

Brains On (APM) | Brains On! What makes gross things gross? 01EGH7HP153M2HW3M4NZ2F2W9G

ISA CAMARGO: You are listening to *BrainsOn*, where we're serious about being curious.

[MUSIC PLAYING]

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

MOLLY BLOOM: Oh, hey, Isa, come in, come in. I was just clipping my nails before we taped the episode.

ISA CAMARGO: That's OK?

[SNIFFING]

What's that smell?

MOLLY BLOOM: Oh, I see you met Alexander, my pet skunk.

ISA CAMARGO: Hi, Alexander.

MOLLY BLOOM: I had to bring him into the studio today because I had to sitters cancel. It's the strangest thing. Each of them came to the door, saw my beautiful little boy, and then suddenly remembered they had other plans. Weird. A good skunk sitter is so hard to find these days.

ISA CAMARGO: Yeah, I guess so?

MOLLY BLOOM: Oh, hey, I stopped by the soup shack on the way here and picked us up a couple bowls of my favorite, cow tongue soup. Here you go.

ISA CAMARGO: Oh, you know what? I ate just before we got here. Darn it!

MOLLY BLOOM: Oh, no, that's too bad.

[SLURPING]

Well, do you at least have room for a couple of these buttery, garlicky escargot?

ISA CAMARGO: Snails? I'm good.

[RATTLING]

MOLLY BLOOM: Cricket chips?

ISA CAMARGO: Isn't the show starting soon?

MOLLY BLOOM: Oh, yeah, I almost forgot.

[MUSIC PLAYING]

You're listening to *Brains On* from American Public Media. I'm Molly Bloom, and with me today is Isa Camargo from Orlando, Florida. Hi, Isa.

ISA CAMARGO: Hello, Molly.

MOLLY BLOOM: Fair warning, today we're going to get gross, we're talking sounds and smells and tastes and things that you might touch that some people consider gross. Isa, are there any foods or smells or anything in particular that really gross you out?

ISA CAMARGO: Well, there is this one food that really grosses me out. Sorry to all you cheese lovers out there, but I really do not like cheese.

MOLLY BLOOM: Any cheese?

ISA CAMARGO: Any cheese at all. I just do not like it.

MOLLY BLOOM: What about cheese grosses you out?

ISA CAMARGO: The smell is just really stinky, and the taste just makes me want to gag.

[LAUGHTER]

MOLLY BLOOM: Well, has there ever been a time in your life where you ate cheese? Or has this been like your whole life, no cheese?

ISA CAMARGO: I tried cheese when I was really little, and I was just like, nope, nope, I don't like this at all.

MOLLY BLOOM: Not for you.

[LAUGHTER]

ISA CAMARGO: Nope.

MOLLY BLOOM: So would you say that gross things have a color?

ISA CAMARGO: Actually, I think they do. I think that green is the color of gross because in cartoons when people burp or fart or cough, the gas is green. Or if people throw up, then the puke is green in cartoons. And even, in the movie *Inside Out*, the emotion disgust is green.

MOLLY BLOOM: Very good point. Isa, what sound do you make when you see a really disgusting, vile thing?

ISA CAMARGO: OK, there are two noises that I most commonly do when somebody says something really disgusting or they show me something disgusting. So I'll either turn away, and I will say in a really loud, high-pitched voice, ewwww! Arg! Or my most common one, I will turn around, bend on the ground, and go--

[GAGGING]

[LAUGHTER]

MOLLY BLOOM: Oh, those are really good sounds. They really get the point across. I think my most common gross sound is bleh! It's not quite as good as going on the ground and having a physical reaction. I'm going to work on that.

Well, Isa, it is time to keep that gross-out sound handy because you're going to need it because we're going to get squishy, squeaky, slurpy, stinky, and sour, gross!

ISA CAMARGO: So what makes us hold our noses, plug our ears, or make a face about something gross in the first place?

MOLLY BLOOM: Here to help us unpack all things gross is Rachel Herz.

