

**Brains On (APM) | Brains On! Tongue twisters: Terribly terrific and truly tantalizing  
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**KARIS:** You're listening to Brains On where we're serious about being curious.

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

**MOLLY BLOOM:** Oh, what a perfect morning strolling through a farmer's market near the beach. Breeze in my hair. Blue sky above. Thank you for joining me, Karis.

**KARIS:** Of course, so many cool stands here.

**SALLY:** Seashells? Come pick out a lovely seashell.

**MOLLY BLOOM:** Oh, neat.

**SALLY:** Hi, I'm Sally. Can I interest you in a seashell?

**KARIS:** Wait, your name is Sally?

**SALLY:** Yeah.

**KARIS:** And you sell seashells?

**SALLY:** Obviously.

**KARIS:** And everybody this t-shirt?

**SALLY:** So?

**KARIS:** Sally sells seashells by the seashore.

**SALLY:** You're just stating facts.

**PETER PIPER:** Peppers here. Get your peppers. They're freshly picked sold by the pack and pickled too.

**SALLY:** Oh, that Peter Piper is so loud.

**MOLLY BLOOM:** Wait, Sally who sells seashells by the seashore has a stand next to a Peter Piper who picks pecks of pickled peppers?

**SALLY:** Literally, he just said that. Are you OK?

**FUZZY WUZZY:** Yeah, hey, Sally. Do you have change for a 20? People keep buying buy fuzzy bear's hoodie jars, and I need some small bills.

**SALLY:** Sure. Nice shave by the way, Fuzzy. You look good with the bald look.

**FUZZY WUZZY:** Yeah. I thought it would be weird for a bear to have no hair. But hey, it keeps me cool in the summer.

**KARIS:** What? No way. Is that bear's last name Wuzzy?

**SALLY:** You know him?

**KARIS:** Fuzzy Wuzzy was a bear.

**MOLLY BLOOM:** Fuzzy Wuzzy had no hair.

**BOTH:** Fuzzy Wuzzy was a bear. Fuzzy Wuzzy.

**SALLY:** You two are talking nonsense. Please, leave.

**MOLLY BLOOM:** Oh. OK, I'm sorry. It's just don't know these tongue twisters? Seriously?

**SALLY:** I have absolutely no idea what you're talking about.

**WOODCHUCK:** Hey, Sally.

**SALLY:** Oh, hey. Mr. Woodchuck.

**KARIS:** Woodchuck? Let me guess. You sell freshly chucked wood?

**WOODCHUCK:** How did you know that? Are you a mind reader? Get out of my head.

[THEME MUSIC PLAYING]

**MOLLY BLOOM:** You are listening to Brains On four APM Studios. I'm Molly Bloom, and my co-host today is Karis from Detroit. Hey, Karis.

**KARIS:** Hello.

**MOLLY BLOOM:** Today's episode is all about tongue twisters. A tongue twister is a sentence or series of words that are super hard to say. How much wood could a woodchuck chuck if a woodchuck could chuck wood?

**KARIS:** Or toy boat toy boat toy boat toy boat.

**MOLLY BLOOM:** And all the quizzically curious quandaries and questions we've gotten about them can be summed up like this.

**JOSIAH:** I'm Josiah from Vernon, British Columbia. And my question is, why are tongue twisters so hard to say?

**MOLLY BLOOM:** So Karis, to start off, do you have a favorite tongue twister?

**KARIS:** Yes. My favorite is how much wood could woodchuck chuck if a woodchuck could chuck wood?

**MOLLY BLOOM:** That one's great. It has a good rhythm to it. I like that.

**KARIS:** Me, too.

**MOLLY BLOOM:** Are there any sounds that you find like tricky to say now?

**KARIS:** Not really but like some S's are really hard to say. Something like with toy boat is so hard. I don't know. When I finish, I start sounding like-- I start having a British accent when I finish. I'm like, how did this get here?

