

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

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

[HUMMING]

BOB: All sharpened. Hi, Sanden.

SANDEN
TOTTEN: Bob, how are you doing? Hey, is now still a good time to catch up?

BOB: Sure. One second. I'm right in the middle of getting my treats ready for all the trick or treaters-- freshly sharpened pencils. Kids love pencils.

SANDEN
TOTTEN: Yeah. Halloween isn't for a few weeks, though.

BOB: Well, this is just the first step of my preparations. I'm going to make one of those scary front lawn displays.

SANDEN
TOTTEN: Ooh! Like some giant skeletons? Oh, or maybe a tombstone. Personally, I love a good cobweb.

BOB: Oh, no. Way spookier. I'm renting a fog machine and then putting a filing cabinet out front. And when you open it, the files are out of order.

SANDEN
TOTTEN: Oh, OK. Wow. Mm-hmm. That sounds scary. Sure.

BOB: The Q's are before the B's. The W's are up way up by the L's. Alpha pandemonium. Literal chills up and down my spine.

SANDEN
TOTTEN: Uh, yeah, definitely spooky. Hey, are you dressing up for Halloween this year?

BOB: Thank you for asking. I am, indeed.

SANDEN
TOTTEN: Ooh, care to share?

BOB: I'm going as a popsicle stick.

SANDEN
TOTTEN: Ah, a popsicle stick, I should have guessed.

BOB: And the flavor is a pumpkin spice popsicle stick.

SANDEN
TOTTEN: Naturally. Yeah, that's perfect.

BOB: I'm going to smell amazing.

SANDEN Smell-- oh, I bet you're going to smell great. Hey, are you going to dip the top half in orange so it looks--

TOTTEN:

[MUSIC PLAYING]

MOLLY BLOOM: You're listening to Brains On from American Public Media, I'm Molly Bloom, and I'm here again with our pal, Gus, from Seattle. Hi, Gus.

GUS: Hey, Molly.

MOLLY BLOOM: Gus has been our co-host for every episode we've made about this pandemic. This is our 10th one. It's been about 18 months, and we've all weathered so much change.

GUS: Yeah. We're making it through a very rough time.

MOLLY BLOOM: And you're all doing a great job. The world is asking a lot of kids right now, and you're stepping up in amazing ways. We are very proud of you.

GUS: And to let just how proud, we're going to give you special shoutouts throughout the episode.

MOLLY BLOOM: First, here is a mega huge, super giant, great job. Hit it!

SPEAKER: Great job!

GUS: And here's a super teeny, tiny, mouse-sized good job.

SPEAKER: Good job.

MOLLY BLOOM: So Gus, what is new with you now? I think you are back in the school building. Is that right?

GUS: Yeah, that is right.

MOLLY BLOOM: So how is it starting school this year compared to last year?

GUS: Uh, I actually like it a lot better. I liked online school because I got to stay home all day. But I like this better because I just-- I get to go to-- like, I'm in sixth grade now, so that means I get to go to the-- like I go from class to class instead of staying in one class like all day. And so I get to go to all the different classes, and that's really fun. Like, I have-- I have a new band class, which is really fun. I have Japanese. I have-- I like science too, I guess.

MOLLY BLOOM: That's awesome. And so are there parts of school that you're finding that are really happy to have back in your life that you're kind of like forgot? Like, oh yeah, I like this about school.

GUS: Yeah. I like having band class in person because it's not just-- it's just not the same over Teams, like Microsoft, or whatever. Because it just doesn't sound right. But I like it in person a lot better, which I get to do now.

MOLLY BLOOM: That's awesome. So how do you do-- how do you play instruments around other people safely with COVID? How do you do that?

GUS: Oh, OK. Yeah. That's actually kind of weird. So we have these special masks that have holes in the front, at least for trombones, which is what I play. They're different for every instrument, but I have one that opens up in the front, kind of like a slit, that I put the mouthpiece into. And then for the bell of the trombone, you have to put a big like cloth with a cinch over it, kind of like a bag, sort of, that like clings to the end of the bell that keeps the-- keeps the germs from getting out.