ISA CAMARGO: She's a neuroscientist and a professor at Brown University and thinks about gross stuff all the time, professionally, of course, but probably for fun too.

MOLLY BLOOM: She even wrote a book called *That's Disgusting*.

ISA CAMARGO: Hi, Rachel.

RACHEL HERZ: Hi, Isa.

ISA CAMARGO: What sound do you make when you see the grossest thing ever?

RACHEL HERZ: Ewww!

[LAUGHTER]

ISA CAMARGO: That is exactly what I do. Or I'll go--

[GAGGING]

RACHEL HERZ: Or sometimes I go, ah! That's what I do too sometimes.

ISA CAMARGO: My little brother, Donovan, actually had a question that he wanted to ask you. He said, why is ew the most common noise that we make when we see something disgusting?

RACHEL HERZ: Well, Donovan has a fantastic question, and that goes back to the whole idea about what disgust is about. It's about preventing something bad on the outside from getting into our insides. And the easiest way something can get into our insides is through our mouth.

And when we make the noise ew, it's like if you can feel your mouth while you're doing it or look in the mirror, you see that it's basically pushing something out, closing your mouth off. Or if you had something in your mouth, you're sticking out your tongue. You're spitting it out. You're getting rid of it. So it's like getting rid of what might be bad getting in there and preventing anything else bad from getting inside.

ISA CAMARGO: What do we find things gross? Or why do we find things gross?

RACHEL HERZ: So actually, we're not born thinking anything is gross. We're actually born thinking things taste bitter and horrible, and we want to spit that out. And that rejection of bitter taste-- and actually, the face that you make when you're tasting something bitter is the same face that you make if I say go stand on an earthworm with your bare foot, or hold your neighbors dirty dentures or something disgusting like that.

So the emotion of disgust is actually something that we've learned through our experience, through our culture, through socialization. And it maps onto things that we want to reject and spit out, like bitter taste. But it's actually what I like to say is the instinct that has to be learned.

MOLLY BLOOM: Why aren't we born just knowing that these things are bad for us and being disgusted?

RACHEL HERZ: Because we don't know what we're going to encounter as a function of the ecology and the environment that we grow up in what might be bad for us. And this is based on the fact that humans are what are known as generalists. That means that, as a species, we can inhabit any place on Earth.

We could potentially eat things from the sea, things from trees, things from the land, and so forth. This is in contrast to species that are what are called specialists. And they only have very specific little environment they live in and only really specific foods, so like the panda bear, for example, and only eating bamboo. That would be an example of really restricted environment.

So because anything could be good or bad for us, depending upon where we grow up, we need to learn it. But we learn it really quickly. So it only takes one trial to know that that mushroom was not something good to eat, and something with that smell or that looks like that is really yucky.

ISA CAMARGO: Why is green, the color of gross things in like cartoons?

RACHEL HERZ: Well, probably because snot is green.

[LAUGHTER]

And so cartoons are capitalizing on the aversion we have to bodily fluids. But there's nothing inherently gross about green. Lots of really delicious vegetables are green. Your grass is green. That's really pretty. We can think about green in lots of positive ways as well.

ISA CAMARGO: Oh.

RACHEL HERZ: So do you think green is gross?

ISA CAMARGO: I actually don't think that green is gross, but now that I think about it, I now do think that green is gross--

[LAUGHTER]

--the way you described it because I never thought of it-- it's not-- you could say that it is green and people think that's not disgusting. And I never thought of that way.

RACHEL HERZ: Well, you know what else is really interesting? You just said something brilliant because it's the way we think about something that makes it gross or not. So we can be thinking about something in a totally benign way or even a positive way. And if you make yourself think of it in a disgusting way, you'll be totally turned off.

ISA CAMARGO: Here's a question that we got from a couple of listeners.

AUDREY: Hi, this is Audrey from St. Petersburg, Florida.

KAITLYN: Hi, I'm Kaitlyn.

KIRA: And I'm Kira.

AUDREY: My question is, why do smells offend us?

