

CHILD 1: You're listening to *Brains On!*, where we're serious about being curious.

CHILD 2: *Brains On!* is supported in part by a grant from the National Science Foundation.

MOLLY BLOOM: Hey, nice costume, Adam. Did you make it yourself?

ADAM: You bet. I decided to be an astronaut.

MOLLY BLOOM: Out of this world.

ADAM: Thanks. I really like yours, Molly. Especially all those swirly colors. You're a lollipop, right?

MOLLY BLOOM: Actually, I'm a Molly-pop, get it?

SANDEN TOTTEN: Did someone say lollipop? Gimme, gimme, gimme. [LICKS]

MOLLY BLOOM: Ah! Stop licking my costume, Sanden.

SANDEN TOTTEN: [LICKS LIPS] Mm, hints of plastic and red paint.

ADAM: Hey, Sanden, sweet costume.

SANDEN TOTTEN: Oh, this? Thank you. This year I wanted my costume to really represent me, so I chose a star, obviously.

MOLLY BLOOM: You are a star, Sanden. And what about you Marc and Menaka? What are you supposed to be?

MENAKA: We're viruses!

MARC: Not just any viruses. I'm Kara.

MENAKA: And I'm Gilly. Isn't it great?

[UPBEAT MUSIC]

SANDEN TOTTEN: Soup's topical.

MARC: What can we say? We're huge fans of their podcast.

ADAM: Me too. I'm totally a viral, you know.

[ELEVATOR PINGS]

Oh, hey there, Elevator. Did you dress up?

ELEVATOR: Obviously. I'm a refrigerator. Look, I even have all these condiments.

[GLASS CLINKING]

A half-empty bottle of ranch dressing, expired sour cream, and limited-edition pumpkin spice mustard.

SANDEN TOTTEN: Nice one, Elevator. Hey, could you bring us up to the 13th floor, please? That's the perfect floor to start my trick-or-treating escapades.

ELEVATOR: But there's a pumpkin carving contest on floor 12. Shouldn't we start there instead?

SANDEN TOTTEN: Hm, tempting but I think floor 13 is better for spooky season.

ELEVATOR: How about floor 14?

[CAT MEOWS]

There are dozens of black cats waiting to be seen there.

SANDEN TOTTEN: Elevator, are-- are you avoiding the 13th floor?

ELEVATOR: Fine. Yes. I'm-- I'm scared of the 13th floor. Don't you know the number 13 is bad luck, Sanden?

MOLLY BLOOM: Come to think of it, you haven't taken any of us to that floor in years. You always have an excuse not to go.

SANDEN TOTTEN: Oh, yeah. Besides, that thing about 13 being unlucky is just baloney, Elevator. Nothing but superstitions.

ELEVATOR: Don't you all believe in superstitions, too? Sanden, I thought you had a thing about saying Bananarama.

SANDEN TOTTEN: [GASPS] Elevator, you know we don't talk about that.

MOLLY BLOOM: That's OK, Elevator, we've got a show to start anyways.

ADAM: To the studio, please?

ELEVATOR: You got it.

[ELEVATOR PINGS]

Going down.

SANDEN TOTTEN: But wait, what about trick or treating? The spook, Molly, the tricks, and more importantly, the treats, the sugary, sugary treats! My blood sugar's dropping right now.

I need a candy, a toffee, a lollipop-- uh, anything. Just shove it in my mouth. Just-- just something to tide me over till we start, please? Nougat? Nougat? [INAUDIBLE] I'll take it.

[FUNKY MUSIC]

MOLLY BLOOM: You are listening to *Brains On!* from APM Studios. I'm your host Molly Bloom. And today, I'm joined by my co-host Adam from Cambridge, Massachusetts. Hi, Adam.

ADAM: Hi, Molly.

MOLLY BLOOM: So today, we are doing an episode all about superstitions.

ADAM: A superstition is a belief that something is lucky or unlucky.

MOLLY BLOOM: Like how some people say it's bad luck to open an umbrella inside.

[SAD TROMBONE]

ADAM: Or how finding a four-leaf clover is good luck.

[CHIME]

MOLLY BLOOM: So Adam, you wrote in asking about why the number 13 is considered unlucky. So do you personally think the number 13 is unlucky?

ADAM: I don't really think it's unlucky. I think it's just a normal number.