MOLLY BLOOM: So like the end of the trombone where the music, the air comes out. Your trombone is basically wearing a mask.

GUS: Basically, yeah.

MOLLY BLOOM: Very nice. That's really cool. I didn't know that. What are you doing outside of school that you're enjoying?

GUS: Soccer, for sure. I'm doing soccer again since last year. Because last year, obviously, I didn't get a chance to do soccer. But before that, I did it a lot. And this year, I got to do it again, and it's really fun.

MOLLY BLOOM: So it's like you're back doing things with other kids now?

GUS: Yeah.

MOLLY BLOOM: Are you doing more, like, social stuff outside of school too, beyond soccer, with other friends then?

GUS: I mean, on Halloween, I'm going to go-- I mean, I think I'm going to go trick or treating with my friend. We're actually-- we're going to both be plague doctors.

MOLLY BLOOM: Oh, nice. Perfect. And you guys are all wearing masks at school?

GUS: Yes. Except for lunch time. Lunch time is kind of weird. But at lunchtime, because we have our masks off to eat, we all sit outside and we all face the same direction.

MOLLY BLOOM: Oh, interesting.

GUS: So that we're not breathing in each other's faces. And only the sixth grade sits outside because like half of the kids aren't vaccinated because it's the beginning of the school year.

MOLLY BLOOM: Right. So by the end of the school year, you'll be 12 and vaccinated.

GUS: Yeah.

MOLLY BLOOM: But maybe you'll even be able to get your vaccine sooner than that, potentially.

GUS: Maybe.

MOLLY BLOOM: Fingers crossed for that.

SPEAKER: B-B-B-B-B-B-B-B-B-Brains On.

MOLLY BLOOM: Around the world, lots of kids are going back to school in person. But some schools are staying remote, and in-person school looks different from place to place.

GUS: The good news is, for kids over 12 and adults, we have vaccines that give us a head start at fighting off the coronavirus.

MOLLY BLOOM: And scientists are working on vaccines for younger kids too. The hope is that more kids will be able to get vaccines later this year or early next year.

GUS: More vaccines for more people is a big deal.

MOLLY BLOOM: Because if vaccinated people do come across the coronavirus, they're much less likely to get infected.

GUS: And if a vaccinated person does get infected, they'll usually avoid getting very sick.

MOLLY BLOOM: Plus, when adults get vaccinated, it helps to protect kids around them who can't get vaccinated yet.

GUS: That's very important.

MOLLY BLOOM: Yes. But vaccines can't save the world from coronavirus all by themselves. Just like in any good superhero showdown, vaccines need a super team. Meet the Spread Stoppers.

SPEAKER: This pandemic, a super team of heroes will rise. But first, they must find the heroes in themselves.

So then I was like, of course I don't use Zoom. It's the fall of 2019. Hello? Why would I use Zoom when I could just go see people in person? I know, right? So silly.

What did you say?

I said, why would I use Zoom-- Look, forget it. Why don't you just come closer so you can hear me?

No. No, thanks. My superpower is standing 6 feet away from people.

What kind of power is that?

Oh. Maybe they're right. Being sergeant socially distanced feels kind of silly right now. In 2019, when it's like super cool to stand really close to people.

Hey, stranger. Don't let their snickering get you down. My power is wearing this mask over my mouth and nose. They laughed at me too. But I just know in my heart one day, I will help save the world. Hi, I'm the Masked Mentor.

I'm Sergeant Socially Distance. Nice to meet you.

Meanwhile, a villainous virus kicks off a plan to bring the world to its knees.

Soon I'll infect all the lungs of the world. Then the planet will be mine.

And after that, I'll probably open up a bunch of soup restaurants only for viruses or something, maybe go on Dancing With the Stars. I really haven't figured out the end of this plan yet.

As the evil coronavirus swept the globe, our heroes set out to help.

Breaking news! We're joined now by two superheroes who say they know how we can stop this virus. Welcome, Captain Socially Distanced and the Masked Mentor.