**MOLLY BLOOM:** So were there any sounds that were tricky for you to say when you were littler?

**KARIS:** No, not really. My little sister when she says I love you, she would say I lobe you, like I love you.

**MOLLY BLOOM:** Oh, interesting. So she couldn't say the V, it was B more sound? Got you. Do you consider yourself a fast talker or a slow talker?

**KARIS:** A very fast talker. I talk like really fast. Sometimes.

**MOLLY BLOOM:** Let's see how fast you can talk. Why don't you do like the ABCs as fast as you can?

**KARIS:** OK. A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

**MOLLY BLOOM:** Whoa. That was really fast. Record breaking ABCs there. Incredible. Is there a favorite word that you love to say?

**KARIS:** Oh, squeegee.

**MOLLY BLOOM:** Yeah, that is a very, very satisfying word to say. To tackle tongue twisters, let's start with the basics.

**KARIS:** How do we make the sounds in a tongue twister anyway?

**MOLLY BLOOM:** Speaking is actually complicated business, and it's a wonder we don't trip over our words more often.

**KARIS:** Speaking begins with a breath.

**MOLLY BLOOM:** You take a deep breath in, and you let it out as you speak.

**KARIS:** And that breath goes on a journey. First, it passes through our vocal folds.

**MOLLY BLOOM:** Right, these are two small muscles in your throat. You may have heard them called vocal cords, too. They can open and close.

**KARIS:** When they're open, air passes through without making a noise, like when you're just sitting there and breathing.

**MOLLY BLOOM:** When they close, they vibrate as air passes through them and this makes sound.

**KARIS:** It's like, think of a balloon.

**MOLLY BLOOM:** Your vocal folds are like the opening of the balloon. The air can flow out when the opening is wide open and there's very little sound. Or you can tighten the opening of the balloon by stretching it sideways so the air has to squeak through. And this creates vibrations that are loud.

**KARIS:** But talking isn't just breath vibrating your vocal folds.

**MOLLY BLOOM:** If that were the case, our language would sound like a-ha ha ha. Thankfully, there are other tools we use to shape our sounds.

**KARIS:** Those tools are sometimes called articulators because they help us articulate or pronounce things.

**MOLLY BLOOM:** Think of your lips which help with ma ma ma or ba ba ba sounds.

**KARIS:** Or your teeth which help you go tha tha tha or fa fa fa.

**MOLLY BLOOM:** Then you've got your tongue and the top of your mouth, perfect for or da da da or if they touch further back ka ka ka, then there's your cheeks. Karis, make a sound like this with your mouth just hanging open.

[VOCALIZING]

OK, so now keep making that sound, but pull your cheeks from the corners of your mouth like your cheeks in a big old smile.

[VOCALIZING]

**KARIS:** [VOCALIZING]

**MOLLY BLOOM:** Yeah, now stop smiling and drop your cheeks and make that same sound.

[VOCALIZING]

**KARIS:** [VOCALIZING]

**MOLLY BLOOM:** Yeah, and that will do it over and over fast.

[VOCALIZING]

**KARIS:** [VOCALIZING]

**MOLLY BLOOM:** Super fun. I'm going to do that all the time. Sounds like a really tired siren. Siren needs a break. All right. So we have lips, tongues, teeth, and cheeks. They all help shape, block, and release that breath as it leaves our bodies. Think how incredible it is. How quickly our mouths change shape, our tongues move, and our vocal folds tighten, also we can say these words. Incredible. That's how we talk.

**KARIS:** But what if we want to twist our tongues? We want to learn more so we asked our pal Ruby Guthrie to look into it. Hi, Ruby.

**RUBY GUTHRIE:** Hey, what's good Collie and Maris? I mean, Wally and Garis. Oh, no. Molly and Karis.

**MOLLY BLOOM:** Took a sec, but you got there.

**RUBY GUTHRIE:** You see what I just did there? That's called a spoonerism. That's when you mix up the beginning sounds of words in a phrase or sentence.