KAITLYN: And our question is, why do some things smell good to us and some things smell bad?

RACHEL HERZ: So that's probably my favorite question of all because my primary area of research is the sense of smell. And things smell good or bad to us because of the meaning that we've learned to them. So if you smell something and you really love it, that's because the meaning of it is really good to you. And if you smell something that you think is really disgusting, it's the meaning that you've learned to it.

But let me give you an example of something else. It's also how we encounter that thing that makes a really big difference. When I was a kid, I think I was probably about five years old. And I was in the backseat of the car, and it was a beautiful summer day, windows rolled down, driving through the countryside. And all of a sudden, there was a smell in the air. And my mom from the front seat said, oh, I love that smell.

And so I love my mom, and I didn't know what that smell was. And so I thought, oh, beautiful day. Mommy loves it. I love mommy. I love that smell. And it wasn't until a couple of years later when that smell was there, and I said, oh, I love that smell. And I was on the playground, and kids were like, ooh, that's so gross. You're so gross. That's skunk. How could you like that smell? So I learned that was not something to admit to a lot of people.

But I have since encountered many people who admit to me that they like the smell of skunk.

(SINGING) Brains On.

[CLEARS THROAT]

MOLLY BLOOM: When it comes to gross, none of our senses can escape, even hearing. Isa, are your ears ready for some grossness?

ISA CAMARGO: Yes, maybe, I don't know for sure.

[LAUGHTER]

MOLLY BLOOM: Maybe not. We'll see.

ISA CAMARGO: It depends on how gross it is.

[LAUGHTER]

MOLLY BLOOM: Good point. Well, let's see. It's time for the mystery sound.

[WHIRRING]

[GONG]

[ASCENDING AND DESCENDING WHISTLE]

ISA CAMARGO: (WHISPERING) Mystery sound.

MOLLY BLOOM: Here it is.

[SLURPING AND SLOSHING]

[BELCHING]

Oh, my gosh. Oh, my gosh.

[LAUGHTER]

ISA CAMARGO: Oh, my god. Bleh!

[LAUGHTER]

MOLLY BLOOM: Very good use of the sound.

ISA CAMARGO: I don't know what it is, but it sounds disgusting.

MOLLY BLOOM: Yeah, so on a scale of 1 to 10, how gross was that sound?

ISA CAMARGO: 110.

[LAUGHTER]

MOLLY BLOOM: Yes, it's a pretty gross sound, so sorry to everybody. So what do you think that that sound was? What is your guess?

ISA CAMARGO: OK, so it sounds like somebody squishing slime. But then I hear somebody eating something. So I'm not too sure.

MOLLY BLOOM: Stick around. We will reveal the disgusting answer a little later in the show.

[MUSIC PLAYING]

We are so excited to share with you that we wrote a book. It's called *It's Alive, From Neurons and Narwhals to the Fungus Among Us*. It's all about the amazing living things on this planet, from giant blue whales to teeny tiny bacteria and everything in between. There are match-ups, comics, mystery photos, and even a feature called the Moment of Ew, where we share our favorite gross facts we found while writing the book.

It comes out September 8, but you can preorder it right now. Just head to BrainsOn.org to find the link. Or if you order from our very own local Minneapolis bookshop, Magers & Quinn, you'll get a bonus *Brains On* bookmark while supplies last. There's a weird brain on it, and it's super cute. To get it go to MagersandQuinn.com. That's all one word, Magers, M-A-G-E-R-S, and Quinn with two n's. They're also hosting a live virtual event where you can hang out with me, Sanden, and Mark. That's on September 9.

We'll also be live with a virtual event through Blue Willow bookshop in Houston on September 12 and another virtual event with Once Upon a Time in Southern California on September 26. Go to BrainsOn.org to find out more about those events. See you there.

ISA CAMARGO: You can also go to BrainsOn.org/contact to submit mystery sounds, drawings, high fives, and questions.

MOLLY BLOOM: That's what Olivia did.