Um, it's Sergeant.

So, will you be able to destroy the virus? Hopefully by next Wednesday at 8:00/7:00 PM when I have tickets to see Selena Gomez, who just released an album right now in early 2020, which is the time we're in.

Well, no. We don't destroy the virus, but we can teach you to protect yourself.

What about you, Major Socially Distanced, can you zap it with lasers or something?

Actually, it's Sergeant. And no. I'll teach you to keep your distance from other people, though. You see, this virus spreads from person to person. And if we stay far enough apart, it's hard for enough of the virus to travel from one infected person to another. And--

Was that cameraman Doug? Is he sick? Are we all going to be sick?

Fear not, talking newsperson. It is I, the Test Master. I help test people to find out if they have the coronavirus or just an ordinary cough. Let's use my swabs of safety.

Oh, thank goodness.

Cool. Another hero.

I am the hero. If you test, you can find out who is sick, and simply have the sick people stay home. Spread stopped!

Well, sometimes people don't feel sick, so they don't think to get a test. But they could be spreading the virus without any symptoms.

Yeah. If you use a mask, like I suggest, you can limit how much virus you spread if you're sick without symptoms.

Well, just test Doug already. Stop arguing.

Will our heroes learn to work together? Stay tuned to the Spread Stoppers.

Brains, Brains, Brains On.

Excellent work. You are doing a good job.

MOLLY BLOOM: All right, time to answer a listener question. This one was sent in by [? Liron ?] in Potomac, Maryland. And she wanted to know, what is the new COVID-19 variant and how can you protect yourself from it? This is a great question. You may have heard that the coronavirus itself has changed a bit in the last few months. It's evolved into new versions called variants.

GUS: Scientists have given these slightly different versions of the coronavirus different names. That way, they can keep track of them. Those names are based on the Greek alphabet.

MOLLY BLOOM: The Delta variant is the one getting the most attention because it's the best at spreading.

GUS: But a new name doesn't mean a totally new virus.

MOLLY BLOOM: The good news is that we can protect ourselves in the same ways we've been protecting ourselves already--wearing masks, keeping your distance from others, and getting vaccinated when you can.

GUS: It's normal for there to be variants of viruses, especially when there's a lot of that virus around.

GILLY: So why not let me, Gilly, a.k.a. Everyone's favorite virus, tell you all about it.

GUS: I figured the talking viruses would show up right about now.

MOLLY BLOOM: OK, Gus, let's take a little break.

GILLY: Later humans. It's time for Going Viral with Gilly and Gilly.

[MUSIC PLAYING]

So, virally nose, you probably noticed something is missing. It's my usual virus co-host Kara. She's off today, filling in as host on our other favorite pod, Call Your Germ Friend. But that's OK. Because today, I have a special guest co-host, one of my variants.

GILLIANT: I'm still mostly the same Gilly, with a few little changes. But I still want the same things as you, OG Gilly.

GILLY: A scoop of strawberry ice cream with peanuts on top and a human pal to enjoy it with.

GILLIANT: I also still dislike the same things as before.

GILLY: Oh, like masks that keep humans from spreading germs and human antibodies and immune cells?

GILLIANT: Immune systems, the worst.

GILLY: So, anyways, Gilliant. Can I call you Gillian? Like Gilly variant?

GILLIANT: Of course.

GILLY: Perf. So, let's hear how you became Gilliant.

GILLIANT: Love to. It was all a part of how I came into existence. It happened on my copy day.

GILLY: Of course, September 23. For the humans out there, what's a copy day?

GILLIANT: It's the day I came into the world. I think humans celebrate this as like a burp day? The day that they were burped into existence.

GILLY: Humans do celebrate when they get formed? Bored? Born. But we viruses don't get burped or borned or whatever it is. We get copied from other viruses. So we have copy days.

GILLIANT: Right. So let me set the scene of my copy day for you.

[MUSIC PLAYING]

Early on September 23, there's a virus, who's a copy of you, regular Gil. A jumble of genetic instructions and proteins with a thin bubble of fat protecting it.

