

MIRIAM: You're listening to Brains On where we're serious about being curious.

VIOLET: Brains On is supported in part by a grant from the National Science Foundation.

HARVEY: Hello, podcast listener. I am Harvey, the omnipresent virtual assistant that keeps things running smoothly at Brains On headquarters. I see you are here to check in for today's Fung-o-Rama.

Before we start, we ask that you make much room in your brain to receive a large quantity of fungal facts and puns. There is no dress code for this event. Just wear your love for fungus on your sleeve. OK, podcast listener, if you are ready to put the fun in fungus, please say, fung-o-rama after the beep.

[BEEP]

Wonderful. Welcome to the party.

[THEME MUSIC PLAYING]

MOLLY BLOOM: You're listening to Brains On from American Public Media. I'm Molly Bloom, and this is Miriam from Denver, Colorado.

MIRIAM: Welcome to our Fung-o-Rama.

MOLLY BLOOM: Fungus deserves a party because it's everywhere and super important to life on this planet.

MIRIAM: The kingdom of fungus includes mushrooms and molds, but also yeast like the kind that helps make bread.

MOLLY BLOOM: Right. So today, we're embracing the ick, we're snuggling up to the slimy, we're making friends with mold and mushrooms. It's a full-on fung-o-rama.

MIRIAM: Funky. See what I did there? Fungi funky.

HARVEY: I got us party hats and these noisemaker thingies.

[HORN]

MIRIAM: I made a cake that says, Oh, my, oh, my, how I love fungi? Oh, wait, is it fungi or fungi?

MOLLY BLOOM: Yup, exactly.

MIRIAM: Wait, which one?

MOLLY BLOOM: All of them. They're all correct. Turns out there are lots of ways to say it. Miriam, when I say mold, what do you picture?

MIRIAM: I think of like that mold that covers stale bread or like the weird, slimy mold that you see when you leave yogurt in the fridge for too long.

MOLLY BLOOM: And what about when I say fungus?

MIRIAM: I think of like mushrooms, but it also reminds me of those like mushrooms you see in Mario.

MOLLY BLOOM: Exactly. I like that. Do these ick out or fascinate you, or you like, nah!

MIRIAM: Nah, they're interesting, but they also can be crude girls, like the yogurt mold.

MOLLY BLOOM: Yeah, definitely. We're going to find out about the good parts and the icky parts of fungus today. And you're co-hosting because you wanted to know more about fungus, which is a big category of mostly tiny things.

MIRIAM: OK, cut me some cake and let's kick off our fung-o-rama with these questions.

BOON: My name is Boon, and I'm from Pleasant Hill, Missouri. Is there mold in the air? I was wondering how else it would grow on things unless it was airborne. If it is in the air, does that mean we breathe it in? Can it make us sick?

CHLOE: Hi, my name is Chloe from [INAUDIBLE], Massachusetts. And my question is, what is mold when is it alive? I thought of this question when we had to throw away some moldy strawberries. And I thought, where did the mold come from? Did the strawberries already have mold in them and it just came out?

MOLLY BLOOM: Mold is a type of fungus, so let's start there. Are fungi like mold and mushrooms alive?

MIRIAM: The answer is yes, totally living. They grow, they change, they get energy from the world around them. They are definitely alive.

MOLLY BLOOM: But they're not jump up and down, run around the forest, make a lot of noise alive.

MIRIAM: They're more chill vibes, stay pretty still, and blend in alive.

MOLLY BLOOM: And because of that, people once considered fungi, plants. But plants do something really special that fungi can't. Plants photosynthesize.

MIRIAM: That means plants can just hang out and absorb sunlight and turn that into energy. They make food from the sun.

MOLLY BLOOM: So jealous. I want to eat the sun. Well, I'll settle for this cake. Yum.

MIRIAM: Like us, fungi can't photosynthesize. So they aren't plants, but they're not really animals either.

MOLLY BLOOM: Yeah, for instance, animals tend to eat food and break it down inside their bodies. Like I'm doing now. But fungi give off chemicals called enzymes that break down their food into smaller parts. And then they just absorb those nutrients into their cells.

MIRIAM: It would be like if you held up cake in your hands and oozed out stomach juices from your fingers, and then your body slurped up the digested cake goo.

MOLLY BLOOM: Oh, thanks. Now, I suddenly lost my appetite.