OLIVIA: Hi, this is Olivia from Utah. My question is, why do worms come out when it rains?

MOLLY BLOOM: We'll answer that question and check out the newest members of the *Brain's* honor roll at the end of the show.

ISA CAMARGO: Keep listening.

[MUSIC PLAYING]

You are listening to *Brains On* from American Public Media. I'm Isa Camargo.

MOLLY BLOOM: And I'm Molly Bloom.

ISA CAMARGO: This episode is disgusting but in a good way.

MOLLY BLOOM: Right, we're thinking about all the things that gross us out and why. Isa, if you were programming a robot, you need to teach it all about the world, how would you describe the concept of gross to the robot?

ISA CAMARGO: So I would probably tell the robot that gross needs to be really disgusted out, and it can make you gag. It can make you plug your nose. It can make you do all sorts of stuff.

MOLLY BLOOM: Very good answer. Well, our listeners have a few ideas of how to explain gross to a robot too.

[SQUISHY SOUNDS]

SUBJECT: Well, I don't like the smell of popcorn.

SUBJECT: Gross is something that people think is weird, and they don't like to be around it or touch it.

SUBJECT: Like slime and stuff.

SUBJECT: Things they're slimy, like boogers.

SUBJECT: Well, some people think snakes are gross.

SUBJECT: I would describe like when you throw up.

SUBJECT: Gross is something that makes you go bleh!

SUBJECT: It gives me a shiver down my back.

MOLLY BLOOM: Thanks to Theo and Alex from Woodbury Minnesota, Leo from Portland, Oregon, Reese from Minneapolis, Lucy from Fairfax, Virginia, and Donovan from Orlando, Florida, for those truly gross descriptions.

ISA CAMARGO: A lot of what we might think is gross is learned. We're not born thinking it's gross.

MOLLY BLOOM: Remember our pal Rachel Herz, the one who wrote the book about gross things? Let's bring her back to answer a couple more gross questions. Here's one from Taro.

TARO: Why do people think that rats are gross, scary, and dirty animals?

RACHEL HERZ: OK, well, the idea about rats being gross and dirty, that comes from also understanding the concepts of contamination. And so we've had this idea because we believe in the fact that, for example, rats can carry disease that, therefore, they're disgusting. But there's nothing inherently bad about a rat. You can have a rat for a pet, and it can be perfectly clean.

And the thing with animals is that they could carry a variety of different kinds of parasites or other kinds of microorganisms that could be dangerous to us. But we don't necessarily know that just by looking at them. And so maybe your dog or your cat actually has something that you shouldn't have too much contact with, but you're totally OK with them licking your face because you love your dog or your cat.

So we have to think about the way we're thinking about the animal and then question, is there something good or bad about what they're maybe bringing to us?

ISA CAMARGO: Are there things that people used to think were gross but don't mind now?

RACHEL HERZ: Yes, that's a great question, and food is another really good example of that. So for example, lobster, most people today think about lobster as being a luxury dinner. It's really expensive. Often, it's only available at certain times of the year. But go back a couple 100 years, it was considered totally garbage food that nobody else wanted to eat. And so just the fact that time has changed and along with it our perceptions about what is good to eat.

ISA CAMARGO: I love lobster.

[LAUGHTER]

[MUSIC PLAYING]

[TOUCH TONES BEEPING]

LENNY OK, lobsters. OK, everybody, it's time. Let's get this meeting started. Let's get it going. So we should say who's
LOBSTER: here. I think you all know me. I am Lenny Lobster, of course, head of marketing. Lily.

LILI LOBSTER: Thanks, Lenny. Hi, Lily Lobster, Deputy of Public Relations.

LUCY LOBSTER: Oh, hi, I guess I'm next. Hi, I'm Lucy Lobster, Creative Director.

LENNY Hey, Lucy, all right. And I know we have some lobsters on the phone. Who's on the phone with us?
LOBSTER:

ROCK: It's just Rock from the mid-Atlantic office. Hi, everyone.

ALL: Hi, Rock.