GILLY: Oh, great look. Classic. Timeless.

GILLIANT: That regular Gilly virus, it happens upon a human cell and sneaks its way in.

GILLY: Right. We travel so light. Got to use human cell parts to get anything done.

GILLIANT: Exactly. And what does any virus want to do? Copy itself to make a bunch more viruses.

GILLY: Everybody knows that's the best thing to do when you get into a human cell.

GILLIANT: But here's the thing about making copies. When you're making lots of copies, some of the copies are bound to come out slightly different from the original.

GILLY: Well, sure. Like, if you were copying something by hand, like the same sentence or the same doodle, you might make an exact replica a few times. But once you started trying to make way more, like hundreds more or thousands more or millions more, eventually, some of those copies would have little changes and look slightly different.

GILLIANT: And on my copy day, that's exactly what happened. The virus that looked like you, regular old Gil, made some exact copies. And then it just happened to make a copy with a few changes.

GILLY: And that's you, Gilliant.

GILLIANT: Before I knew it, I had burst out of that cell with all the other virus copies and everyone around was singing to us.

(SINGING) Happy copy day to you. Happy copy day to you. Happy copy day all you Gillies. Happy copy day to you.

GILLY: Is it weird if I say I'm glad you were copied?

GILLIANT: Not at all.

GILLY: Great. I'm glad you were copied.

GILLIANT: You too, Gil. I really hope someday I get to infect a cell and make copies of my own.

GILLY: I don't know. I guess I kind of want to focus on my career and travel.

GILLIANT: Why not both? The more cells you infect, the more chances you have to copy a variant of your own. More copies could mean more changes.

[MUSIC PLAYING]

GILLY: That's tempting. And imagine copying a variant, like the Delta variant of the coronavirus.

GILLIANT: Oh, yeah. That coronavirus was being copied so many times that this variant popped up. And a lot of the time, copying errors make variants weaker. But Delta's mistakes made her stronger. Oh, she is so very annoying.

GILLY: Yeah. She's gotten so much attention. I just heard an interview about her on how I copied this. She was going on and on about outside proteins and those spike proteins that the coronavirus has. Hers have a slightly different shape, and so they're way better at sticking to cells and infecting them.

GILLIANT: Ugh, delta, delta, delta.

GILLY: And when she infects the human, she sneaks into cells and makes her copies really, really quickly. And all those copies can spread to other people sometimes even before the infected person feels sick.

GILLIANT: Honestly, that's so spready, it's not fair.

GILLY: But Gilliant, you have to remember, she didn't change that much. The COVID vaccines the humans made still work against delta. If vaccinated people do get infected by her, they don't get as sick.

GILLIANT: Ha! Take that delta. Maybe with a little rebranding, I can be as well known. How about better than Gilly or Gillies cuter variant or good golly Ms. Gilly?

GILLY: Oh, sheesh. I think we better wrap this up. That's it for today, virally nose. Stay infected and don't get sanitized.

[MUSIC PLAYING]

SPEAKER: I "vant" to tell you, you're doing a great job.

MOLLY BLOOM: OK, let's pause here to challenge our ears. It's the--

SPEAKER: Mystery sound.

MOLLY BLOOM: Are you ready, Gus?

GUS: Yes.

MOLLY BLOOM: Here it is.

[CLANGING]

What are your thoughts?

GUS: Uh, metal.

MOLLY BLOOM: Metal. Nice. Do you want to hear it one more time?

GUS: Yeah.

MOLLY BLOOM: OK.

[CLANGING]

OK. You heard some metal. What else are you hearing there?

GUS: It sounds like a bowl, like a metal bowl with something else. Because it made a clanging sound, but it echoed, sort of.

MOLLY BLOOM: Hmm. Very good ears. We'll hear it again and give you another chance to guess in just a bit.

[MUSIC PLAYING]

We are making an episode about superstitions.

GUS: And we want to know, what's something that you consider good luck? Or what's something unlucky that you avoid?

MOLLY BLOOM: Do you have any good luck or bad luck superstitions?

