay, cool. So what's your research focus? What are you looking at? What are you talking about, all of that great stuff?

- Right. So as a fellow at WRAIR with entomology, I have had the opportunity to participate in a couple research projects on top of the main capability of WRAIR Entomology, which is maintaining colonies of relevant vectors. So mosquitoes, ticks, and sand flies. So helping out with the rearing of course, and here and there, research projects. But my main research project that really spanned over half of my fellowship with ORISE is these yeast encapsulated botanical oil based or essential oil base larvicides. So it's a partnership with the University of New Mexico and the US Army Medical Unit in Kenya.

- Okay.

- It's like alphabet soup working with DOD. But so, it's a partnership with them and our partners at University of New Mexico have formulated these yeast encapsulated essential oils for the purpose of killing mosquitoes. So we know that mosquitoes transmit various diseases, Zika, malaria, dengue, all the things. And so the essential oil-based larvicide is a relatively more eco-friendly approach to targeting the lesser mobile phase of the mosquito, the larvae, which are in the water, in the breeding ground rather than the ones that are flying around.

- Gotcha.

- So that's been my main focus.

- And why is this work important?

- So I think that from a global health standpoint, mosquitoes are high on the list. Especially, not only are they pests. No one wants to get bit by mosquito.

- Right, right.

- But especially because of the diseases they transmit. So this larvicide is important to work the kinks out, because it would make an impact with global health in terms of mitigating mosquito populations in a more effective way.

- Gotcha. And especially when you're talking about things like dengue fever and malaria.

- Right.

- And other illnesses like helping eradicate or at least reduce-

- Right.

- The risk of contracting some of those mosquito borne illnesses, right?

- Right.

- Awesome.

- So what does this, this oil-based, how is it different from your, you know, typical synthetic chemical pesticide? How do they differ in any way?

- Sure. So the oils that I've been testing are yeast-encapsulated fennel oil, which kind of has a licorice smell. These oils make the labs smell so interesting. People walk by like, "What are y'all up to?" So I tested fennel oil, spearmint oil, and orange oil. So something about the essential oil, so the mechanism of delivery, of course, is inside of this yeast. So yeast is a natural component of mosquito larvae. So the mechanism of delivery, the engineering is that when the mosquito ingests the yeast, it digests it and the oil triggers the apoptosis pathway inside of the larvae, and then it dies. So the oil is effective in the same way that a chemical pesticide would be, if not more, but it also does not disrupt the ecosystem that these larvae are living in. So the fish, even the plants, some agricultural crops, you know, little pools of water where these larvae live and breed. You can spray crops with them, and it wouldn't affect what you don't want to die, so.

- Gotcha.

- It's a better alternative in that way.

- And it would smell good too.

- And it does. It does. I don't mind spearmint oil.

- Right.

- Right.

- That’s incredible.

- Yeah.

- So has science always been an interest for you?

- Oh, that's an interesting question. I think that I didn't find science in the traditional way that I think a lot of people in STEM did.

- Okay.

- Especially entomology. I wasn't like the kid that went out in the backyard and played in the dirt and was, you know, bringing bugs in the house. But I think that the thing that attracts me to science is the detail. So I think I've always been sort of curious about the intricacies of things. If you ask my mom, she would say, "I was always focused on things that of the other kids weren't focused. I was reading books the other kids weren't reading." I think middle school kids were reading like "Captain Underpants" and a "Diary of a Wimpy Kid." I was flipping through dog breed books and books about gemstones and Greek mythology and all sorts of things. So I get really attached to things that have intricate pathways and deep implications in other fields.

- Okay.

- So, going into undergrad, I knew that I wanted to do forensic pathology because I was inspired by, there was a show on the Medical Channel called "Dr. G: Medical Examiner." And so another thing that nobody in my age group was watching at the time, but I was so fascinated by how the forensic pathologist could sort of look at the intricacies of the deceased and kind of piece together backwards how, you know, a story or a proposed story of how the person's last moments looked. So that was super inspiring. And then, I went in with the idea that I was gonna do forensic pathology. But then, the idea of pathology wasn't so attractive anymore about halfway through school. I was thinking about medical school, and about how I wasn't really wanting-

- Right.

- In the mood to, you know, commit to getting in to medical school. Before you even get in, it's a commitment. So my goals looked different after I came to that realization. So my mentor at the time, Dr. Dash, Dr. Sean T. Dash, he's an entomologist and zoologist. And I was taking, I think, for my electives parasitology and medical entomology. And I was really fascinated by how both had an impact on global health. And I also really liked taxonomy at the time, so I sort of dropped the pathology part of forensics and tacked on the entomology. And that was my new sort of goal.

- Nice.

- So science found me in a roundabout way. Yeah.