MIRIAM: You're welcome.

MOLLY BLOOM: So basically, they're not plants and they're not animals. They're their own special thing.

MIRIAM: Way to be original, fungi.

MOLLY BLOOM: Yeah, there are millions of different types too. From the ones in the forest that grow into mushrooms.

MIRIAM: To the ones on your feet that can grow into a fungal foot infection. Yuck.

MOLLY BLOOM: To the one that's currently covering that month-old fruit salad in my fridge.

MIRIAM: You should really throw that out.

MOLLY BLOOM: I would, but I think it's become self-aware. I don't want to make it mad.

[ROARING]

MIRIAM: So what is mold? Here to help answer that is Rachel Cook from the University of Nebraska in Lincoln.

RACHEL CROOK: So mold is a type of fungus, and it's not a special group of fungi per se. It's really more of a way of describing the morphology.

MIRIAM: Morphology means a way of thing looks.

MOLLY BLOOM: So for humans, our morphology is that we have two arms, two legs, a head.

MIRIAM: For a mermaid, the morphology is two arms, a flipper, and a head.

MOLLY BLOOM: For mold, it means it's a fungus that looks like tiny microscopic strands or strings. These strings are called hyphae.

RACHEL CROOK: And that is basically the form of a mold. It reproduces by these long strands. And these strands are what interact with the environment.

MOLLY BLOOM: When a bunch of mold hyphae get together, they grow into a big old group called a mycelium.

MIRIAM: It's like a single mold hyphae is a blade of grass, and a mycelium is a lawn. It's lots of blades of grass.

RACHEL CROOK: When you find mold on your maybe like an old sandwich or something that didn't get properly disposed of, you are seeing the mycelium.

MIRIAM: And to answer the question from before, don't freak out, but there is mold all around us in the air.

MOLLY BLOOM: In fact, no matter how much you clean, there is mold and other fungi in the air pretty much all the time. But the good news is, it's almost always totally fine to breathe in.

MIRIAM: So how does this mold go from the air to a sandwich? And what does it do when it gets there?

MOLLY BLOOM: Let's find out with a little story.

[MUSIC PLAYING]

NARRATOR: A day in the life of mold.

RACHEL CROOK: So say you're a mold.

MOLD: Dab a mold.

RACHEL CROOK: You're going to start out as a spore. You're going to be just floating in the air perhaps on particles of dust in the house.

MOLD: I call it dust surfing. Cowabunga. Ew. You should have steer this thing. Now, I hope I land in something good.

RACHEL CROOK: And what you're going to do is you really want to find an environment where you can get some nutrition.

MOLD: I am hungry. What have we got to eat this place?

RACHEL CROOK: What you're going to be looking for is that environment that has enough moisture like something that's a little wet.

[SPLASH]

MOLD: Oh, hey, I just landed on-- is this a peanut butter pickle sandwich? Ho, ho! Jackpot!

RACHEL CROOK: So once you've found that environment, then what you're going to do is you're going to start releasing chemicals that you can create yourself onto the slice of bread or whatever wet environment you're on. And they're going to break it down into smaller bits that you can then use to feed yourself.

MOLD: But if you think your body is so gross, it's so much more civilized to digest it outside and just absorb what you want. Plus I don't eat silverware.

[SLURPING]

RACHEL CROOK: And then once you've absorbed suitable amounts of nutrients, you're going to start to grow. Your hyphae is going to elongate. It's going to branch. So it's going to become kind of like a tree

MOLD: Oh. Gee is the least. I have really picked out. Look at me. I'm huge. Well, technically, I am still microscopic, but I am a lot bigger than I used to be. Hey, let's grow more. I want to bake a mycelium.

[SLURPING]

RACHEL CROOK: You're going to stay on this loaf of bread until there is no more nutrients to be eaten there.

MOLD: Woo! This sandwich is now mostly mold. Well done, me. Self high-five.

RACHEL CROOK: Then, what's going to happen is you're going to produce spores.

MOLD: There we go. Grew some new spores. Had to fly into the unknown my moldy little children. Fly. Fly on the majestic wind of that air conditioner.

RACHEL CROOK: And then what they're going to do is they're going to eject and then they're going to go back into the air. You're going to find a particle of dust now, and you're going to just we're right back to where we started the day.

MOLD: Floating in the air, ruining sandwiches, and shooting your baby seeds to the wind.