GUS: No, I don't. But I know that my grandma does. She has a couple superstitions. But one of the ones she told me about is that she knocks on wood.

[KNOCKING]

MOLLY BLOOM: So for good luck, she knocks on wood?

GUS: Yeah, I guess so.

MOLLY BLOOM: Well, listeners, you can share your answer with us at brainson.org/contact.

GUS: That's BrainsOn.org/contact.

MOLLY BLOOM: Which is where we got this question.

SPEAKER: Hi, my name is [? Aya. ?] I live in San Diego, California. My question for you is, how do skunks spray their stink?

GUS: We'll answer that at the end of the show in our Moment of Um.

MOLLY BLOOM: And we'll read the latest group of listeners to join the Brain's Honor Roll.

GUS: So keep listening.

You're listening to Brains On. I'm Gus.

MOLLY BLOOM: I'm Molly, and this is the mystery sound again.

[CLANGING]

GUS: The only thing I can think of is like a table tennis ball and you roll it down a thing and then it activates another thing and then another thing.

MOLLY BLOOM: Like a Rube Goldberg machine.

GUS: Yeah, kind of like that. Like maybe something rolls down a little pipe and then it clangs into a bowl, and then a bowl tips and then lands in another bowl or something.

MOLLY BLOOM: I think that's an excellent guess. Do you want to hear the answer?

GUS: Yes.

MOLLY BLOOM: All right, here's the answer.

NEVE: This is Neve in France, and that was the sound of me dropping an ice cube in warm water.

MOLLY BLOOM: Mm.

GUS: Oh.

[INTERPOSING VOICES]

MOLLY BLOOM: So the cracking was like the ice cube cracks when it gets in that warm water. We don't know that it wasn't a metal copper bowl, though. So that part could have been right.

GUS: Want to hear the ice cubes in my drink?

[RATTLING]

MOLLY BLOOM: Nice.

GUS: Mystery sound.

(SINGING) I am very proud of you.

MOLLY BLOOM: Even though we're seeing more variants of COVID-19, the things we've been using to protect ourselves are all still good ways to stay safe, like using masks, staying socially distanced from people outside your house, especially indoors, and testing to see who has the virus and who doesn't.

GUS: That's right. Speaking of which, let's see what's going on in that superhero epic, The Spread Stoppers.

MOLLY BLOOM: Ooh, pass the popcorn. I cannot wait.

SPEAKER: It's spring of 2021. And it's been over a year since the villainous COVID-19 started spreading. But now, a new defender is fighting back.

Welcome back. It's so nice to be back in the studio instead of at home by myself or on Zoom, which is all I use in this year of 2021. And it's all thanks to a new hero. Welcome to the show, the Vaccinator.

Hi, I'm the Vaccinator. I help get people vaccinated with a new vaccine made by scientists. The vaccine is made of stuff similar to the virus, but it's safe and not infectious. When you get it, the stuff inside the vaccine trains your body's immune system to fight the real coronavirus, if you should ever meet it.

Breaking news, people! That means no more masks, no more distancing, no more tests. Now we can do whatever we want. I can go to indoor rapid breathing contests and lick door handles and eat old tissues like the old days.

No, you actually shouldn't.

I'm pretty sure that's what we did in the old days. I honestly can't remember. Oh well, now we just get the shot and we are all totally protected.

Actually, no. It's still possible to get sick after you've been vaccinated. But if that happens, with the vaccine, you'll most likely get a mild case, or maybe no symptoms at all.

Thanks, The Vaccinator. I'm going to go make a sandwich on the floor of a bus. Good day, everybody.

Even though Vaccinator was a powerful hero, some people who got the vaccine did in fact get sick. And some people were unable to get the vaccine for medical reasons or because it wasn't available to them. And some people chose not to get it. So coronavirus kept spreading.

I'll admit, I, the coronavirus, have experienced some serious setbacks thanks to the Vaccinator. Maybe I should just give up and start making pottery in rural Connecticut like I always dreamed. But no, I must take over the world. I think it's time to release my copy, the delta variant.