MOLLY BLOOM: So where did you hear about people thinking it's unlucky?

ADAM: My mom said that some people think Friday the 13th is an unlucky day.

MOLLY BLOOM: So to help us get to the bottom of why people think the number 13 is unlucky, we asked our pal [? Catherine ?] [? Sundqvist ?] to look into that for us. Hi, Catherine.

CATHERINE Hi, Molly. Hi, Adam. Here in the US, this superstition is super well-known. Some people don't want to leave
SUNDQVIST: their houses on Friday the 13th. And some buildings are actually built without 13th floors.

MOLLY BLOOM: Oh, yeah, I have seen that. Yeah, some airplanes don't have row number 13 either.

ADAM: Once I read a book that skipped the 13th classroom. It went classroom 11, classroom 12, classroom 12b, classroom 14.

CATHERINE So they called 13, 12b instead? Clever. So, yes, this superstition is everywhere.
SUNDQVIST:

But just like the Loch Ness Monster or the Bermuda Triangle, the story behind the superstition is shrouded in mystery. There are a few different ideas about where it might have come from. One idea is that it comes from the story of The Last Supper in the Bible.

[PENSIVE MUSIC]

Jesus was having dinner with his 12 followers, so there were 13 people in total. And Jesus predicts that someone in that very room would betray him. The apostles are shocked, but it turns out he was right.

Not much later, one of them turned on him. This story led people to believe it was unlucky to have 13 people together at a dinner. And later on that the number 13, in general, was unlucky.

Other people think that the number 13 is unlucky because it comes after the number 12. You see, ancient Sumerians developed a number system built around the number 12, a system that we still use to measure time today. There's 12 months in a year, and a day is 24 hours, which is 12 plus 12.

In this system, 12 was seen as a perfect number. And, therefore, 12 plus 1, which is 13, looked less than perfect by comparison. This might explain why we started avoiding it. Another story of why 13 is unlucky involves one of the oldest legal documents in the world.

It's an ancient writing called the Code of Hammurabi. It was full of legal rules, but the 13th law was accidentally left out. This made people think there was something bad or unlucky about the number 13. Later on, we learn that the laws weren't even numbered in the first place, but the superstition stuck.

MOLLY BLOOM: Wow, so there are a lot of different reasons why someone might think the number 13 is bad luck. But I've also heard that some people think the number 13 is their lucky number.

CATHERINE SUNDQVIST: Right. Because there's no science behind the number 13 being unlucky or lucky. People often build their superstitions based on their own experience. In some cases, people have positive experiences with the number 13, so they think it's their lucky number, like pop icon Taylor Swift. She was born on December 13, her first album went gold in 13 weeks, and her first number-one song had a 13-second intro. She even performs with the number 13 on her hand as a good luck charm.

MOLLY BLOOM: That is very interesting. So I guess good or bad, 13 is a number packed with meaning. Thanks for joining us today, Catherine.

CATHERINE SUNDQVIST: Thanks, Molly.

[TAYLOR SWIFT, "THE LUCKY ONE"] And they'll tell you now, you're the lucky one. Yeah, they'll tell you now, you're the lucky one. But can you tell me now, you're the lucky one?

MOLLY BLOOM: Beyond the number 13, there are several other numbers that carry superstitions, so psychologist, writer, and superstition expert Stuart Vyse is here to help us understand why. Welcome, Stuart.

STUART VYSE: Thank you. It's nice to be here.

ADAM: What numbers are considered bad luck in some cultures?

STUART VYSE: The number 13 is bad luck, especially in Western Europe and in the United States, but also in Asia. The number four in Chinese culture and cultures that use the Chinese number system is considered unlucky because it sounds like the word for death. I don't speak Chinese, but that's what I understand is the case. And that's sort of an interesting thing because that's also kind of random that it just happens to be a coincidence that it is.

And I believe that in Italy, the number 17 is also thought to be unlucky. And it has something to do with rearranging the Roman numerals for 17 can create a word that's associated with death also. So there are a few bad luck numbers in different parts of the world.

MOLLY BLOOM: Hey, Adam, do you know how to say the number four in Chinese?

ADAM: [SPEAKING CHINESE]

MOLLY BLOOM: And you know how to say death in Chinese?

ADAM: [SPEAKING CHINESE]

MOLLY BLOOM: So those do sound very similar.