LENNY OK, so today is the kickoff meeting for our big advertising initiative, Back to Bugs colon an Anti-popularity
LOBSTER: Campaign.

LILI LOBSTER: So stoked.

LUCY LOBSTER: Finally.

LILI LOBSTER: I'm so excited.

LUCY LOBSTER: This is so exciting.

LENNY I put together a quick PowerPoint just so we're all on the same page here. OK, here we go. Lobsters, currently, we
LOBSTER: are the symbol of luxury.

LUCY LOBSTER: Is that you in the photo, Lenny?

LENNY Good eye, Lucy. Yeah, that's me on vacation last summer. Anyway, humans, they want a fancy dinner, they think
LOBSTER: lobster.

LILI LOBSTER: But if it's a fancy dinner, why are they wearing bibs? Really? Humans are so strange.

ROCK: So true.

LENNY OK, OK, but it wasn't always this way. When Europeans first came to North America, they saw us on the beaches
LOBSTER: and thought we were vermin.

LUCY LOBSTER: Cockroaches of the sea.

LENNY Correct, we were the opposite of stylish. Back then, we were very cheap, and fancy people thought we were
LOBSTER: gross.

LILI LOBSTER: Those were the days.

LENNY In fact, servants demanded a clause in their contracts that said they could only be fed lobster three times a
LOBSTER: week. This is what we're trying to go back to, Lobsters. This is what we're trying to recapture. We were happy being disgusting, but then the people who ran the railroads realized they could pull a fast one on the customers who didn't live in the Northeast. They didn't know lobsters were gross, so the railroad companies could present us as trendy and exotic, a real delicacy.

ROCK: Oh, that's some good marketing.

LENNY Don't I know it. And once people were told that lobsters were awesome, they thought we were delicious. When
LOBSTER: people came to the Northeast from other parts of the country, they were seeking out lobster. Our popularity led to overfishing, and then our prices rose.

LUCY LOBSTER: And so we became a sign of luxury.

[COLLECTIVE SIGHS]

LENNY So today, we are spitballing. How do we get back to that image, cockroach of the sea? How do we change the
LOBSTER: perception of eaters everywhere?

LUCY LOBSTER: Love leaning into that bug idea. Bugs are our relatives. How about something with a family tree.

LENNY Ooh, I like where you're going, Lucy. I like it.
LOBSTER:

ROCK: Maybe a viral campaign where we get celebrities to tweet bad stuff about us.

LILI LOBSTER: Or maybe a viral campaign where we just make everybody sick.

LENNY Like actual viruses?
LOBSTER:

LILI LOBSTER: Yeah.

LENNY Well, let's put a pin on that one for now. Let's think about that one.

LOBSTER:

LILI LOBSTER: OK.

LENNY Well, our time is almost up, and it looks like, yes, someone is waiting for this conference room. I tell you what
LOBSTER: though. I cannot wait to hear what you and your teams come up with. Back to Bugs, come on crustaceans. We can do it.

[MUSIC PLAYING]

[CHATTERING]

LUCY LOBSTER: That was a great PowerPoint. Good job.

LILI LOBSTER: He dos have a way with words.

ROCK: Hello, guys?

LILI LOBSTER: When his claws get going, I'm just--

ROCK: Hey, anybody still in the room? OK, then.

MOLLY BLOOM: Lobster are really not that different than insects, so would you eat you think crickets or cicadas or worms? Have you ever tried those?

ISA CAMARGO: I've never tried them, and I probably never will.

[LAUGHTER]

MOLLY BLOOM: Well, actually, eating bugs is a lot more common than you might think. And that brings us to this question.

LAURA: Hi, this is Laura from Elizabethtown, Pennsylvania. My question is, why do some foods taste gross to some people and yummy to other people?

MOLLY BLOOM: Like Rachel said earlier, the only thing we naturally find gross when we're babies are bitter things. Everything else is taught. So if the idea of eating bugs is gross to you, that's what you've been taught.

SILEO: I'm Sileo. I am a food and culture writer, and I'm one of the cowriters of *Meal*.