**MOLLY BLOOM:** Like Guby Ruthrie.

**KARIS:** Or Blolly Moom.

**RUBY GUTHRIE:** Blolly Boom. Exactly. It's fun and it's just one of the ways we can play around with language. Tongue twisters are another way. And part of the fun of a tongue twister is the challenge. I wanted to find the hardest tongue twister there is. And lucky for me, some scientists wanted to know the same thing.

**STEFANIE** Well, let me start by telling you why we would ever bother to do such a thing.

**SHATTUCK-**

**HUFNAGEL:**

**RUBY GUTHRIE:** That's Stefanie Shattuck-Hufnagel. She's a research scientist at the Massachusetts Institute of Technology. And she's one of the scientists who came up with some of the hardest tongue twisters ever. And she wanted to do it for more reasons than just plain fun. Although, fun is a pretty good reason to me.

**STEFANIE SHATTUCK-HUFNAGEL:** We're very interested in the process that goes on in your mind when you plan an utterance.

**RUBY GUTHRIE:** An utterance is just a chunk of speech that has a clear beginning and end. It could be a sound like "A-ha" or one word like "Hello" or even a whole sentence like, "Molly, your pants are backwards."

**MOLLY BLOOM:** Exactly. Wait, what? My pants are backwards? OK. That was just an example. OK, phew.

**RUBY GUTHRIE:** Stefanie is interested in understanding how we talk, how our brains plan the sounds and sentences we use to communicate. But this is really hard to do because we can't exactly see how our brains are putting together sentences. That's where tongue twisters come in.

**STEFANIE SHATTUCK-HUFNAGEL:** We thought that by studying tongue twisters, which is a rather extreme circumstance in which things fall apart, we might be able to learn even more about the process by which you plan another words, what goes on in your mind when you're doing that. In particular, we wanted to know what makes something hard to say.

**RUBY GUTHRIE:** And if you want to learn what makes something hard to say, tongue twisters are the perfect place to start.

**STEFANIE SHATTUCK-HUFNAGEL:** All of your listeners are familiar with "She sells seashells," which if you say it once, is not too hard. But if you say it several times, it's very hard.

**MOLLY BLOOM:** Oh, OK. Let's try it 3 times fast.

[INTERPOSING VOICES]

**STEFANIE SHATTUCK-HUFNAGEL:** Oh, no.

**MOLLY BLOOM:** I messed it. That's tricky.

**STEFANIE SHATTUCK-HUFNAGEL:** We had a hypothesis that there were several factors that might make something hard to say. One was that you have not only an alternation like T-K-T-K, but a different pattern of alternation at the beginning and at the end of the syllable.

**MOLLY BLOOM:** OK, so there's an alternating pattern, meaning the sound changes and goes back and forth.

**RUBY GUTHRIE:** Right. In She Sells Seashells, the beginning of each word isn't always the same. It switches sounds. So it goes she-se-se-she. And we can call that pattern A-B-B-A. In this alternation, the switching of sounds is extra tricky because the she and the se sounds are so easy to confuse.

**KARIS:** Those sounds are already so similar.

**MOLLY BLOOM:** And if you think about it, your tongue is nearly in the same place when you're making a sh sound as it is when you make the s sound.

**RUBY GUTHRIE:** I know. But it gets even trickier because the endings of the words are also alternating.

**MOLLY BLOOM:** Whoa. She sells seashells. The endings go e-el e-el.

**KARIS:** And that's a different pattern from the beginning pattern. Mental gymnastics.

**MOLLY BLOOM:** It's like patting your head and rubbing your tummy at the same time.

**RUBY GUTHRIE:** Exactly. And it's these competing patterns that make for a really tricky tongue twister. Knowing this, Stefanie and her colleagues set off to make one of their very own. They started with six syllables, each starting with alternating sounds. In this case, T and K sounds.