ADAM: They do.

MOLLY BLOOM: But they're a different tone, right? Can you do those two again so we can hear the difference again?

ADAM: [SPEAKING CHINESE]

MOLLY BLOOM: Got it.

ADAM: What about good luck numbers?

STUART VYSE: Well, the most common good luck numbers, of course, is 7 in the United States. And I'm not really quite clear on how that came about but the number of 7 is not just in the US, it's also in Europe and other places. In Chinese culture, eights are lucky numbers. Sounds like the word for prosperous. Sometimes you'll find phone numbers that are all eights so that people will feel good when they're dialing that number.

MOLLY BLOOM: So, Adam, how do you say the number eight in Chinese?

ADAM: [NON-ENGLISH]

MOLLY BLOOM: OK, and then [NON-ENGLISH] means to strike it big or prosperous. So, yeah, those definitely sound very similar. And in Judaism, the number 18 is considered lucky because each Hebrew letter has a number assigned to it.

And if you add up the letters in the word [NON-ENGLISH], which means life, you get 18. So there's lots of numbers that mean good luck. So, Stuart, I'm just wondering, why are number superstitions so common?

STUART VYSE: I think they're popular because, first of all, they're sort free of any meaning unless you place some meaning on it, otherwise they're just numbers. They're completely random and have no special significance. And they do come up often, they're everywhere.

And so it is easy to put some meaning on it. Some people develop a story about the number. Or an association, it reminds them of something, and that gives it a special significance.

- Well, Stuart, this has been super helpful. Thank you so much for speaking with us today.

STUART VYSE: Thank you, it was fun.

CHILDREN: *Brains on!*

ADAM: There's a Chinese tongue twister. It's very fun to say.

MOLLY BLOOM: Oh, can I hear?

ADAM: [NON-ENGLISH SPEECH]

MOLLY BLOOM: Wow, that was super cool. What does it translate to in English?

ADAM: 4 is 4. 10 is 10. 14 is 14. 40 is 40. 40 is not 14. 14 is not 40.

MOLLY BLOOM: Wow, that's so cool. It's a tongue twister in English, too, that's awesome.

SINGERS: Ba, ba, ba, ba, ba, ba, ba, ba, ba, ba, *Brains On!*

MOLLY BLOOM: There are so many different superstitions out there.

ADAM: Both lucky and unlucky.

MOLLY BLOOM: So we asked our listeners to share some of their superstitions with us.

[EERIE MUSIC]

LIV: Me and my mom's superstition is we always cross our fingers when we're going to go to my gymnastics place. Because it's hard to find a parking space, so we always cross our fingers. And that's our superstition. Bye.

JULIAN: Whenever I want to get something good, like when I'm asking a question, I always cross my fingers.

JOE: My superstition is when I make a mistake, I get bad luck.

VIOLET: My grandmother had a superstition that if someone stepped on a person who was sitting on the floor, they would stop growing. My papa also has a superstition that he has sort of the same underwear on the day his favorite soccer team plays or else they'll lose.

MOLLY BLOOM: That was Liv from Harlem, New York. Julian from Vancouver Island, British Columbia. Joe from Williamsburg, Virginia. And Violet from Gainesville, Florida. Thank you for sharing your superstitions with us. Now, Adam, I have something to share with you. It's the--

[MYSTICAL MUSIC]

GIRL: (WHISPERS) Mystery sound.

MOLLY BLOOM: Here it is.

[MYSTERY SOUND PLAYING]

So what's your guess, Adam?

ADAM: Hm, I think it sounds sort of like a ghost.

MOLLY BLOOM: Mm.

ADAM: Or what a ghost would sound like. Maybe like a creepy, pipe organ music.

MOLLY BLOOM: Mm, good guesses.

ADAM: Maybe something related to bad luck.

MOLLY BLOOM: Well, we'll hear it again and give you another chance to guess in just a bit.

[FUNKY MUSIC]

MOLLY BLOOM: We are working on an episode all about the multiverse.

ADAM: It's the idea that there are multiple different universes existing all at once.

MOLLY BLOOM: And we want to hear from you. But what do you think clothes are like in a parallel universe? Are we wearing pajamas all day, underpants on our head, maybe bunny slippers are the new Crocs? So, Adam, what do you think people are wearing in an alternate universe?