BLUE My name is Blue Delliquanti. I'm an illustrator and comic artist, and I am the other cowriter of *Meal*. *Meal* is about
DELLIQUANTI: a girl who's trying to get a job at a cool new restaurant that specializes in making meals out of bugs.

SILEO: Outside of the US, there are more restaurants that serve insects all the time. Here, it's still kind of a novelty. But in the rest of the world, like in Mexico where I lived for a while, there were restaurants that just happened to have giant ants on their tostadas or crickets on their guacamole. And that was just a normal thing.

BLUE In a lot of places in Africa and Asia and Central America and South America, they eat insects a lot. It's like going
DELLIQUANTI: fishing. It's like something that you can go out and collect for fun with your family or your friends.

SILEO: It's like if you go to a pick-your-own strawberry orchard, you know?

BLUE Yeah.

DELLIQUANTI:

[LAUGHTER]

If you eat a larva, there's a lot less to deal with. There's not legs or hard parts. It's just a soft, delicious, gummy--

SILEO: Squishy.

BLUE Yeah.

DELLIQUANTI:

[LAUGHTER]

SILEO: It's an easy package to eat. But a more mature insect, like the grown up water beetle, there's a lot of hard material that you can't really eat. So you just take off the stuff that you can't eat. In the insect's case, it's the outside part, the shell. And you just eat the fillet of the water beetle.

BLUE Mealworms are a flavor that I think are easy to compare to flavors that people have had before. I find them to be
DELLIQUANTI: like nutty, a little proteiny. And it's really easy to mix with stuff like-- I've make it in Curry, which is really tasty. And they're very easy to raise and grow on your own.

We already eat insects and things like-- there's an insect called cochineal. And they have been harvested for many, many, many years because they're a great source of a red dye that's safe to eat. It makes red stuff redder, like clothes or lipstick. But you also see it in things like red deserts, like red velvet cake or certain drinks or jams and jellies. So we already do eat bugs in regular foods and snack foods too. But yeah, It'll be interesting to see where that goes with bugs that are less squished and more easy to recognize.

[LAUGHTER]

SILEO: If you're afraid of a food that someone's offering you, the best thing to do would be to ask them why they like it? And hearing about that will help you be less scared.

[CRICKETS CHIRPING]

ERIC Fortunately, the insects I like to eat are different than the insects I like to study. My name is Eric Middleton. I'm
MIDDLETON: an entomology graduate student at the University of Minnesota, and I study bees and other beneficial insects and how they could be useful for agriculture.

One of my favorite insects to eat and one that's very commonly eaten throughout the world are crickets and grasshoppers. I think they have a good flavor. They're nice and crunchy, kind of like chips. I've also eaten tempura fried tarantula spiders. And that was probably my most interesting experience in entomophagy.

So I've always thought that eating insects just sounded like a fun, interesting idea. My research involves looking at how we can use insects to better produce food. And so also a little pet interest of mine is could we just eat insects? I think the rest of the world is on to a really great idea, and I thought it'd be fun to try to experiment with that and play around with it a little bit myself.

Early on, I heard about this. And my dad and I went out into our garden-- we had lots of grasshoppers at that time. We thought, you know what? We know other people eat insects. We know that grasshoppers are something they eat. Maybe we should give it a shot. Well, insects, while they are food, you have to cook them well. Otherwise, just like anything else, you can ruin them. And unfortunately, that first time, we didn't cook them particularly well.

We froze them. We pulled off all the legs and wings because those aren't quite as tasty. And then we ended up boiling them. And like shrimp if you boil them, they actually turn red. And honestly, we should have taken them out at that point and eaten them like that. But then we additionally fried them with a little bit of batter. And unfortunately, that overcooked them a bit. So they lost most of their flavor. They were just kind of crunchy. But since then, we've had a bit more success on successfully cooking insects.