**STEFANIE** Something like Top Cape. So you have a T in the beginning of Top and a K at the beginning of Cape. We picked  
**SHATTUCK-** those two sounds because they are fairly easy to confuse. It ordinary speech errors that we all make when we're  
**HUFNAGEL:** talking sometimes.

**KARIS:** Just like this and this sounds in She Sells Seashells.

**STEFANIE** Then, we put a P at the end of all six syllables because we wanted the alternating pattern of the T and the K to be  
**SHATTUCK-** different from the same pattern of P at the end. And then we had a different vowel for each of the six syllables.  
**HUFNAGEL:**

**RUBY GUTHRIE:** And those were the magic ingredients for the ultimate tongue twister.

**STEFANIE** Top Cape Tip Carp Type Keep.  
**SHATTUCK-**  
**HUFNAGEL:**

**RUBY GUTHRIE:** Top Cape Tip Carp Type Keep. Whoa. My tongue is already in knots.

**STEFANIE** For most people, the second or third time you see it, you will be making some kind of an error.  
**SHATTUCK-**  
**HUFNAGEL:**

**MOLLY BLOOM:** Top Cape Tip Carp Type Keep. It's like patting your head, rubbing your belly, and roller skating all at once.

**KARIS:** But what does it all mean?

**MOLLY BLOOM:** As far as I can tell, it's gibberish. Adding meaning onto a tongue twister is another layer of difficulty. But for now, Stefanie's team was interested in how hard it is to say, not whether or not it made sense.

**STEFANIE** And we constructed several more along the same lines. So here's another one. Pod Kid Pulled Card Pad Cord. In  
**SHATTUCK-** that case, it was the P and the K at the beginning of each syllable, a D at the end, and a different vowel for each  
**HUFNAGEL:** one.

**RUBY GUTHRIE:** By studying how and when we mess up these phrases, whether it's twisting our tongues or having a spoonerism slip, Stefanie hopes it'll help us understand what our brain does when we plan to talk. And while these tongue twisters can certainly stump us, there's still so much fun to say.

**STEFANIE** I'm not quite sure why this is the case, but you start reading one of these things and you start to giggle, and then  
**SHATTUCK-** you start to laugh out loud. I'm not quite sure why they are so funny, but they are very enjoyable.  
**HUFNAGEL:**

**RUBY GUTHRIE:** On that note, I think it's time my tongue took a rest. Catch you on the slip fide. Slip slide. Flip side. Catch you on the flip side. Bye.

**MOLLY BLOOM:** See you, Ruby.

[THEME MUSIC PLAYING]

Our tongues might be twisted, but are your ears ready to listen? It's time for the?

**KARIS:** Mystery sound.

**MOLLY BLOOM:** Are you ready, Karis?

**KARIS:** Yeah.

**MOLLY BLOOM:** Here it is.

[SPRINKLING]

What do you think?

**KARIS:** Well, I think it's like a water bottle. Someone's putting the cap on a water bottle and then drinking it and then swallowing it.

**MOLLY BLOOM:** Wow. I love that. Very, very good guess. It sounded like water to me, too. Well, we're going to listen to it again and get another chance to guess at the end of the show.

**KARIS:** We're working on an episode where we're giving awards for the things that are the most.

**MOLLY BLOOM:** Most long, most fast, most deep, or longest fastest deepest is how we usually say those in English. And we want to hear from you. If you were going to give a Mosty Award, what would you give it to? Maybe it's the funniest joke or the tastiest food or the most stylish color. Truly whatever category you can dream up, we'd like to hear your winner. Karis, what category would you want to give an award in?

**KARIS:** Maybe the fastest talker or the most comic book.

**MOLLY BLOOM:** Who has the most comic books do you think? Do you know someone with a ton of comic books?

**KARIS:** Yeah. My cousin he has like 50,000 comic books.

**MOLLY BLOOM:** What the hell? What? Wait. What? How is that? Where are they? Are they in this house?

**KARIS:** Yeah, he's been like collecting ever since he was a child.

**MOLLY BLOOM:** Whoa.

**KARIS:** Back when they were like \$0.25.

**MOLLY BLOOM:** 50,000 comic books, that is incredible. Please send us your ideas at [brainson.org/contact](http://brainson.org/contact). While you're there, you can send us mystery sounds, drawings, high fives and questions.