ADAM: Mm, I'm thinking maybe like the exact opposite of what we wear.

MOLLY BLOOM: So what would that be?

ADAM: Pants on our head.

MOLLY BLOOM: [LAUGHS]

ADAM: And shoes on top of the pants.

MOLLY BLOOM: [LAUGHS]

ADAM: And then upside-down shirts as pants.

[LAUGHTER]

MOLLY BLOOM: And what would be on your feet? Gloves?

ADAM: Um, I'm thinking maybe hair ties.

MOLLY BLOOM: Oh, totally. Scrunchies on your feet, mm-hmm, I like it.

ADAM: We want to hear your ideas.

MOLLY BLOOM: Send your answer to us at BrainsOn.org/contact. While you're there, you can also send us mystery sounds, drawings, or questions.

ADAM: Like this one.

JUDE: Hi, my name is Jude. I'm from Cameroon. And the question is do cockroaches of hearts?

MOLLY BLOOM: We'll answer that during our Moment of Um right after the credits. And then we'll read the most recent listeners to be added to the *Brains* honor roll.

ADAM: So keep listening.

You're listening to *Brains On!* From APM Studios. I'm Adam.

MOLLY BLOOM: And I'm Molly.

SANDEN TOTTEN: OK, Marc, you can drop it all there.

MARC: [GROANS] Like right here?

[THUD]

SANDEN TOTTEN: No, no, no, no, over there in the far corner.

MARC: OK. [GROANS] A few--

[GRUNTS]

--more steps. [GROANS]

[THUD]

[SIGHS]

MOLLY BLOOM: Hello, Sanden and Marc. What brings you to our taping with that enormous pile of paper?

SANDEN TOTTEN: Oh, that's not just any paper. That's the manual for our experimental go-anywhere elevator. And on second thought, uh, Marc, maybe you should put it over there with a light is better.

MARC: Oye! OK. (GROANING) Just moving it over--

[THUD]

--there.

ADAM: And why did you bring that massive manual to the taping?

SANDEN TOTTEN: Well, we wanted to help Elevator with their fear of the 13th floor, so we dug through the manual to get some ideas. And I think we found something helpful.

MARC: Right. It turns out Elevator's programming is a lot like a human brain. So we figured by helping Elevator understand why people believe in superstitions, it might help Elevator, too.

MOLLY BLOOM: Not a bad idea.

SANDEN TOTTEN: I know, it was mine. And, actually, uh, now the stack of papers is kind of blocking the light, Marc, so huh.

MARC: [SIGHS] Move it back?

SANDEN TOTTEN: Thanks, you read my mind. So while Marc's doing that, let's get Elevator here, and let's get started. Oh, Elevator.

[WHIRRING]

[ELEVATOR PINGS]

ELEVATOR: You called.

[RUMBLING]

Oh, is that my manual?

MARC: [GROANING] All 400,722 pages of it. [GROANS]

SANDEN TOTTEN: Yep, Elevator, we're here to help you get over your superstition of the 13th floor.

ELEVATOR: Wow, something I didn't ask for, thanks.

SANDEN TOTTEN: Oh, you're welcome. So get this, for humans, psychologists think we tend to believe in superstitions as a way to feel a sense of control in a chaotic and often unpredictable world.

ELEVATOR: Chaotic, unpredictable, no control, you described my life. Other people literally control where I go.

MARC: I know, uncanny, right? I mean, there's so much we can't control. From the weather to school assignments to other people's behavior. So for us humans, we tend to do things like keep lucky charms or avoid cracks in the sidewalks or wear the same special underwear every time we play Mario Kart against Sanden. [CHUCKLES]

SANDEN TOTTEN: Oh, that explains the smell.

MARC: Because doing these things gives us a sense of control. Like, we can take actions to change the outcome, even though most of the time we really can't.

ELEVATOR: Interesting. But if doing those things doesn't actually change the outcome, why do it?

MARC: Well, our brains aren't always rational. Sometimes they make decisions based on bad logic. So one reason we believe that superstitions affect outcomes is because our brains always look for simple cause-and-effect relationships. For example, say you're playing baseball. And most of the time you strike out.

**BASEBALL
PLAYER:** God!

MARC: But one day when you're wearing a pink shirt--

[THWACK]

--you hit a home run!

[CHEERING]

Yeah!

