

Ask a Biologist vol 037 Topic: Ants and Ant Farms Co-host: Itzany Mendez
Guest: Rebecca Clark

Ant Farm -

Other than the rare chocolate covered ant, why would we want to farm ants? Dr. Biology and his co-host Itzany Mendez from Dunbar Elementary School look into lives of these interesting animals. The two talk with PhD graduate student Rebecca Clark and learn some pretty cool things including how to build a slick ant farm using two music CD cases.

Transcript

Dr. Biology: This is Ask-a-Biologist, a program about the living world and I'm Dr. Biology here with my co-host, Itzany Mendez. Welcome to the Ask-a-Biologist program, Itzany.

Itzany Mendez: Thank you.

Dr. Biology: You happy to be here?

Itzany: Yes.

Dr. Biology: OK. How excited are you about this day?

Itzany: More excited than ever.

Dr. Biology: Oh, well, I'll take that. OK. Well, I have to say it's been great to have you here, too. And can you tell us just a little bit about yourself?

Itzany: Well, I come from Paul Lawrence Dunbar Elementary School.

Dr. Biology: You going to come to ASU when you get old enough?

Itzany: Of course.

Dr. Biology: All right. We're going to have her back anytime. I have a question, Itzany. Have you ever been on a picnic?

Itzany: No.

Dr. Biology: You haven't? OK. Well, let me describe something. You go out into, here it'd be the desert, or maybe you drive up into the mountains. And you take lots of nice food. Your friends and family go. And you lay out a tablecloth and you put the food out. And you have, you know, the potato salad, the hamburgers are getting done. You have hotdogs and you have all sorts of foods. I mean, I can't even imagine all of the different kinds of foods you'd have. Besides your friends and family, what do you think shows up real quickly?

Itzany: The ants?

Dr. Biology: You got it. That's exactly what happens. Today we're going to learn about some of the ants that live in the desert. We're going to also get some advice on building an ant farm that we can have at home or in the classroom. These are pretty cool designs. And one of the designs is brand-new. I'm not going to tell you what it is. You've got to listen in because this is really cool.

Our guest scientist is Rebecca Clark who is a PhD student in the school of Life Sciences. Rebecca is working with ants and she wants to learn about how do ants colonies grow? You know, we have cities grow, right? But, are the same decisions being made by ants? Who knows, right? Well, Rebecca's going to figure that out. Rebecca?

Rebecca Clark: Yes?

Dr. Biology: I want to thank you for coming to Ask-A-Biologist.

Rebecca: Thank you, Dr. Biology.

Dr. Biology: Itzany, do you want to start us off?

Itzany: Sure. Why do ants like sweet things?

Rebecca: That's a really good question. So, if you put something sweet out, like, let's say you have a soda or some juice and you spill it on the ground. If you come back a little while later, usually you'll see a bunch of ants that are hanging out on that sweet stuff. Well, I think, they like sweet things because of the sugar in it just like why humans like sweet things. That's a source of energy that they can use and it helps keep all of the ants in a colony going.

Dr. Biology: How about another question?

Itzany: Why do ants eat worms?

Rebecca: Have you seen ants eating worms before?

Itzany: Yes, I have.

Rebecca: Oh, wow. Well, it's kind of along the same lines as why they like sweet things. So, sweet things contain sugar and sugar is a fuel that keeps your body going. But, besides needing fuel, we also need things that help us grow like proteins. So, for ants, they get fuel from sweet things and then they get protein from things like worms. And ants are actually the garbage disposal of the natural world. Do you know what garbage disposals do?

Itzany: No.

Rebecca: You can take all kinds of scraps from your kitchen and a garbage disposal will grind them up and get rid of them for you.

Itzany: Yeah.

Dr. Biology: Have you ever put food down the sink and flipped the switch and that thing goes, "Rowda, rowda, rowda, row?" You done that?

Itzany: Yes.

Dr. Biology: OK. That's a garbage disposal.

Rebecca: So, in the wild, something has to happen to everything that's died. We don't see a lot of dead worms or dead bugs or other things. And ants are actually one of the types of animals that go around and use those as food. And so they clean them up.

Dr. Biology: What do you think that ants usually eat, Itzany?

Itzany: Candy?

Dr. Biology: Candy. Yeah, they do. They're, I guess they have a sweet tooth, don't they?

Rebecca: They definitely do. They love sugar.

Dr. Biology: How many different ants are there in the world?