**KARIS:** Like this one.

**REUTER:** Hi, I'm Reuter and I live in Northbridge, Massachusetts. I want to know, do cats go to the dentist?

**MOLLY BLOOM:** You can find an answer to that wonderful question on our Moment of Um podcast. It's a daily dose of facts and curiosity you can find wherever you listen to Brains On.

**KARIS:** Just search for a Moment of Um.

**MOLLY BLOOM:** And keep listening.

You're listening to Brains On from APM Studios. I'm Blolly Moom. I mean, Molly Bloom.

**KARIS:** And I'm Karis.

**MOLLY BLOOM:** And we asked our listeners to share their favorite tongue twisters. Here's what you had to say.

**ELLIOTT:** Hello, my name is Elliott from Scotland. And my favorite tongue twister is Betty bought a bit of butter, but she found the butter bitter. So Betty bought another bit of butter to make the bitter butter better.

**VINCENT:** To sit in solemn silence in a dull, dark, dock, in a pestilential prison, with a life-long lock. Awaiting the sensation of a short, sharp, shock, from a cheap and chippy chopper on a big black block!

**ADELAIDE:** My favorite tongue twister is Baby bears blow blue bubbles. Baby bears blow blue bubbles. Baby bears blow blue bubbles.

**CORDELIA:** Hi, I'm Cordelia. And I made this tongue twister up. Penny picked plenty of pretty purple petunias.

**JAMIE:** My favorite tongue twister is How much wood could a woodchuck chuck if a woodchuck could chuck wood?

**EZRA:** How much wood could a woodchuck chuck if a woodchuck could chuck wood?

**WILLA:** How much wood could a woodchuck chuck if a woodchuck could chuck wood?

**JING:** This is how fast I can say. How much wood could a woodchuck chuck if a woodchuck could chuck wood?

**ISAAC:** My favorite tongue twister is Luke Luck likes lakes. Luke's duck likes lakes. Luke's Duck ticks lakes and lakes. Luke Luck likes. Luke Luck takes licks in lakes duck likes. This tongue twister was found in a book called Fox and Socks by Dr. Seuss.

**NOAH:** Hey, Molly, I wanted to tell you my favorite tongue twister. Here it is. Sally sold seashells by the seashore, but her seashells didn't sell so well.



**ISABELLA:** This famous British tongue twister is said to be inspired by the life and work of Mary Anning. Here it is. She sells seashells on the seashore. The shells she sells are seashells, I'm sure. So if she sells seashells on the seashore, then I'm sure she sells seashore shells.

**ISABELA:** She sells seashells by the seashore. The shells she sells are surely seashells. So if she sells shells by the seashore she sure really sells the seashore shells.

**ARIA:** Hi, I'm Aria, and I'm 14 years old.

**ADYA:** Hi, I'm Adya. I'm nine years old.

**ARIA:** We'll be saying five of our ABC tongue twisters. A. Alligators ache for antelopes in the afternoon. B. Bears bake bread at breakfast. C. Cats claws caused a commotion when cutting clementines.

**ADYA:** D. Dolphins dive into the desert at the delicious diner. Eels eat emus after eating at a mommy.

**ARIA:** And that's just five of the 26 that we have.

**MOLLY BLOOM:** Wow. Aria and Adya, a tongue twister for every letter of the alphabet is such a great idea. Thanks also to Elliot, Vincent, Adelaide, Cordelia, Jamie, Ezra, Willa, Jing, Isaac, Noah, Isabella from Perth and Isabella from Vermont. Those were all truly terrific. OK, so far, we've learned about how to make a super tricky tongue twister, but it doesn't take a tongue twister to trip us up. Sometimes it's just a simple sound. To tell us more about why some sounds are trickier than others, it's brains on producer Rose Dupont.