[CELEBRATORY TUNE]

Your brain might think, hey, I hit a home run in this pink shirt. Maybe pink is my lucky color. I'll wear pink every time I compete. And next thing you know, you've got a superstition.

SANDEN TOTTEN: Oh, so that explains the pink sweats you wear when we play Mario Kart.

ELEVATOR: Well, I did go to the 13th floor once and then broke down later that afternoon.

SANDEN TOTTEN: Maybe that's when this all started. You made a cause-and-effect association. If I go to the 13th floor, I will break down. In reality, though, you probably would have broken down, either way, that day if you went to the 13th floor or not.

MARC: Another reason we believe in superstitions is something called confirmation bias.

SANDEN TOTTEN: That's when we pay special attention to evidence that supports our beliefs and ignore evidence that goes against them. It's in the name confirmation bias. A bias is when we have a preference for something. And when we say confirmation bias, it means we tend to prefer information that confirms what we already think.

MARC: For example, say I think 6:00 PM is an unlucky hour. So every day from 6:00 to 7:00 PM, I'm very cautious. But stuff still happens. My shoelaces come undone and I trip at 6:15.

[QUIRKY TUNE]

My microwave burrito overheats and explodes--

[SQUISH]

--at 6:37.

[MICROWAVE PINGS]

And a mosquito bites my leg at 6:59.

[MOSQUITO BUZZING]

[SLAP]

I'll use all of that as evidence that 6:00 PM is a dangerous hour for me, even though the same things happen at all other hours, too. And plenty of good things happen between 6:00 and 7:00. I just use those examples to confirm my bias against that time of day.

SANDEN TOTTEN: Oh, that explains why you'll never play Mario Kart after dinner.

ELEVATOR: So your human brains just look for evidence to support your superstitions rather than looking for evidence to argue against them. Typical.

MARC: Well, yeah. And part of that is because, honestly, superstitions usually aren't that big a deal. They're usually pretty easy to do. I mean, it's not much work to walk around a ladder rather than under it or to avoid a black cat.

But having a bad day, that's really hard. So if I think eating a whole can of sardines in the dark makes me feel lucky, why not do it? It's not that big a deal.

SANDEN TOTTEN: Oh, that explains that smell when we play.

ELEVATOR: This is all well and good, but I am an elevator. I am not flawed like you humans clearly are.

MARC: Well, that's where you're wrong. You see, we've read your manual. And it turns out on page 3,064 it says you were programmed to think like a human.

SANDEN TOTTEN: Yeah, I forgot I built you to be more person-like in your thinking so you wouldn't be too logical. That way you'd be better at understanding all of your passengers.

ELEVATOR: Really? Let me see that.

MARC: [SIGHS] OK, let me just grab this huge book--

[GROANS]

--and walk it over one step at a time. Ooh!

SANDEN TOTTEN: Here, it's faster if you just look at the digital copy of the manual on my phone.

[PING]

See?

ELEVATOR: Wow, you are right. So it's your fault I don't like the 13th floor.

MARC: Wait, you had a digital copy this whole time?

[THUD]

SANDEN TOTTEN: Oh. [CHUCKLES] Uh, yeah, I guess I did. Oops.

MOLLY BLOOM: So, Elevator, your superstition is probably just a side effect of you being able to think like a human.

ELEVATOR: Yes. And like a human, it's completely irrational. I don't know why I wasted all this time being afraid of that floor. Only a human would be that silly.

MARC: Well, OK, it might seem silly to you, Elevator, but superstitions are also part of our cultures and they help us tell stories and can be a fun spooky part of the holidays, like Halloween. And I like to think they're kind of a side effect of our very creative brains. After all, us humans are great at thinking outside the box.

ELEVATOR: Not me, all my thinking happens in a box. I am literally just a box.

MARC: So what do you say, Elevator, you want to go visit the 13th floor now?

ELEVATOR: Yes, I do. Thank you. Let's go, everyone.

[ELEVATOR PINGS]

ADAM: Cool, I want to come.

MOLLY BLOOM: Me, too.

ELEVATOR: OK, everyone, get in. 13th floor, here we come. Oh, and Marc, don't forget to bring my manual.

MARC: Ugh, why? Ugh, whatever. Fine, hold up. [GROANS] I should have brought my wheelbarrow for this. [GROANS]

ELEVATOR: Come on, hurry up. We don't have all day.