Rebecca: That's a very good question. Around the world there are 9000 different kinds of ants that we know about. And then on top of that we think there might be another nine thousand kinds of ants that we don't know of yet. No one's discovered them. So, there could be up to 18000 different kinds of ants. And, I don't know about you, but I have a very hard time imagining how many 18,000 are, but that's a lot of kinds of ants.

Dr. Biology: Well, all right. So, there could be as many as 18000 different kinds of ants in the world. How many live in Arizona?

Rebecca: So there are 300 different kinds of ants that live in Arizona.

Dr. Biology: OK. And are any of them dangerous?

Rebecca: Actually, yes, some of them are. Among ants, there are some kinds of ants that have stingers. Ants are related to wasps and so, just like wasps, they will sting in self-defense. And I would consider those to be dangerous. They're probably not as dangerous as something like a bee. But, they're still not something that you'd want to get too close.

Dr. Biology: When we talk about different kinds of ants, and we said there are 300 different kinds, and we said there's, Itzany, today, we learned that there are carpenter ants, right? And what was the, what was the other one, night ants?

Itzany: Yes.

Dr. Biology: Yeah. OK. And what was your cool, the coolest ant that you saw this morning?

Itzany: The, the fast ones. I forgot its name.

Rebecca: The, was it the one where when we blew on them, they started running around really quickly?

Itzany: Hm-hm.

Rebecca: Those are a type of carpenter ant.

Dr. Biology: Oh yeah. And that was because of the carbon dioxide?

Rebecca: That's right. Yeah.

Dr. Biology: All right.

Rebecca: Ants are very sensitive to smells.

Itzany: How do ants talk to each other?

Rebecca: I first like to think about how humans talk to each other. What different ways do humans use to communicate with each other?

Itzany: By using their voice.

Rebecca: OK. By using their voice, so, by talking. There's one way where if I wave around right now, that's another type of way to communicate using movement. What about, another possibility is what if I tap you on your shoulder?

Itzany: They won't really hear it.

Rebecca: They wouldn't hear that either, but that's another way to communicate. So, by touch. And then one other way that something might be able to communicate is by smell. So, if we wanted to try those things out, you can actually try those out with any ants that you come across. You can try tapping on the ground to see if they react. You could try shouting at them and see if they do anything in response to shouting at them. So, you could try touching them. See if they respond to touch.

And one way that we figured out that you can see if they respond to smell is if you blow on them very gently, usually if you do that, most types of ants use smells to communicate with each other. So, it's something that if you're just watching the ants, you can't see the smells, right? You can only see how they respond. But, it's a very different world for the ants. And then we did also see one kind of ant today that also uses vision a lot. Do you remember watching those ants when we waved something around, they'd respond?

Itzany: Yes.

Rebecca: And it's, they put their antennae up in the air and they'd get really excited? So some kinds of ants use vision also.

Itzany: Why do ants go together like penguins?

Rebecca: So, do you mean in groups?

Itzany: Yeah.

Rebecca: OK. Or, or what other things do they do that are similar to penguins?

Itzany: Like, they huddle up.

Rebecca: Ants and penguins both live in groups. A group of ants is actually an ant's family. So, all of the ants you find together are related to each other. They're actually all sisters. Part of why you find them in groups is because, just like for you or for me, our families are really important. For an ant, her family is really important as well. And penguins have a similar type of social group where by hanging out together with each other, they basically can support each other and help each other out.

Itzany: Do ants bite or do they sting?

Rebecca: Well, ants actually do both and it depends on the kind of ant. So, the leaf-cutter ants that we have here, they're not able to sting at all. Their only way of protecting themselves is if they bite. And they're not even very good at that, either. So, if you were to poke them, they couldn't really do much back. They might try to bite you, but that's all.

But, there are other kinds of ants that do sting. And ants are kind of like wasps where that's their major way of defending themselves against something that's big and scary like us. To an ant, we're very large and we're very scary and dangerous. So, the kinds of ants that are able to sting, will sting. About half of them can. About half of them can't. It, it just depends on the kind of ant.

Dr. Biology: And so when you get that, when an ant stings or bites, I mean, I don't know what it's doing, but it hurts.

Rebecca: Oh.

Dr. Biology: Is it usually the bite or is it the sting?

Rebecca: Good question. So, it's usually the sting that hurts.

Dr. Biology: Oh.

Rebecca: What they will do, it's kind of helpful to know this, is they will first bite to hold on and then they will sting.

Dr. Biology: Oh.

Rebecca: And, just like with a wasp, it's the sting that hurts.