**ROSE DUPONT:** Hi, Collie. Hi Marise. I mean, Molly and Karis. Geez. It's contagious. Anyway, I did a little research. And turns out the hardest sounds to make in the English language are called The Late Eight. They are: sh as in sheep or shore, s as in sea or solid, thi as in think or thimble, tha as in that or right, r as in red.

**MOLLY BLOOM:** Or rabbit.

**ROSE DUPONT:** Z as in zepp.

**KARIS:** Or zoom.

**ROSE DUPONT:** L as in legs.

**MOLLY BLOOM:** Or light.

**ROSE DUPONT:** And su as in measure.

**KARIS:** Or a casual.

**ROSE DUPONT:** Bingo. So that's [SOUNDING OUT PHONEMES]. And I wanted to know why these sounds are hard. I talked to an expert about it.

**GEORGE** My name is Dr. George Castle, and I am a speech pathologist.

**CASTLE:**

**ROSE DUPONT:** Speech pathologists are masters of communication. They help people improve their communication skills in all sorts of ways. One of their specialties is helping people learn to say The Late Eight. Turns out there are two big things that make the Late Eight tricky. Number one, it's hard to see people make these sounds with their mouths.

**MOLLY BLOOM:** You mean the sound is being made by like the tongue, but we can't easily see that just looking at someone's lips.

**ROSE DUPONT:** Exactly. The second reason these sounds are tough to master, they're hard to hear.

**GEORGE** The sh in shop is hard to understand because it's not as loud as let's say a vowel, for instance. If I say a or o or

**CASTLE:** ow, I make them with an open mouth relatively open airway, and so they're easy to hear and they're easy to say.

**ROSE DUPONT:** And if you push these Late Eight sounds together in a single word or phrase, they form something called a cluster.

**GEORGE** If you have to say the word three, for instance, now you're combining the th sound and also the r sound, two

**CASTLE:** sounds that are individually difficult to make.

**ROSE DUPONT:** Molly and Karis, can you think of any other cluster examples using The Late Eight?

**KARIS:** Shrimp.

**ROSE DUPONT:** Yes.

**MOLLY BLOOM:** And shred.

**ROSE DUPONT:** Totally. The thing is a lot of people have trouble making these sounds, especially when they're kids. It's George Castle's job to help people tackle these tricky sounds. So naturally, he has lots of tips.

**GEORGE** Number one is just to have fun.

**CASTLE:**

**ROSE DUPONT:** Like practicing tongue twisters.

**KARIS:** Sally sells seashells down by the seashore. Sally sells seashells down by the seashore.

**ROSE DUPONT:** Or playing games that involve The Late Eight.

**GEORGE** If I'm working on the th sound like thing, I might have a ball. And we might practice throwing the ball. See how I

**CASTLE:** elongated the sound of throwing? So every time I throw the ball, you have to say throw it to me George.

Anything that allows the person to say the sound but not really think about the fact that they're saying the sound, they just think that they're having fun. I'm just throwing this ball with this fun guy and we're doing a bunch of things that are fun. And by the way, we're also working on speaking in a different way.

**ROSE DUPONT:** If some of those Late Eight sounds are tricky for you, practice saying them while having fun and you'll probably get better at them. Speech therapists have lots of other games and techniques they use to help people. And even if those sounds stay hard, that's OK, too. Because there are lots of different ways to communicate and achieve understanding. And that's that.

**KARIS:** Really rad reporting, Rose. Rose reports are regularly really rad.

**ROSE DUPONT:** Thanks, Karis. Bye.

[THEME MUSIC PLAYING]

**MOLLY BLOOM:** Before we go, we've got a special treat. English isn't the only language with tongue twisters. We asked our friends to share tricky sayings from other languages and they delivered.