[DOORS CLOSE]

[WHIRRING]

13th floor.

[ELEVATOR PINGS]

Here we are.

[WHIMSICAL MUSIC]

MOLLY BLOOM: Ooh, the anticipation!

[CREAKING]

MR. Ooh, youhoo, welcome my bestest fiends.

BONEJANGLES:

MOLLY BLOOM: Mr. Bonejangles, our favorite talking skeleton?

MR. [GASPS] Molly Bloo-oom. What a treat.

BONEJANGLES:

MOLLY BLOOM: What are you doing here?

MR. Oh, my dear human, well, you see, I live here. My bone-chelor pad, if you will. I wasn't expecting company, so

BONEJANGLES: don't mind the mess, but do please come in.

ADAM: I can't believe Mr. Bonejangles has been here the whole time.

SANDEN TOTTEN: This place is sweet!

MR. Wow, I am absolutely jazzed to see you. You see, it can get quite bone-ly up here. Hardly anyone seems to visit. And I would offer you something to eat, but my pantry is absolutely bone dry. [SOBS] I really need to go to the market, I'm serious.

ADAM: That's OK, Mr. Bonejangles, I really like what you've done with the place.

MR. Ah, yes, I've got a disco ball, those tiny chairs cool teachers sit on backwards to have a heart-to-heart. And, **BONEJANGLES:** most importantly--

[SPLASHING]

--this never-ending chocolate fountain.

[THUD]

MARC AND Chocolate fountain!

SANDEN TOTTEN:

MR. Oh, please, do help yourself.

BONEJANGLES:

SANDEN TOTTEN: I'm going to dip my chocolate bar in the chocolate fountain and get double chocolate action!

MARC: And I'm going to take this triple chocolate brownie and absolutely dunk it, quadruple chocolate!

[GOBBLING]

SANDEN TOTTEN: Chocolate fountain.

[GOBBLING]

So good!

[GOBBLING]

I'm just going to stick my face in it for a second.

ELEVATOR: Ha, it's not scary here at all.

MR. Scary! I should hope not. I was really trying to go for more of a cottagecore meets mid-century vibe.

BONEJANGLES:

MOLLY BLOOM: Oh, Elevator just had some superstitions about the 13th floor. You see, we're doing an episode all about superstitions.

MR. An episode on superstitions you say? I thought that's what I heard through the vents. That's where I play hide and seek with myself. Anyhoo, first you just drop by unexpectedly, next you ask me to be in the episode!

BONEJANGLES:

MOLLY BLOOM: Nobody said anything about that.

MR. Oh, if you insist, Molly. In fact, I have a game for you. It'll be an osteoblast, I promise.

BONEJANGLES:

MOLLY BLOOM: Uh, sure.

ADAM: I'm in.

MR. Engage the disco ball!

BONEJANGLES:

[SEBASTIJAN DUH, "TOPIC"]

It's time for Good Luck, Bad Luck. It goes a little something like this. I'll give you a superstition. And it's up to you to decide if it's happy-go-lucky or an omen turned yucky. Ready to play?

ADAM: Oh, yeah.

MR. All righty. First up, trimming your nails after dark.

BONEJANGLES:

[HORROR MUSIC]

Good luck or bad luck? Oh, what say you, Adam-mamama?

ADAM: I'm I say it sounds like bad luck.

[SHIMMERING]

MR.
BONEJANGLES: You are correct. It's bad luck. This is believed to bring bad luck in many countries across Asia, including India, Japan, and South Korea. One explanation for the superstition is that fingernail clippings are a piece of your soul.

And, left unattended, rats will eat them off the ground and have the power to transform into you. Yikes! Good thing it's my personal policy to never handle sharp objects after sundown.

[HORROR MUSIC]

Moving right along. Whistling indoors, good luck or bad luck?

ADAM: I have no clue why it would be bad luck, so I'm going to say good luck.

[CAT GROWLING]

MR.
BONEJANGLES: Not quite. To be honest, I was surprised by this one myself. It is bad luck in a few places like Lithuania and Russia. Some people think whistling indoors brings poverty as if you're whistling your money away.

[WHISTLES] Whoo, what a doozy. Oh, man, I just whistled. Not in the bone-chelor pad. Good thing I have the 40-bone(k) for my retirement.