Delta, delta, delta.

You were like me, the original novel coronavirus, but with a few tweaks. You may not be the smartest, but you are good at spreading. Isn't that right, Delta?

Mm-hmm. Delta, delta, delta.

Now, go. Infect all those people who aren't vaccinated. And bring me back a sandwich. I skipped lunch!

Soon, it was clear, vaccines alone were not enough.

Delta, delta, delta. Delta, delta, delta.

Oh no, delta is heading for that crowd of people. A bunch of them are vaccinated, so they'll probably be fine. But what about the people who aren't vaccinated?

Delta, delta, delta.

I really need some backup.

Did somebody call for a hero? It's me, the Masked Mentor.

And me. Over here, Sergeant Socially Distance.

And I am, of course, the one and only Test Master. With all of us working together, we'll have an even greater chance of saving the world.

Amazing! Who knew a team of heroes was waiting to rise.

I did. I literally said that right in the beginning of the movie.

Good people, watch out! The nasty delta variant of coronavirus is running loose.

Delta, delta.

But if you all put these masks on to prevent the virus from spreading from mouths and noses.

And stay apart indoors or keep your distance with strangers to keep it from going from person to person.

And get tested regularly so sick people can stay home and not pass the virus on.

And get vaccinated, so your body can fight the virus if you do meet it. Then you'll be protected both inside and out. Together, we can shut down delta and all other versions of the coronavirus too.

No! Delta, delta.

[MUSIC PLAYING]

So, even though vaccines were available and the world was reopening, it took all these heroes working together to keep us safe. And of course, we have to do our part too by wearing masks, practicing social distancing, getting tested, and getting the vaccine when we are eligible. So in a way, we were all the Spread Stoppers.

[MUSIC PLAYING]

Hey, I'm a horse. And I want you to know I'm really proud of you.

MOLLY BLOOM: So we've got pandemic superheroes to rely on. And right now, we need to call in all four superheroes as much as we can.

GUS: They'll be there for us as long as we need them.

MOLLY BLOOM: But eventually, once vaccines are approved for kids and more people around the world have access to shots, we'll have a new superhero to rely on-- immunity. Immunity is when your body is familiar with a virus and knows how to fight it. And that superhero could really change the pandemic.

GUS: I talked to Sarah Zhang about that.

MOLLY BLOOM: She writes for The Atlantic.

GUS: Sarah told me that as more people get vaccinated and more people have some immunity to the virus from those vaccines, things will look different. The coronavirus won't go away completely, but it also won't be a pandemic-causing virus anymore.

SARAH ZHANG: Our immune systems will know what to do as soon as they see the virus. We won't get very sick. We might get some sniffles. Most cases, probably get a mild infection, but won't get very sick. And hopefully, life will look a lot more normal.

MOLLY BLOOM: So the coronavirus would still be around, but we'd be much better prepared to fight it off.

GUS: Yeah. And there are lots of other viruses that we've lived with for a while. We call those endemic viruses.

SARAH ZHANG: Yeah. An endemic virus is just a virus that is always circulating around us. So a good example of that would be the flu. All the viruses that cause common colds are also endemic viruses. The common cold is actually caused by lots of different viruses, including other coronaviruses. So all viruses that we don't really think about that much because they don't usually get us that sick, but these viruses are all endemic.

GUS: What will help the coronavirus get closer to being endemic rather than a pandemic?

SARAH ZHANG: Get more people vaccinated. The way to get to an endemic virus is basically get everyone to have some immunity to the virus. Of course, there are two ways of getting immunity, right? You can get vaccinated, or you can get the virus and hopefully recover. One of these is definitely preferable to the other. But the faster we can get everyone to having some immunity, the faster this pandemic will end.

GUS: OK. And can an endemic virus reverse course and become a pandemic again?

SARAH ZHANG: That's a great question. So for that to happen, the coronavirus would basically have to change so much that our immune systems basically don't recognize it anymore. And scientists I've talked to think that's really, really unlikely. It's really hard for the coronavirus to change so much.