[CHUCKLES]

The circle of life is so beautiful.

[CHUCKLES]

NARRATOR: This has been a day in the life of mold. But actually, this probably took a few weeks, so a month in the life of mold? Who cares? The story is over. The end.

RACHEL CROOK: And throw out that fruit salad, Molly.

MOLLY BLOOM: OK, OK. It's my to do list. I swear.

[THEME MUSIC PLAYING]

OK, Miriam. Next, we're going to take a look at--

MARC SANCHEZ: Hey, Miriam. Hey, Molly. Sorry to bust in on your--

[INTERPOSING VOICES]

But my new issue have just arrived. I think you're going to like it.

MIRIAM: What's FFF?

MARC SANCHEZ: Oh, it stands for famous fungus fanzine. It's a fungus appreciation fan club for all fungi. You know, mushrooms, mold, yeast. Oh, last month's story about bread yeast really rose to the top. And who could forget the epic tale of the honey mushroom in Oregon? It is literally larger than a whale. Sweet. Anyway, each highlights three cool fungi. Do you want to take a look?

MIRIAM: OK.

MOLLY BLOOM: Sure.

MARC SANCHEZ: Whoa, look what's on the cover.

MIRIAM: It's such a pretty blue.

MARC SANCHEZ: I know. That's a sky blue mushroom.

MOLLY BLOOM: Make sense.

MARC SANCHEZ: Right. I mean, it is the color of a blue sky or a Smurf. Maybe they should call it a Smurfshroom. Oh well, where was I? Oh yeah, the sky blue mushroom. It grows in India and New Zealand. New Zealand even once used an image of the sky blue mushroom in a set of fungus related stamps. And they even printed it on the back of a \$50 bill.

MIRIAM: Cool mushroom money.

MOLLY BLOOM: So what other fungi are in this issue?

MARC SANCHEZ: Let's see. Oh. Oh my, this one's scary.

MIRIAM: What is it?

MARC SANCHEZ: It's a zombie fungus. And it's called--

OPHIOCORDYCEPS:Ophiocordyceps.

MOLLY BLOOM: Should I be worried?

MARC SANCHEZ: Well, if you're an insect living in a tropical area, then yes. The spores of ophiocordyceps, those are the seeds of a fungus, they land on an insect like an ant. And from there, ophiocordyceps grows roots into the ant's body. Once inside, it sends chemicals to the ant's brain telling it to--

OPHIOCORDYCEPS:Go find a place with just the right amount of water and sunlight. Ophiocordyceps needs to grow.

MARC SANCHEZ: The ant then starts to climb up the nearest tree, just as it's told. And when it reaches the right spot, ophiocordyceps says--

OPHIOCORDYCEPS:Clamp down and don't let go.

MARC SANCHEZ: So the ant is stuck there on a tree trunk or whatever, and that's where it dies. And then something really weird happens. Ophiocordyceps grows back out of the ant's body and produces new spores. These spores then drift down in the air landing on unsuspecting insects, where the whole cycle of terror begins again.

MOLLY BLOOM: Great. Now, zombie ants are going to haunt my dreams. Thanks, Marc.

MARC SANCHEZ: No problem. There's one more fat fungus in this issue, and it's a real stinker.

MIRIAM: Oh, bummer.

MARC SANCHEZ: No, no, no, it's super cool. It's just that it's found in poop.

MOLLY BLOOM: So a literal stinker.

MARC SANCHEZ: Yeah, and it can travel faster than the speed of sound. It's called the dung cannon fungus. It lives on grass and often gets eaten by horses and cows.

MIRIAM: And what goes in a cow must come out.

MARC SANCHEZ: Correct. It survives being eaten and pooped out. And that steaming pile of stink is where dung cannons start to grow. They look like elongated splashes of water shooting out of the poops. Each one with a little black dot on top, that's the spore, and this is where the magic happens. If magic involves poop and fungus.

As dung cannons grow, they fill up with water, which builds pressure. Finally, they get so full they explode. The initial blast takes only about two millionths of a second, faster than a blink of a blink of a blink of an eye. And that's when the spores accelerate to about 12.5 miles per second. They fly through the air and if they're lucky, land in a nice patch of grass to start the process all over again.

MOLLY BLOOM: Good luck, you tiny dung cannons.