- Thanks to Dr. G and

- Exactly. And "Law and Order" somewhere in there. Yeah.

- Right.

- Yeah.

- That's awesome. So you bring up that one mentor, you know, kind of talk about how your mentors have kind of led you to where you're today. How important are those mentors through your scientific career and your pathway to get to where you are?

- Yeah, I love talking about mentorship, because I feel like I just hit the mentor lottery at every stage. Even as a fellow now, I have mentors who are really invested in my professional and personal growth. So, Dr. Dash was my advisor at the time. So, you know, when it was time to pick classes for the next semester, I would meet with him at the end of the previous semester, and we would go over my class schedule. And so, it sort of gradually morphed into just me stopping in his office. And then, we would just talk about my goals and my personal life and so on and so forth. So we really formed a relationship that didn't feel so structured. And it felt like I could be vulnerable in my level of experience. That's another thing I really value about mentorship is that, or at least the mentors that I've had, good mentorship is that I think a good mentor really makes the mentee feel comfortable with, you know, their level of knowledge. Of course, a good mentor is gonna know more than you. That's just, you know, the nature of mentorship. But, if they can impart the knowledge that they have without making you feel like there's something you should have known or, you know, making you feel like you don't belong, then it's a good mentor to me.

- So helping you-

- That's been my experience.

- Helping you realize the knowledge as opposed to telling you, like you said, like you should have known it all along.

- Right. Right.

- Elle, how important is it to you, you know, I'm meeting you for the first time. Matthew and I are meeting you for the first time. You are a brown woman in STEM. How important is it for you to have representation, to see representation, but then also be representation for scientists who may follow in your footsteps? Realizing there aren't a lot of brown women, right, in stem.

- That's right. It's very important. I think that going back to my forensics and interests, specifically "Law and Order," the SVU series, the forensic pathologist was a black woman.

- Mm-hmm .

- And Dr. G was my entry. And then, as I got older, I stumbled into "Law and Order." And I was like, "Wow." Like she, of course, it's a dramatized show. It's a show, but even still, it was the first time I can vividly remember imagining being in that space. Not even as a black person or a black woman, which black person and black woman is like tacked on top of tacked, stacked on top of stacked. But, it was the first time I could really see myself in a space as a professional, as a scientist. So I think that increasing the visibility of black scientists is important for young black scientists to see or to experience, because imposter syndrome is very strong.

- Sure.

- And I think that if you experience imposter syndrome as a black scientist, and you walk into these rooms where you don't see people who look like you, you know, there's a strong possibility that you may self-select yourself out of these rooms. And at the end of the day, science is about progression. Right? What are we discovering things for, I mean, if not to push the science forward? So by adding novel voices, black voices to the science, you would inherently be pushing the science forward.

- Right.

- Because we get new ideas, different perspectives. So one of my favorite black scientists, black entomologists, Dr. Jessica Ware in New York, she's an entomologist. And I sort of follow her journey, and she posts nerd stuff just like me on social media. And she's great. So I think that we just need more visibility, for sure.

- More of that, right? Yeah.

- More of that, for sure.

- Right. I mean, you are there, and you know, your voices matter and you are bringing a different perspective. Elle, has that been an obstacle for you, getting to where you are at any point?

- That's a good question. I don't think it's been an obstacle that I am consciously aware of.

- Okay.

- I think that I'm reminded of it when I'm in professional spaces like conferences. The last conference I recently came from in Chicago, ASTMH, so tropical medicine. And so, a lot of research is doing mosquito work and vector-borne disease work. And throughout each presentation, I didn't see a whole lot of brown people. So, of course, everyone who was attending the conference, it's very diverse,

- Right.

- Not even just within the United States. There are people coming from all over the globe to attend the conference. But, those who are presenting, those who are receiving awards, those whose name is in the booklet, I didn't see enough black people.

- Gotcha.

- For my tastes, so.

- Gotcha. That's when it sort of hits me. So it's not necessarily an obstacle. I think it's just something that plays in the background every once in a while. But I keep going.

- Yeah. Yeah.

- I keep going. Mine just keeps me going.

- I think that's important. And you talked about imposter syndrome. So, you know, when you're in those situations where there aren't a lot of people who look like you, how do you, I guess, psych yourself up, talk yourself into not being the person who self-selects?

- Right.

- You know, to walk away.

- Right. Honestly, I call my mom.

- Okay.

- My mom, she's a pharmacist.

- Okay.