[MUSIC PLAYING]

I do think eating insects will catch on more, in large part because producing things like beef and other meats that we eat takes lots and lots of resources, lots of land and water. And producing insects takes a lot less. So this is the kind of thing that, if we're worried about feeding a growing population, eating insects is a very viable way to go.

[MUSIC PLAYING]

MOLLY BLOOM: Eric also competed on the show *American Ninja Warrior*. Yes, he beat the warped wall. And he told me he was inspired by insects.

ERIC MIDDLETON: I would always think, wow, these are such amazing athletes. Look at this ant carrying something above its head and running along for what would be the equivalent of miles and miles. So insects were also a great inspiration for me to say, you know what? I want to leap like a flea. I want to soar like a dragonfly when I'm going through these different obstacles.

[CHILDREN SHOUTING]

MOLLY BLOOM: So Isa, we're going to go back to grossing out our ears. I'm going to play the mystery sound one more time. Prepare yourself.

ISA CAMARGO: I can do this. Here we go.

[LAUGHTER]

OK.

[SLURPING AND SLOSHING]

[BELCHING]

MOLLY BLOOM: That part is the worst.

[LAUGHTER]

ISA CAMARGO: I'll do it again. Oh, my god.

MOLLY BLOOM: Oh, man.

ISA CAMARGO: I was cringing through that whole entire mystery sound.

MOLLY BLOOM: Oh, it's rough. OK.

[SIGHS]

Gross. All right, so I think we probably make our gross sound once for old time's sake. Let's make it. 1, 2, 3.

ISA CAMARGO: Bleh! Bleh!

[GAGGING]

Sorry, I went a little overboard.

[LAUGHTER]

MOLLY BLOOM: The gross sound is almost equally gross.

[LAUGHTER]

ISA CAMARGO: Oh, my god.

MOLLY BLOOM: OK, so Isa, any new guesses about that disgusting sound?

ISA CAMARGO: OK, still sounds like somebody's squishing slime.

MOLLY BLOOM: OK, that's an excellent guess.

ISA CAMARGO: But it also sounds like a dog slobbering.

MOLLY BLOOM: Yes, I kind of thought there was a dog sounding sound in there as well.

ISA CAMARGO: It also sounds like somebody eating, so I'm not too sure what to say.

MOLLY BLOOM: Eating, squishing, dogs, or something going on there. You ready for the answer?

ISA CAMARGO: A dog eating squishy slime.

MOLLY BLOOM: Perfect. Yes, all right, here's the answer.

MATT DAVIES: The sound you just heard was a tomato being eaten very, very aggressively. My name is Matt Davies, and I'm a Foley Artist.

MOLLY BLOOM: Isa, do you know what a Foley Artist is?

ISA CAMARGO: Nope.

MOLLY BLOOM: Well, a Foley Artist--

ISA CAMARGO: That makes a lot more sense now.

MOLLY BLOOM: Yes, so you were very close. There was something being eaten and squished. Well, a Foley Artist makes sound effects for movies, and they add everything from simple sounds like footsteps and doors closing to fantastical sounds, like lasers or monsters. And Matt often uses everyday things to make really gross sounds.

MATT DAVIES: Some examples of where I would use a tomato would be if I need to do a really disgusting zombie bite--

[SLOBBERY CHEWING]

--or a really slimy creature that's maybe got a really big mouth.

[SLOBBERY CHEWING]

All of that liquid inside is moving around as you're squeezing it and as they're all squirting out. So it's acting like a really big zit almost.

[SLOBBERY CHEWING]

Another sound I really like that's also a classic is celery.

[CRUNCHING]

And I might use this sound for more of the kind of gross noises that can happen with things like bone breaking or something like a creature that's really rickety and is very spindly. So a lot of the time, gross sounds that you might hear aren't actually that gross in real life. And we might experience them all the time. So one of my favorite props of all time is just simply a rag. A rag soaked in water and then wrung out a little bit or just damp, maybe it's dripping a little bit, can create a really slimy, nasty sound.