MIRIAM: Can you send me the link to subscribe to?

MARC SANCHEZ: Oh, sure, sure. No problem. Hey, is that a--

[INTERPOSING VOICES]

Cake? Do you mind if I take a slice?

MIRIAM: How about it?

MARC SANCHEZ: Oh, this is delicious. My--

[THEME MUSIC PLAYING]

MOLLY BLOOM: OK, Miriam, it's time for the--

DUMINKA: Mystery sound.

MOLLY BLOOM: Here it is.

[SCRAPING]

MIRIAM: That sounds like-- I can tell it's like something scraping. For sure there's like a scraping sound. So it tends to sound like something being shredded. It's like something being shredded against a grater. It sounds like paper though.

MOLLY BLOOM: Well, we're going to give you another chance to hear it so maybe some other things will pop out and have another guess a little bit later.

Look up in the sky. It's big. It's bright. It's responsible for keeping us all alive.

MIRIAM: It's the sun, and we all love it.

MOLLY BLOOM: We're working on an episode about this hardworking star at the center of our solar system. And we want to know if you were able to add another planet to our little solar system family, what would it be like? Miriam, what would your planet be like?

MIRIAM: My planet would probably be a planet that's like all beach. There's no cities or anything. It's all a beach. So there's water, but there's also a lot of sand. When you live there, you can live in a beach house and it'd be sunny all the time. And who doesn't like the sun?

MOLLY BLOOM: Yeah, I would definitely visit there for a long vacation. So listeners, send us a short recording of your new planet at brainson.org/contact.

MIRIAM: Or send us a question.

MOLLY BLOOM: Like this one.

YURI: Hi, my name is Yuri and I'm from Barcelona, Spain. My question is, how does air fry? We'll answer

MIRIAM: That at the end of the show during our Moment of Um.

MOLLY BLOOM: And we'll be the latest group to join the Brains Honor Roll.

MIRIAM: So keep listening.

[THEME MUSIC PLAYING]

You are listening to Brains On from American Public Media. I'm Miriam.

MOLLY BLOOM: And I'm Molly. And we have a special guest here, Adriana Romero-Olivares who studies fungi at New Mexico State University.

MIRIAM: Hi, Adriana. Welcome to our fung-o-rama. Would you like some cake?

ADRIANA ROMERO-Hi. Yes, I would love some cake.

OLIVARES:

MIRIAM: Why do mushrooms grow on tree stumps?

ADRIANA ROMERO-Mushrooms usually grow on tree stumps because the tree was once infected with a mushroom. Usually, those **OLIVARES:** trees, the ones that have only the stump left, those were once big and healthy trees. At some point, they got infected by a fungus and the tree probably died because of that infection. However, the fungi still lives in the remaining wood of the tree stump, so they keep making mushrooms every now and then. That's why you usually see mushrooms on tree stumps.

MIRIAM: Wow. That's super cool. What does fungus do to a forest that makes the forest healthy or not healthy?

ADRIANA ROMERO-Fungi do a lot of different things. You know that fungi are decomposers. That means that they recycle organic **OLIVARES:** matter, basically everything that is dead in the forest floor like leaves or insects or worms or even like animal carcasses. So everything that is dead mushrooms recycle. Then, through that process of recycling, which is the process of decomposition, fungi simplify whatever is in those very complex tissues.

Thanks to that process of simplification, then a lot of molecules that were once kind of like trapped in this very complex tissues are freed and are very simple now and are available, for example, plants to use and microbes and other animals.

MOLLY BLOOM: Can you talk a little bit about what fungus does for soil?

ADRIANA ROMERO-One of the main things that fungi do for soil is actually create soil, making this soil good for plants to grow **OLIVARES:** involves fungi. Again, thanks to the recycling of organic matter, fungi make soil habitable for plants and for other organisms.

MIRIAM: How does fungus affect climate change? Does it help it? Does it harm climate change? What does fungus have to deal with climate change?

ADRIANA ROMERO-Like any other living organism, fungi are also being affected by climate change, especially in northern **OLIVARES:** latitudes, for example, Northern Alaska, the Arctic, Alaska - all of those places in the most northern part of Earth. The fungi that live in that part of Earth were used to a very specific sea sense. In September, it gets really cold and then it's really, really cold until June.