[HORROR MUSIC]

Next, stepping in dog poop with your left foot. It's sure to be stinky, but is it lucky or unlucky? That is the
[NON-ENGLISH]

ADAM: I'm going to try lucky. I'm thinking it's sort of like the superstition that if a bird poops on your head, you will get good luck for the rest of the day. And if you see someone get bird poop on their head, then you also get good luck for the rest of the day. It's already bad enough to step in dog poop with your left foot, so there needs to be a good side to it.

[SHIMMERING]

MR.
BONEJANGLES: What do you know, it is good luck in France, [NON-ENGLISH]. Bone-jour. [CHUCKLES]

But watch out, if it's your right foot, it's a world of doo-- doo-- doo-oom.

[HORROR MUSIC]

OK, I have a femur for you. Here's the next superstition. Saying rabbit-rabbit on the first of the month, lucky-ducky or bad-news bass?

ADAM: I think it might be good luck.

[SHIMMERING]

MR. BONEJANGLES: I think you might be right! It is good luck! Saying rabbit-rabbit first thing on the first is meant to help you have a lucky month ahead. This superstition comes from Britain, where rabbits have been seen as lucky for more than 2,000 years!

[HORROR MUSIC]

Next one. Wishing someone happy birthday early or celebrating before your actual birthday, good luck or bad luck?

ADAM: I'm going to say bad luck.

[SHIMMERING]

MR. BONEJANGLES: Correct again! Don't get ahead of yourself because it's bad luck. Celebrating your birthday early in Russia and India, for example, is considered bad luck or arrogant. More like happy boo-thday, am I right?

[CHUCKLES, RATTLES]

Hope you don't mind, I like doing a little dance.

[HORROR MUSIC]

OK. And last one. An itchy right palm. What are we thinking?

ADAM: I think I heard this one before, but I think it was an itchy left hand. I'm going to think bad luck.

[CAT GROWLING]

MR. BONEJANGLES: Oh, almost. An itchy right palm is good luck in some African countries like Kenya and Nigeria.

ADAM: So, basically, scratchy hand is good luck?

MR. BONEJANGLES: Well, the right hand is. It's thought of as your receiving hand. It's a symbol of good fortune.

ADAM: And if your left hand itches?

MR. BONEJANGLES: Well, that means you're going to have to pay up, my dear Adam. So, remember, left foot in the dog poop, right hand with the itch, and no whistling inside. I live by these words!

ADAM: I'll try to remember that.

[SEBASTIJAN DUH, "TOPIC"]

MR. BONEJANGLES: And that concludes Good Luck, Bad Luck

MOLLY BLOOM: Wow, thanks for putting together such a fun game, Mr. Bonejangles.

MR. The pleasure is all spine! Please visit any time, and we can keep up this rhyme.

BONEJANGLES:

MOLLY BLOOM: Sounds divine.

MR. Oo-oooh.

BONEJANGLES:

ADAM: Bye, thanks for having us.

MR. Phew, back to the skele-vision to binge *Spinal Tap*, my favorite!

BONEJANGLES:

[WHIRRING]

[CREAKING]

[ELEVATOR PINGS]

MOLLY BLOOM: Wow, I am so glad we got to visit the 13th floor. Thanks for taking us, Elevator.

ADAM: Yeah, Elevator, we're super proud of you.

ELEVATOR: Thanks, everyone.

MARC: But, most importantly, I would have never known about that glorious chocolate fountain!

SANDEN TOTTEN: [SIGHS] Well, I'll always have quadruple chocolate.

MARC: [SIGHS] Yeah, yeah, buddy, we will. Those were special moments.

SINGERS: Ba, ba, ba, ba, ba, ba, ba, ba, ba, ba, *Brains On!*

MOLLY BLOOM: Adam, before we go, it's time to try your luck at the mystery sound again. Let's hear it one more time.

[MYSTERY SOUND PLAYING]

OK. So last time you thought a ghost, something related to a superstition maybe, a pipe organ, what are your new thoughts?

ADAM: Now I'm thinking probably some creepy instrument under a bridge. Another reason that I thought that is I think I heard a bird chirping.

MOLLY BLOOM: Mm, very good ears. Are you ready to hear the answer?

ADAM: Yes.

MOLLY BLOOM: OK, here it is.