Dr. Biology: And the stinger's just where we'd, like, just like in a bumblebee, at the back, it's in their butts?

Rebecca: Yeah. It's in their butt. Yep.

Dr. Biology: Yeah? OK.

Rebecca: So, so, they'll, they'll bite on and they'll try and poke their butt in you. And the funny thing with the leaf-cutters is, even though they don't have a stinger, they still try to sting. And you'll watch them and they'll sit there and try poking their butt in your hand or wherever the ant has bitten and nothing will happen.

Dr. Biology: Oh, OK. Well, we introduced our guest, Rebecca here. We've had a nice conversation. But, I really should have introduced our other guests. And, quite frankly, in the studio we have, must be hundreds.

Rebecca: Yep.

Dr. Biology: Doesn't it look like hundreds, Itzany?

Itzany: Yes.

Dr. Biology: Yeah. And what are they?

Itzany: Ants.

Dr. Biology: Yeah. It's, it's actually, and they're leaf-cutter ants. What I'd like to do is talk a little bit about the leaf-cutter ants because they're unusual.

Rebecca: -huh.

Dr. Biology: And they're unusual in the sense because we can consider them gardeners, right?

Rebecca: That's right. They're farmers like humans are.

Dr. Biology: Right. And that'll allow us then to move into our, your favorite thing, I think, you want to talk about today, and that's making an ant farm. So, it's kind of funny. We're going to first talk about ants that are farmers. And then we're going to talk about how to make an ant farm. Does that sound cool?

Itzany: Yes, it does.

Dr. Biology: Tell us about these leaf-cutter ants.

Rebecca: So, they get their name from the fact that if you watch them out in the wild, you'll see them in trees and in bushes cutting leaves. And they'll cut those leaves into small pieces that are small enough for them to carry. And then they'll carry them on a trail back inside of their nest. And, inside of their nest, they chew the leaves up even more until they're just little, tiny pieces. And then they use the leaves to grow a fungus, a mushroom. So, they really are mushroom farmers and the mushrooms are what they eat.

Dr. Biology: Oh, so they're not actually harvesting the leaves to eat. They're using those as a tool for growing their fungus.

Rebecca: That's right.

Dr. Biology: Well, Itzany, what, let's describe this. What does this look like? There's, there's two containers, right?

Itzany: Yes.

Dr. Biology: OK. And we're going to have to find out why there are two containers here. Well, actually, I, I'm getting a hint. I see leaves in one side. Do you?

Itzany: Yes.

Dr. Biology: OK. So, this must be the place where they're going to go out and collect the leaves. And there are these tubes between them. But, I also see, well, what is it, one, two, three, four different cylinders on the other big, clear box, right?

Itzany: Yes.

Dr. Biology: Yeah. Can you see what they're doing? Well, I'm looking. I've got to get up here just a little bit. I can't, ooh, cool. What does that look like to you?

Itzany: A mushroom.

Dr. Biology: Looks like a mushroom, yeah. It does, it does. It looks kind of like, yeah. It looks kind of like a, a fungus among us.

Rebecca: That's right. The mushroom that they eat is actually similar to the mushrooms that we like to eat as well. It's related to those although it's a little different. I've never tried it so I don't know what it tastes like. But, it probably would taste a lot like mushrooms that we eat in our food.

Dr. Biology: You know, talking about taste, have, have you ever eaten chocolate-covered ants?

Rebecca: Oh, my gosh! Only once. My brother gave me some ants that were in white chocolate. And you, I have to tell you, they really tasted mostly like chocolate. I couldn't really taste the ants at all.

Dr. Biology: OK.

Rebecca: No.

Dr. Biology: Itzany, are you going to try some ants?

Itzany: Oh, no.

[laughter]

Dr. Biology: I'm with you. I don't think I'm going to do that. But, maybe, grasshoppers.

Rebecca: Gross.

Dr. Biology: [laughs] All right. So, we've got, the leaves are out on one side where they've been out foraging we can say, right?

Rebecca: That's right.

Dr. Biology: And then I can see where they're growing that mushroom or the fungus. What are the other things going on here, Rebecca?

Rebecca: So, there are a couple of other things inside the nest. Well, there's one box that's kind of like what we would see on the ground outside. And the box that contains the fungus is what's actually normally underground. Along with the fungus that's inside of the nest, there are also a couple of other interesting things going on.