We're going to be sleeping during this time. But climate change is now shifting those states a little bit. So fungi are like going to sleep later in the year and they're waking up earlier in the year. Maybe now they're going to sleep in October instead of September, and they're waking up in May instead of June. So it is affecting them, of course.

MIRIAM: Why is fungus important?

ADRIANA ROMERO-OLIVARES: Fungi are really important because they are their own thing. They're not plants, they're not animals, they're fungi. They have very unique functions, ecological functions, they are very important for human health. A lot of the food that we eat is actually produced by fungi. Without fungi, we wouldn't be able to be here because fungi are mediators of the carbon cycle.

Again, they are the ones that are responsible for keeping nutrients flowing in our ecosystems. Without fungi, for example, plants wouldn't be able to grow. Without plants, animals wouldn't be able to grow. And without all of these different connections and resources in our ecosystem, we wouldn't be able to be alive because we wouldn't be able-- we wouldn't have any food sources.

MIRIAM: Thanks for answering all my questions, Adriana.

ADRIANA ROMERO-OLIVARES: Thank you. It was wonderful talking to you.

[THEME MUSIC PLAYING]

MOLLY BLOOM: All right, let's go back to that mystery sound. Here it is again.

[SCRAPING]

MIRIAM: I think I'm a brand new guess.

MOLLY BLOOM: OK, let's hear it.

MIRIAM: I think it sounds like somebody spraying something with the spray bottle.

MOLLY BLOOM: Oh, I love that guess, really.

MIRIAM: Because it reminded me of when I was spraying something. That's my new answer. Something being sprayed, like water being sprayed from a spray bottle.

MOLLY BLOOM: All right, you ready for the answer?

MIRIAM: Yeah.

MOLLY BLOOM: Here it is.

HAZEL: Hi, my name is Hazel from Bristol, Rhode Island. I'm 12 years old. And that was me spritzing all my plants with my spray bottle. Bye.

MOLLY BLOOM: Miriam.

MIRIAM: Yes.

MOLLY BLOOM: 100% correct.

MIRIAM: I knew it.

MOLLY BLOOM: So were you spraying plants or we're you spraying something different? MIRIAM: Actually, my mom does that. Since we have a lot of plants at home, she sprays them with a spray bottle. I think that's where I could have also gotten that sense. She does it every Sunday.

MOLLY BLOOM: You filed that away in your memory every Sunday, was in there.

MIRIAM: Yeah.

MOLLY BLOOM: Nice work.

[THEME MUSIC PLAYING]

MIRIAM: All right, a quick recap. Fungi are everywhere, and they're super important in keeping our world a healthy place.

MOLLY BLOOM: One of the coolest things about fungi is just how many different kinds there are. Scientists think there are millions of different kinds of fungi, but they've only described and named about 150,000. So that leaves millions undiscovered.

NHU NGUYEN: You can be discovering new species of fungi every single day of your life and still would not be able to name them all in a single lifetime.

MOLLY BLOOM: That's Nhu Nguyen. He studies fungi at the University of Hawaii at Manoa.

MIRIAM: He's discovered many different kinds of fungi himself, including several kinds of yeast living inside the gut of a beetle. Fungi really are everywhere.

MOLLY BLOOM: Nhu is going to help us gaze towards the horizon and ponder our fascinating fungal future in four fast facts. Fungus can help us fight climate change.

NHU NGUYEN: It is the ability of these fungi to keep plant growing. Therefore, you're taking all that carbon and you're putting it into plants, then the fungal bodies themselves grab carbon from those plants, and then keeping it in the soil. And that could really play a big role in keeping carbon from escaping back into the atmosphere.

MOLLY BLOOM: When carbon goes up into the atmosphere, it creates a blanket that traps heat on Earth. We need some of it in the atmosphere, but too much of it warms up the planet too much. So fungi can help keep that carbon in the soil and away from that atmospheric carbon blanket.

MIRIAM: Fungi can help decompose plastic and clean up pollution.

NHU NGUYEN: So there's definitely a lot of work that shows that fungi can actually break down certain plastics. You can use fungi and remove those toxins.

MIRIAM: This is called micro-remediation, which means using fungus to clean up the environment. Good job, you mighty decomposers.

MOLLY BLOOM: Fungi can help us grow food in a more sustainable way.