- And so she likes to call herself like right on the edge of STEM. So, she's familiar with being a black professional in spaces where you may be the only black professional in the room. And so, her advice to me is always, you know, look at what you've accomplished. If you were to put your name on paper and put your accomplishments underneath your name and compare them to someone else, it's the exact same thing. So at the end of the day, imposter syndrome is about perspective. And of course, it's about real tangible opportunities that, you know, a certain group may get over a different group. But, a lot of it sometimes is about perspective. And so if you make yourself to feel less than, then you will be that way, and you will present that way. And so, you know, you gotta charge yourself up and really think about the accomplishments that you have and about the fact that, you know you have, at least for me, I know I have something to contribute to the science. And I know my passion is just the same as my peers. So that kind of keeps my head in the game.

- Yeah, yeah. I love that.

- That's awesome. Yeah. You know, you talk about, you know, you talked about your mentors a little bit and you know, how you got to where you are, and, you know, being that black voice and being in the room and, you know, contributing. Have you ever had the opportunity to mentor others below you and kind of show them your perspective of how you got where you are and kind of lead them to where you are?

- Yeah, in my last, let's see, I'm trying to remember. My mentee, her name is Danelle Donner. She is a recent graduate of Bowie State University, so in Maryland. And as an AEOP Fellow, I have had the opportunity to mentor her. So she, like me, was looking for fellowships after college. And so, her mentor at the time introduced her to this, it's called the Bridge Program. Alphabet soup, I can't remember. I can't remember what it stands for, but it's a program that connects students or recent graduates and senior students of HBCUs who are interested in careers in STEM, it connects them to those careers. And so they have the opportunity to participate in authentic research and also be connected with lab mentors. So she came to WRAIR under that program in one lab, and then she changed into entomology. And so, when she transferred to Entomology, I was assigned as her lab mentor, which was sort of weird, because I'm a fellow, so I'm being mentored as well. And so, I found myself kind of wearing two hats, the learning hat and the passing on learning hat, which has been its own experience. But my experience as a mentor has been really fulfilling in the way that, as a college student alone, graduating from college, I mean freshly graduated, I mean. I mean like the next week I think it starts to hit that like, wow, like, you know, school is all I've done since I was four.

- Right. And now, I have all this passion, and I have these interests, and I know I kind of know what I wanna do, but I don't know how to plug myself in. I don't know where I should be to apply those passions and skills. So I really recognized myself in my mentee in that way. So the relationship that she and I have is that, you know, we are peers on the same level. Like I said, I'm getting mentored as well. We're in different age groups, not by that much, but we're in different age groups. And we're in different degree types, but, you know, we're still peers. We're still here to learn from someone. And I think that keeps the lines of communication really casual. And I think I'm really proud of the environment that we have, you know, created in that way, for sure.

- Awesome. I have to imagine that in the work that you're, sorry, the research that you're doing, there's a great deal of collaboration. You know, you're not-

- Yes.

- You're not siloed. You're doing, you know, research involving other folks and other disciplines. How does that realize itself in what you're doing now?

- It is a lot of collaboration. I think about all the group projects I had to do in undergrad and how they told us, you know, "One day you are gonna have to collaborate at work." And we, you know, everybody grunt through those group projects, but-

- You're like, "I hope I I don't have to collaborate by myself."

- Exactly. Exactly. So sometimes, you know, the project group people, they don't contribute, you know, the way that you had hoped.

- Right.

- So it, it can be frustrating in trying to troubleshoot group projects in undergrad. It's funny that way. But, I think about it when I'm collaborating and how collaboration really is beneficial when you don't know something. Like, flat out, like when you really just have no perspective on what you're supposed to be doing, it's great to be able to go to someone else, and they may have the answer and vice versa. So right now, with the project that I'm doing, the larvicide, the mosquitoes are of course acquired from WRAIR entomology, the Insectary. And I collaborate a lot with the Insectary manager on when to get mosquitoes, how many, when I would need another batch, how many assays I plan to do. We do a lot of scheduling together, and I'm really lucky to be in an environment where I can just knock on my, you know, the door of any one of my, I call them coworkers.

- Right. Right.

- So, any one of my coworkers, and, you know, "Hey, I have a question about this and this." And then, their next free moment we can sit down and hash it out. So, collaboration is seamless, which is great. And I think it's really something that I'm gonna take away from this experience for sure going into, hopefully going in into grad school this year.

- Awesome. Awesome. I have to say I love that.

- That leads right in to the next question though. So, you're going to grad school. What's next after grad school? What's the ultimate plan?

- Yeah, so in 20, when did, I don't, the years blend. In 2022, I graduated from George Mason University with my master's in Forensic Science. And so I went into the program wanting to learn more forensics to, you know, support my initial career goal.

- Right.