[NON-ENGLISH SPEECH]

**ETHAN:** I want to share two of my favorite Chinese tongue twisters today.

[NON-ENGLISH SPEECH]

What I mean is eat a grape, but don't stick out the skin. If you aren't eating grapes, spit out the skin. I've got a second tongue twister that is better because it tells a story.

**PUMSELAI:** [NON-ENGLISH SPEECH]

What it means is there is a kid named Little Do. He went to the street to buy vinegar and cloth. He bought the cloth, bought the vinegar, and he turns his head to see an Eagle grab a hair. He put down the cloth, put down the vinegar, and courage to chase the eagle and the hair. Away flew the Eagle away around the hair, the vinegar is built in the cloth gets wet.

**RUBY:** Hi, my name is Ruby. And here's a really fun tongue twister in French.

[NON-ENGLISH SPEECH]

That means "If my uncle shaves your uncle, your uncle will be shaved." So silly.

**ETHAN:** Here's a tongue twister in Tulsa.

[NON-ENGLISH SPEECH]

**CASSIE:** Hi, my name is Cassie and I am from Denver, Colorado. My tongue twister is in Spanish. In Spanish, it is

[NON-ENGLISH SPEECH]

In English, that means "Three sad tigers swallowed in a wheat field."

**MOLLY BLOOM:** That was Vivienne, Ethan, Pumselai, Ruby, and Cassie. It's nice to think that no matter where you go in the world, people will be using language to tie up their tongues and say fun things.

[THEME MUSIC PLAYING]

A tongue twister is a phrase or series of words that's difficult to say.

**KARIS:** We make sounds thanks to the air of vibrating our vocal folds. And we articulate those sounds with things like our teeth and tongues.

**MOLLY BLOOM:** We can make tricky tongue twisters by using competing patterns and similar sounds.

**KARIS:** Some people are better at tongue twisters than others.

**MOLLY BLOOM:** But there are certain sounds that are hard for everyone to say, especially when they're young. That's it for this episode of Brains On.

**KARIS:** This episode was produced by Molly Bloom, Ruby Guthrie, Anna Goldfield, Rose Dupont, Marc Sanchez, Sanden Totten, and Anna Weggel.

**MOLLY BLOOM:** This episode was mixed by Evan Clark and sound design by Eduardo Perez. We had engineering help from Mike Keeney, special thanks to Carla Gaston and Andy Doucette.

**KARIS:** Brains On is a nonprofit public radio program.

**MOLLY BLOOM:** There are lots of ways to support the show, you can make a donation, buy our books, come see us on tour, or tell your friends about us. All right, let's go back to the mystery sound.

[SPRINKLING]

Do you have any new thoughts?

**KARIS:** Oh, no. I think I'm going to stick to what I had. It does sound like a water bottle, still something water bottle related. I definitely hear someone swallowing.

**MOLLY BLOOM:** Ready for the answer?

**KARIS:** Yes.

**MOLLY BLOOM:** All right, here it is.

**GENEVIEVE:** Hi, I'm Genevieve from Tucson, Arizona. That was the sound of me throwing sand into a saguaro cactus.

**MOLLY BLOOM:** Oh.

**KARIS:** What? I wasn't even close. I had water related.

**MOLLY BLOOM:** That was really tricky.

**KARIS:** Throwing sand?

**MOLLY BLOOM:** The sound sounded to me like water as well. I had no idea. I didn't know sand could sound so much like water.

**KARIS:** Yeah.

**MOLLY BLOOM:** I guess like when it comes to those small grains, it can sound things pouring.

**KARIS:** Yeah.

**MOLLY BLOOM:** Pouring out. I guess I'll have to throw some sand like some cactuses later and see if we can make it sound like that.

[THEME MUSIC PLAYING]

We love getting mystery sounds from our listeners. Our listeners who send in questions, ideas, mystery sounds, and drawings all get added to the Brains Honor Roll. Here's the most recent group.

[LISTING HONOR ROLL]

[THEME MUSIC PLAYING]

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

**KARIS:** Thanks for listening.