That's where the queens are located. So, they're a different kind of ant. They're actually the mother of all of the other ants that you see in the nest. And then all of the young ants are also inside of the nest underground. And they're usually, with this type of ant, they're found in the fungus because their job when they're growing up is to just eat and eat and eat. So, they'll be in there eating as much fungus as they can.

Itzany: Where are the eggs?

Rebecca: It's actually really hard to see ant eggs. In this species, I think, the ant eggs are about the size of a period at the end of a sentence. So, they're tiny. It's very, very hard to see.

Dr. Biology: Yeah. Look at that. I mean, that, that, that, they'll be teeny-tiny, wouldn't they?

Rebecca: Yes.

Dr. Biology: Yeah. Yeah.

Rebecca: So, their eggs would be inside of the colony underground in the fungus garden. And the tricky thing with the fungus garden is that the fungus is white and the eggs are white. So, they're pretty much impossible to see unless you have a way of looking at things up close, like a very good magnifying glass.

Dr. Biology: So do ants just hatch out of these eggs like we think of a chicken out of an egg and they're like little teeny ants?

Rebecca: Not at all. They kind of look like little jelly beans almost when they hatch out. They're called larvae. So, the egg hatches into a larva and the larvae look like little jelly beans. They are still white and they're really small. And when they're larvae, pretty much the only thing that they do is eat. And they eat and eat and get a lot larger.

And then, after a certain point, they will spin a cocoon and turn into pupae. And a pupa, they oftentimes look like a grownup ant, but they're still very pale or white and their legs

are all folded together and they don't move around very much.

And after some time as a pupa, then they will emerge as an adult. And when they're very young, they're usually really pale and then their exoskeletons - they're sort of their skin, but a hard, armored skin - gets harder and then they're an adult ant.

Dr. Biology: That's pretty cool.

Itzany: It is?

Dr. Biology: Yeah, it is.

Itzany: Do the newborns need milk?

Rebecca: That's a good question. They don't actually need milk. So, for these ants, all throughout their life, the only food they'll need is the mushroom. So, that when they're very little, they're eating mushrooms. Can you imagine if you only ate mushrooms your entire life?

Itzany: Yeah.

Rebecca: [laughs] What do you think it would be like?

Itzany: Disgusting.

Rebecca: [laughs]

Dr. Biology: Yeah, yeah, I'd have to say - I mean, I like mushrooms - but I wouldn't want to have it every day for breakfast, lunch and dinner.

Rebecca: I would get tired of it, too. But, somehow, for these ants, they're able to live quite happily just eating the mushrooms. So, they don't need milk at all.

Rebecca: There's one other thing that's kind of close to you in the corner, in the smaller box where they have leaves that they can collect. Can you describe what's in that corner? What do you see there?

Itzany: Dead ants.

Rebecca: So, there are some dead ants piled up? And do you see the stuff that's underneath them?

Itzany: Mm-hm.

Rebecca: What does that look like? It's kind of hard to see, it's pretty small.

Itzany: Like dirt.

Rebecca: It looks kind of like dirt, but we didn't actually put any dirt into the box. So, it must have come from somewhere else. That's actually some of the trash from the colony.

So, after the fungus has been growing for a while, it uses up the material that it's on, and the ants actually throw it away outside. And they also will take ants that have died, and they'll throw those outside of the colony. It's their way of keeping the colony clean inside.

Dr. Biology: Hm.

Rebecca: They're very, very tidy. They're very good about taking out the trash.

Dr. Biology: You also brought in some examples of ant farms and Itzany; you were interested in making your own ant farm, weren't you?

Itzany: Yes.

Dr. Biology: All right. Why?

Itzany: Because it looks, like, kind of cool and I like it how they move.

Dr. Biology: How they move... I like the way they dig, when they dig those tunnels, I think, those are pretty cool, too. Don't you?

Itzany: Yeah.

Dr. Biology: All right, all right. Which one of these ant farms that Rebecca's brought in is your favorite?

Itzany: I really like the sand one. It has three cases of CDs, and then there's sand in one of them, and there's two queens in there, and...

Dr. Biology: Wow, there are two queens?

Rebecca: There are, yes.

Dr. Biology: That's great. All right, what else do you see?

Itzany: Beach sand, it looks like it.

Dr. Biology: You're actually right, it looks to me like that there's a CD case that has sand in it, and it's vertical. It's up and down, right?

Itzany: Yes.

Dr. Biology: And then it's sitting on, and actually taped to, a part of the CD case that's usually inside, and that's where we attach the CD. And on top it looks like another CD is just taped to it, and it's clear, and, what - do you see the hole in there?

Itzany: Yeah.