- And they didn't have an entomology program to kind of, you know, jam my things together, forensic and entomology. So the degree program was really forensics based. But, through the thesis portion of my last two semesters, I really got to test my skills in research design and research execution, which are two different skills. So my thesis was really forensic entomology based. And I really enjoyed the whole part of it. Of course, it was very intimidating. Like, the assignment was come up with an original research design, execute it and present it. And I was like, "What?" It seemed like this whole, this this big thing to chip away at. But, you know, that's exactly what I did, chip away at it and pull on my mentors. Called on Dr. Dash, of course. And another one of my mentors that I got at George Mason, Dr. Rebecca Forkner, an entomologist, she's great. So that experience really solidified my interest in not only research, but forensic entomology. So when I graduated, a theme with me, I think a lot of people when they graduate college, they don't know what they wanna do. But my issue is that I wanna do many things. So narrowing it down is my issue, not necessarily, you know, the other way around. But, so when I graduated from George Mason, I said, "Okay, well what else can I do in entomology? Let me, you know, explore while I have some time outside of school." So I looked up some fellowship opportunities. ORISE popped up. That was the first one that popped up. And so, I applied. I liked the idea of working with vector-borne diseases and field work. And there was also an emphasis on collaboration in the position. So I was like, I was all in. So two years later, I'm still here as a fellow and still enjoying it. But now, I think I wanna go back to forensic entomology. So the idea now, I applied to some grad schools, to some PhD schools.

- Okay.

- PhD programs. And hopefully, I'm still waiting to hear back. That's the next step. So it would be the PhD.

- So schools-

- After that, I'm not sure. I can't think past four years.

- Right, right, right.

- But yeah, that's the next immediate step.

- So schools, if you're listening Elle Winfield.

- I am ready to be interviewed.

- She is ready. I am ready to be accepted. All the things

- She's ready for your program.

- Absolutely.

- I have to say that a place called the Insectary gives me great joy and visions of a store where, like-

- Ah, it's where you can pick.

- Buy insects. I love that. I love that. Which sounds kind of like what it is.

- Exactly. So, when people come to WRAIR to visit or tour, different global partners, and it's a military institute.

- Sure.

- So different military people come through, and when they visit, the Insectary is always on the list for tours.

- I bet, I bet.

- And it's funny. So the mosquitoes and sand flies and ticks, they're all housed in different incubators within the facility. And we normally hit the sand flies first, and then the mosquitoes next, and then the ticks last. And when I give, like, my talk on the mosquitoes, the adults are housed in a way, in a cage or in a bucket. They're all contained. Mind you people, you know, people assume that the insects are flying around.

- They're just flying.

- They're flying around.

- They're just catching them with nets all day.

- Exactly. Yeah, yeah, yeah. We get bit. It's no big deal. No. So they're contained either in a bucket or cage, depending on the life cycle.

- Sure.

- So we like to show off the adults, of course, because people are familiar with the adult mosquito the most, not necessarily the larvae a little bit.

- Right.

- So they're in buckets, and there's a screen, a mesh screen over top of the bucket. So I'm tilting the screen, and I'm giving my talk, and slowly but surely I see people kind of starting to scratch, you know, scratch. And then, by the end it's a full blown, and we're in the incubator and, you know, it's 80 degrees humidity in there, and it's 75 degrees, you know, so Fahrenheit. It's hot, basically. It's hot, and it's humid.

- Yeah.

- So by the end of my little seven minute spiel, they're ready to go to the next thing

- Sounds like they're looking for tick bites when they come out.

- Exactly, exactly. Checking their clothes. So it's always fun to run people through the Insectary. Most of the time they get some information that they didn't know.

- Right.

- Which is great.

- That sounds awesome. Elle, last question for you.

- Yeah.

- What brings you joy?

- Ooh, what brings me joy? Fellowship. Fellowship and food. Food and fellowship together. Like, so my sister and I live together in an apartment in Fairfax. And my favorite thing to do is go to a different restaurant. We get takeout, come back home, watch some reality TV, and we eat together. And just, we'll get different things on the menu, so we can taste each other's food. And, we just talk about if, what we liked about the food, if we're gonna go back again, or if we're not, what we didn't like about the food. So just getting to eat with people is what really brings me joy for sure.

- I love that. Elle, thank you so much for sharing that and for sharing-

- Absolutely.

- A few minutes of your life with us and helping us understand a little bit more about who you are and what drives you and what happens next. I really appreciate.

- Absolutely. This is great.

- This opportunity.

- Thank you for having me.

- Absolutely. Glad to do it. Have a great day.

- Thank you, you too.

- [Announcer] Thank you for listening to the "ORISE Featurecast." To learn more about the Oak Ridge Institute for Science and Education, visit ORISE.ORAU.GOV, or find us on Facebook, Twitter, and Instagram @ORISECONNECT. If you like the "ORISE Featurecast," give us a review wherever you listen to podcasts. The Oak Ridge Institute for Science and Education is managed by ORAU for the US Department of Energy.