It doesn't actually seem that gross, but if you just take the sound by itself and you apply it to a really gross slithering creature with tentacles, then all of a sudden all you're seeing and hearing is just this gross creature. So the subjectivity of the goeey, messy sound has really transformed because of the visual that you're watching.

[SLOSHING]

One of the things I love to do the most is just simply picking up objects and making them make a sound and then just hold them up to my ear. And often, that's when I discover things. So it might be making breakfast in the morning, and I'm waiting for the toast to go. And I have a mug that I need to wash. And the squeaky sound of the sponge hitting the side of the mug--

[SQUISHY, SQUEAKY SOUND]

--might give me an idea. Maybe it sounds like a frog ribbiting or something like that. And just being curious all the time about actively listening to things that are around you can give you these amazing ideas. Even if you don't use them for anything, you'll get enjoyment out of them. And you can share them with people.

[SQUISHY, SQUEAKY SOUND]

[MUSIC PLAYING]

MOLLY BLOOM: We naturally want to protect our bodies from disease and illness.

ISA CAMARGO: And a lot of what we find gross comes from that idea.

MOLLY BLOOM: But what's gross can depend on the culture you grow up in.

ISA CAMARGO: One person's bleh is another person's yum.

MOLLY BLOOM: And things change. What we think is bleh now, might not be so bleh as our perceptions change.

ISA CAMARGO: Getting over what we think is gross might actually benefit us in the future.

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

ISA CAMARGO: *Brains On* is produced by Marc Sanchez, Sanden Totten, and Molly Bloom.

MOLLY BLOOM: We had production help from Lauren Deet and Emily Bright.

ISA CAMARGO: Michael Osborne and Bill Johnson engineered the show.

MOLLY BLOOM: Special thanks to Jill Ferris, Cecile Sarabian, Tracy Mumford, Eric Ringum, Marianne Combs, and Hans Buetow.

Brains On is a nonprofit public radio production. We rely on listener support to keep making new episodes.

ISA CAMARGO: Listeners like you support *Brains On* today at BrainsOn.org/donate.

MOLLY BLOOM: In addition to the warm fuzzies of supporting the show, we also have some cool thank you gifts to choose from.

Thanks.

ISA CAMARGO: And before we go, it's time for the moment of (SINGING) ummm.

[UMMING]

VARIOUS Um.

PEOPLE:

VARIOUS Um.

PEOPLE:

VARIOUS Um.

PEOPLE:

OLIVIA: Hi, this is Olivia from Utah. My question is, why do worms come out when it rains?

KELSEY U: My name is Kelsey Yu. I'm a professor at the Department of Soil, Water, and Climate at the University of Minnesota Twin Cities.

[MUSIC PLAYING]

We might think that earthworms are afraid of being drowned in the water, and that's why they come out. But truth is that earthworms, they don't really get drowned in the water. They can breathe in the oxygen in the water through their skin. But some of the reasons they don't really do well when the water in soil run out of oxygen. So after the rainfall and the water fills the soil pores and earthworms begin to breathe in the oxygen in the water. And once this oxygen depletes, then earthworms are nearing being suffocated. So they need to come out.

There are about 3,000 known earthworm species. Some of them don't really care. So they can be happy after the rainfall and they never come out. So there are many other ideas why earthworms come out after the rain, and one is that, when it rains hard, then it makes sound. It also makes vibration in the soils, so that make earthworms feel that they are being chased by their predators, for example, moles. So earthworms, when they feel they are being chased by moles, they come out.

We are free to be wrong, but it's good to have a guess that you can actually prove wrong or prove correct.

[MUSIC PLAYING]

MOLLY BLOOM: It's always raining here at *Brains On* headquarters, raining with awesome questions, mystery sounds, and drawings, that is. We like to give a shout out to all the curiosity seekers that fill our digital and physical mailboxes with amazement. Here are the newest additions to the Brain's honor roll.

[MUSIC PLAYING]

[LISTING HONOR ROLL]

(SINGING) Brain's Honor Roll [INAUDIBLE]

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

ISA CAMARGO: Thanks for listening.