Dr. Biology: And there's a hole that's in the case that's laying on top of it, so it's laying perpendicular to the one that's going vertical and there's a hole in it, but it's clear. So, what's the deal with that, Rebecca?

Rebecca: Well, so, ants are usually found underground, but as we were saying earlier, it's hard to see what's going on underground, right?

Itzany: Yes.

Rebecca: So, what we've done with the CD case is, we've given them some underground, but it's really thin so you can look through and hopefully see the ants when they think they're underground. But, they also need a place that's aboveground because they need to go aboveground to look for food and to collect food. So, the CD case that's on the top will be a place where they can go and look for food. Right now, there's no food in there, which is kind of surprising, huh?

Itzany: Yes.

Rebecca: Especially based on what you were saying about seeing ants really enjoy sugar. When queens are in the nest by themselves they actually don't eat anything.

Dr. Biology: Hm.

Rebecca: So all the energy that they have is what they've got, at first. And so they use that energy to raise a first group of sisters - the first worker ants - and those first worker ants are the ones that will go out of the nest and look for food. The queens will just stay underground.

Dr. Biology: When you make these things, do you just keep them this way or is there something else we need to do to encourage the ants to dig?

Rebecca: Well usually when we're not trying to look at what's going on inside, we'll use a very high-tech material - aluminum foil - to cover the outside to make it very dark.

Dr. Biology: Oh, so you can just easily mold that around it and it keeps it dark. Do you have to keep it dark all the time?

Rebecca: Not all the time. They're actually, they'll be pretty patient if you want to lift it up and take a look at what's going on, but if you go away and you're not going to be watching them, and usually it's best to cover them at that time.

Dr. Biology: And are there some cool experiments you could do?

Rebecca: There are a lot of cool experiments you can do with ants. That's one of my favorite things about them. One thing that you could do would be to test what kind of different things they like to eat. So, Itzany, you had two ideas earlier, right?

Itzany: Yes.

Rebecca: So you were thinking they like...

Itzany: Dead crickets.

Rebecca: They like dead crickets, OK, so you can find some crickets and see if you put them out if ants would come to the dead crickets. And you noticed they like sweet things, so what if you thought about your favorite sweet things and saw if maybe the ants liked the same foods that you liked. Or maybe they like different foods than what you liked. It would be pretty easy to go and take a couple of kinds of foods and put them out and see how many ants come to them.

Dr. Biology: So, you could do things like put Skittles, Lifesavers, and say a little thimble of honey.

Itzany: Yeah.

Dr. Biology: Yeah, OK. All right, so we're going to say that's going to be our experiment, we haven't done it yet. What do you think they're going to like?

Itzany: The Lifesavers.

Dr. Biology: You think the Lifesavers? OK, so what we've done right now is we've set up an experimental design and you've made a prediction. Basically a prediction is just simply what you think is going to happen. Now the question is: Why do you think they will like the Lifesavers over the other things?

Itzany: Because they wouldn't like the honey, they would actually get stuck. And the Skittles, they don't really like them that much because they can't taste them or open them.

Dr. Biology: Very good! So even though the honey might be sweeter they might be dangerous to get. The Skittles aren't worth the work because they're too hard to get into to even taste, because of that outer coating. And the Lifesavers they could get the stuff. All right, so now you have a hypothesis of why this is going to happen. And all that's left is to do the experiment. So, you have done a brilliant job as a young scientist. Now we'll have to put that up on the Web and we'll actually have to have you go try it out and tell us what you find out. OK?

Itzany: OK.

Dr. Biology: Because that's the last part because now we have to actually do the experiment and then write down the results. Excellent. Is that cool?

Itzany: Yes, it is.

Dr. Biology: Are you going to be a scientist?

Itzany: Of course.

Dr. Biology: Of course. Are you going to be a biologist?

Itzany: -huh.

Dr. Biology: OK. That actually brings up something I've wanted to ask. We have these cool ant farms that are all obviously in the classroom or at home or in the research lab...

Rebecca: -huh.

Dr. Biology: Do you actually have to have those to observe ants and to learn from them?

Rebecca: Definitely not. You really can just go outside and into your backyard or somewhere nearby, and if you see ants, an ant colony outside, just watch what's going on around the entrance of that colony. And sometimes you can see a trail of ants going somewhere and you could follow and see where they're going. Or, if they're not going anywhere, sometimes you can try little experiments, like blowing on them and see how they react. Or you could just watch what they're doing. And so, you really don't need any tools to go and learn about ants.

Dr. Biology: Although, there are a couple of tools that might be useful, right?

Rebecca: There are. Because ants are really, really small. We actually keep a lot of magnifying glasses on hand so that you can see everything tiny up just a little bit closer. One of the other things that we find really useful is actually - I have one of those magnifying glasses that you might see in your grandparents' house that has a little light attached to it, so you can magnify things and also light them up to see them a little bit better.

Dr. Biology: Rebecca, we like to ask our scientists three questions.

Rebecca: OK.

Dr. Biology: And I'll start off and Itzany's going to do this next one. When did you first know you wanted to be a biologist or a scientist?

Rebecca: Oh gosh! I think, for me it was probably about when I was in eighth grade or so. Part of what made me think I wanted to be a biologist was that my brother was really interested in the natural world. And he got really interested in birds, so he spent a lot of time talking about birds all the time. And I thought, birds sound like they're kind of interesting and I like looking around and seeing what they're doing.

And I also got interested in understanding things like how the brain works, and I didn't think of it as biology necessarily, at the time, but just, I wanted to understand how the world around me worked.

Itzany: If you couldn't be a scientist or a biologist, what would you be?

Rebecca: That's another really good question. I think, probably, the first thing I would do would be to become an artist.

Dr. Biology: What kind of artist?

Rebecca: Oh, that's a tough question. I really like doing ceramics so working with clay. Have you ever worked with clay?

Itzany: Sometimes.

Rebecca: I really enjoy using it to make different kinds of shapes. So, probably something with ceramics or else painting, also. I like both of those.

Dr. Biology: Marvelous. I think a lot of scientists and artist...matter of fact, I think, many scientists are artists, and I think, a lot of artists are scientists, they just don't know it.

Rebecca: Mm-hm.

Dr. Biology: All right, one more question. What advice would you have for young scientists, and that's real easy, because you're sitting in our studio and we have Itzany. What's your advice to her?

Rebecca: I think, my advice would be to spend lots of time outside because that's where a lot of really exciting stuff is happening. And one of the coolest things about biology is that it's something that you can see pretty much anywhere, even in your backyard or if you're out in the playground, there's something interesting going on. And so the best way to learn about things is by observing them and the best place to observe them is outside.

Dr. Biology: Rebecca Clark, thank you very much for visiting with us today.

Rebecca: Thank you.

Dr. Biology: And Itzany, I want to thank you for being a co-host on 'Ask a Biologist.' I've had a blast today, it's really been fun. I've enjoyed see you here with your classmates and your teachers and it looks like you've had fun today, too.

Itzany: Yes.

Dr. Biology: All right, and what was the best part?

Itzany: Interviewing Rebecca Clark.

Dr. Biology: Really? OK, well Rebecca, thanks again. All right, you've been listening to 'Ask a Biologist' and our guest has been Rebecca Clark, a PhD graduate student in the ASU School of Life Sciences. My co-host has been Itzany Mendez from Dunbar Elementary School in Phoenix, Arizona.

In case you want to learn more about ants, you can visit our companion website, where we have several companion web articles on ants, including illustrated instructions for building your very own ant farm. We also have experiments and other things you can do with ants. We can even learn about the anatomy of an ant. How many legs do they have? So that's kind of a fun place to go.

The 'Ask a Biologist' podcast is produced on the campus of Arizona State University and is recorded in the Grassroots Studio housed in the School of Life Sciences, which is an academic unit of the College of Liberal Arts and Sciences. And both the School of Life Sciences and the College of Liberal Arts and Sciences provided funding for our co-host contest. Did you have fun with the co-host?

Itzany: Yes.

Dr. Biology: All right, should we do it again?

Itzany: Yes.

Dr. Biology: OK. And even though our program is not broadcast live, you can still send us your questions about biology using our companion website. The address is askbiologist.asu.edu. Or you can just Google the words: ask a biologist. I'm Dr. Biology.

Itzany: I'm Itzany Mendez.

Rebecca: And I'm Rebecca Clark.

Dr. Biology: [laughs] OK. And if you're a student in the Phoenix area and you'd like to be on the 'Ask a Biologist' audio show, just head up to our podcast area. The address is askbiologist.asu.edu/podcasts. There you'll find information about submitting an audition recording.

Hey teachers, this is also a great project to do in your classroom or in a school. We have all the information about the contest and how you can create a contest in your own school. We have details about the equipment, the software used to create podcasts, and much of the equipment by the way, and software, is inexpensive and in some cases, free.