NHU NGUYEN: For a long time, we didn't quite understand what the roles of fungi are in creating a healthier soil environment and creating a place that plants can grow better. Now, we know that fungi do absolutely contribute to recycling all those nutrients in the soil, and protect the plants without having to throw in a lot of chemical fertilizers.

MOLLY BLOOM: In addition to helping plants grow, fungi can also provide us with a lot of delicious nutrients themselves. We'll hear about that in our next episode.

MIRIAM: They can help us make biofuels. Remember that beetle got used new help discover?

NHU NGUYEN: We found that this one yeast is able to ferment cellulose, which is a plant compound. So basically, use it to make biofuels.

MIRIAM: Fungi could help us find new ways to make cleaner fuels, like maybe a car gas that's safer for the environment.

MOLLY BLOOM: Other companies are using fungus to make furniture and replacements for styrofoam. And there will probably be other uses for fungi in the future that we haven't even dreamed up yet.

NHU NGUYEN: If you're interested in studying marine fungi, they live in the ocean. If you're interested in studying plant fungi with plants, they're everywhere. If you're interested in studying cute fungi that live on your scalp, then you can just scrape some off of your scalp and look under the microscope. So you can study fungi no matter where you go. Of course, the millions of species that we have not even discovered.

[THEME MUSIC PLAYING]

MENAKA
WILHELM: Molly, Miriam, did I miss it? Am I too late for the fung-o-rama?

MOLLY BLOOM: Hey, Menaka, you made it just under the wire. We're wrapping up.

MENAKA
WILHELM: Oh, phew. Great. Because I made us a portobello pinata for the party. It's shaped like a mushroom and also filled with mushrooms.

MIRIAM: Epic. You want some cake?

MENAKA
WILHELM: Of course. Oh, is this cake supposed to be fuzzy?

MIRIAM: No.

MOLLY BLOOM: Well, I guess mold showed up to the fung-o-rama, too.

MIRIAM: It got my invitation. Yeah.

[THEME MUSIC PLAYING]

Fungi are alive and there are so many different types of fungus.

MOLLY BLOOM: They're different from plants and animals.

MIRIAM: Most fungi reproduce with spores and they get their nutrients from their environment.

MOLLY BLOOM: They recycle those nutrients so other lifeforms can use them.

MIRIAM: And we're just starting to understand their fungus powers, and how they can help us fight climate change.

MOLLY BLOOM: That's it for this episode of Brains On.

MIRIAM: Brains On is produced by Molly Bloom, Marc Sanchez, Sanden Totten, and Menaka Wilhelm.

MOLLY BLOOM: We had production help from David Jah, Ruby Guthrie, Christina Lopez, and Rose Dupont. We want to give a special shout out to our editor Phyllis Fletcher who's moving on to an exciting new job. We'll miss working with her, but we hope she'll give us a call on her banana phone once in a while. We had engineering help from Veronica Rodriguez. Special thanks to Mireya Saki and Sam Choo.

MIRIAM: Brains On is a nonprofit public radio program. You can support the show at brainson.org/fans.

MOLLY BLOOM: There you can find links to donate or join our free fan club or check out our new Brains On merch.

MIRIAM: We now have Brains On shirts, baseball hats and face masks.

MOLLY BLOOM: And you can buy the Brains On book there too. That's brainson.org/fans.

MIRIAM: Now, before we go, it's time for a Moment of Um.

FREYA: My question is, how does air fry?

WENDY JO PETERSON: It's a small compact air movement directly around the food that actually creates that. Hi, I'm Wendy Jo Peterson. I'm a registered dietitian down in Southern California. An air fryer is a tiny convection oven that comes with a basket that you can place food into the basket and give it a little bit of a spritz of oil. And then close the basket, turn on the heating element, and it will circulate hot air creating that convection air mass around the food.

And it will provide that crispness by doing so. They don't actually reach higher temperature interestingly. So air fryers typically will go up to 400, 450, and a lot of ovens can actually reach over 500. An air fryer works differently so it is just blowing hot air really fast all the way around the food, touching all the finite little parts of it leaving that crispy crusty edge.

MOLLY BLOOM: Not an ounce of hot air in this cool list, it's the Brains Honor Roll. These are the incredible listeners who share their ideas, mystery sounds, drawings, and high fives with us.

[LISTING HONOR ROLL]

[THEME MUSIC PLAYING]

We'll be back soon with more answers to your questions.

MIRIAM:

Thanks for listening.