MOLLY BLOOM: Like we heard earlier on Going Viral with Gilly and Gilly, the coronavirus changes by making little copying mistakes.

GUS: And those copying mistakes probably won't be big enough to cause another pandemic, partly because the mistakes lead to fairly small changes.

SARAH ZHANG: The other reason is that our immune responses are really, really diverse. There are parts of our immune system that are really quick acting, there are some that are slow but strong and they recognize different parts of the virus. So there's just so much going on in our immune system that it's unlikely for the virus to change so, so, so, much that we get a new pandemic.

GUS: OK.

SARAH ZHANG: Well, thanks, guys. It's good talking to you.

GUS: Yeah, you too.

SARAH ZHANG: Bye.

GUS: A variant is a slightly different version of a virus.

MOLLY BLOOM: These different versions come from small copying mistakes that happen as a virus spreads.

GUS: All viruses eventually make variants of themselves.

MOLLY BLOOM: But a variant is still just a version of the original virus.

GUS: And we have trusty superheroes that can keep us safe from the coronavirus.

MOLLY BLOOM: Wearing masks, keeping distance, getting tested.

GUS: And getting vaccinated when you can.

MOLLY BLOOM: We're about to hear an answer to the question, how do skunks spray their stink? But first, some super duper quick credits for this episode of Brains On.

GUS: It was produced by Menaka Wilhelm, Sanden Totten, Marc Sanchez, and Molly Bloom.

MOLLY BLOOM: We had production help from [INAUDIBLE]. Our intern is Katherine Sundqvist. And our executive producer is Beth Perlman. We had engineering help from the wonderful Andrew Walsh. Special thanks to Phyllis Fletcher, Juliette Morrison, Jed Kim, Andy Doucette, Stu Bloom, Vicki Kreckler, [? Eric ?] [? Rahim, ?] Coco Sanchez, and Tracy Mumford, and variant Tracey Mumford.

Remember, you can always support our show at BrainsOn.org/fans. You can sign up there for our free fan club, donate, or buy our merch, including our book. That's BrainsOn.org/fans.

GUS: Now, before we go, it's time for our Moment of Um.

[UMMING]

INTERVIEWER: How do skunks spray their stink?

KATELYN Scientists don't really know exactly how skunks make the stinky spray that they spray out. But what we do know
AMSPACHER: is that the spray has these sulfur compounds that help to make it stinky.

Hi, I am Katelyn Amspacher, and I'm a biologist studying skunks at Southern Illinois University. So skunks have these little glands or these little sacs inside of their body where they hold all of this stinky spray, the stinky stuff that they have. And then when they get really scared or if something is attacking them and they want to scare off the animal that's attacking them, they can spray that stinky smell through a little hole. And they can actually direct where that spray is going.

So if they see a person or see a wolf or a coyote that's attacking them, they can direct that spray to go straight at the animal or the person that is attacking them. They can also make a cloud of smell, just sort of like if you had a spray can of hairspray. And so they can just make a whole cloud of smell to try to keep the animal from attacking them. The skunk itself does not smell. The only reason that a skunk smells is because of that spray. So you won't even be able to smell the skunk. The skunk could be sleeping in a bush right next to you and you would not know it unless something bothered a skunk and it woke up and it sprayed that stinky spray.

What we do know is that skunk sprays contain these sulfur compounds. So it's all sorts of different molecules in there with sulfur attached to them. And it's known to have this rotten egg smell. It does not smell good. And it's also known to be sort of this yellow color. So we don't really know how it's created, where it comes from, but we do know that there's this sulfur that's very characteristic of this spray. And for obvious reasons, not a lot of people have really wanted to study the skunk spray itself. It's kind of stinky.

MOLLY BLOOM: This list smells so sweet to me. It's the Brain's Honor Roll. These are the incredible listeners who keep us going with their questions, ideas, mystery sounds, drawings, and high fives.

GUS: Wait, I have an idea. Now, before we go, it's time for our moment of um.

[HUMMING]

Thanks for listening.