ANYA: Hello, my name is Anya. I come from the US, and now we live in Germany. The sound you just heard was the sound of me swinging a hose from the pump of our swimming pool.

ADAM: Wow!

MOLLY BLOOM: She was swinging a hose in the air and wind-- the air was whistling over the mouth of the hose and making that sound.

ADAM: Wow!

MOLLY BLOOM: Pretty cool. It does sound like a ghost to me. That's what I imagine a ghost sounds like. Can you do your impression of a ghost?

ADAM: Whoo-oo. Whoo-oo.

[FUNKY MUSIC]

ADAM: A superstition is when something is believed to bring good luck or bad luck.

MOLLY BLOOM: Our brains often look for simple cause and effect explanations for things, and that can lead us to create superstitions. But in some places--

ADAM: --the number 13 is lucky. That's because each culture has different superstitions both for good luck and bad luck.

MOLLY BLOOM: Our brains often look for simple cause-and-effect explanations for things. And that can lead us to create superstitions that aren't actually true.

ADAM: And when we believe in a superstition, we often look for evidence that supports our belief and ignore evidence that goes against it. That's called confirmation bias.

MOLLY BLOOM: That's it for this episode of *Brains On!* We're about to hear an answer to the question--

JUDE: Do cockroaches have hearts?

MOLLY BLOOM: But, first, some creepy crawly credits.

ADAM: *Brains On!* is produced by Molly Bloom, Ruby Guthrie, Marc Sanchez, Sanden Totten, and Menaka Wilhelm.

MOLLY BLOOM: We had engineering help from-- Max Liebman, [? Jami ?] Roe, and Alex Simpson. And our intern is [? Catherine ?] [? Sundqvist. ?]

Our executive producer is Beth Perlman. And the executives in charge of APM Studios are Lily Kim, Alex Schaffert and Joanne Griffith.

ADAM: *Brains on!* is a nonprofit, public radio program.

MOLLY BLOOM: You can support the show and help us keep making new episodes by heading to BrainsOn.org/fans. While you're there, you can donate, join our free fan club, or check out our merch.

ADAM: There are face masks, T-shirts, and hats.

MOLLY BLOOM: And you can buy the *Brains On!* book there, too. Its BrainsOn.org/fans.

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

[PEOPLE UMMING]

JUDE: Do cockroaches have hearts?

[MYSTICAL MUSIC]

JODY GREEN: Yes, cockroaches do have hearts. They're not like the ones we have. It is a heart with many chambers, up to 13.

Hi, my name is Dr. Jody Green. I am an educator and urban entomologist. And what that means is I study bugs and focus on the bugs that most people don't like, so spiders, ants, cockroaches, termites, and bed bugs.

So when we talk about the cockroach heart, it's not in one location in the insect's body. It actually is a series of chambers that run the whole top of the insect. And we call that the dorsal vessel.

So if you think of a dolphin, the dorsal fin, that means the top. So this heart runs the whole length of the cockroach body. And what it does, it moves the cockroach blood, but insects do not have oxygen in their blood.

And that's why their blood isn't red. So if you've ever squished a bug or a bug splats on your window and you see white, yellow, or green, that's because they don't have oxygen in their blood. The interesting thing is that it's an open circulatory system.

So circulatory means how oxygen moves in our bodies. But for us, we've got a heart, veins, arteries. For the cockroach, this heart takes that blood, we call it hemolymph.

And it gets pushed into the heart. And kind of gets pushed toward the head. But it's an open system, so that blood rushes over all the organs. And that's how food, nutrients, and waste get carried in the body.

So it's not contained in vessels. It just gets spread or flows throughout the body to carry all that oxygen to different places. And, probably, one of the reasons why it's good to have so many chambers in your heart is if one chamber of the heart fails, there are several to take over and still get that blood pumping.

[PEOPLE UMMING]

MOLLY BLOOM: I have a heart and it's beating this list of names. It's the *Brains* honor roll. The incredible listeners who send us their ideas, questions, mystery sounds, drawings, and high fives.

[THEME MUSIC]

[LISTING HONOR ROLL]

(SINGING) *Brains on!* [INAUDIBLE]

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

ADAM: Thanks for listening.

MR. (SINGING) I'm Bone, Bobby, boh, bah, bah, Bone! Bobby Bone. Babba Bone. Bobby, bone, beh, bon, bone.

BONEANGLES: