

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

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

[CALM MUSIC PLAYING]

SUBJECT 3: [SIGHS]

I love hanging out in the *Brains On!* greenhouse with all my plant buddies, especially at night. I love giving each of the plants a little sprinkle of fertilizer for a midnight snack, and tucking the smallest seedlings into their soft dirt bed. There you go, little guy.

Sometimes, I do a little light leaf trimming.

[SCISSORS SNIP]

I always make sure to spritz any shoots that look thirsty.

[WATER SPRITZ]

Then I read the plants a good night story, and they all go to sleep.

[LEAVES RUSTLING]

SUBJECT 4: Ugh, we don't want to sleep.

SUBJECT 3: [SHRIEKS]

A talking plant! Wait, what? You don't want to sleep?

[LEAVES RUSTLING]

SUBJECT 5: Uh, no. We want to part-ay!

[CLUB MUSIC PLAYING]

SUBJECT 3: Whoa! I have never seen a blueberry bush do that move before.

SUBJECT 4: You've never been to a shrubstep party?

SUBJECT 5: Oh come on, Sanden. Let's see those moves.

SUBJECT 3: Uh, OK. Um. Oh, how about this? Wa!

SUBJECT 4: Is he doing the daffodil drop?

SUBJECT 5: Now he's doing the sprinkler.

SUBJECT 4: That's the hollyhock hustle! With a lemon verbena twist?

SUBJECT 5: Yeah!

SUBJECT 4: Yes!

SUBJECT 5: Sanden!

SUBJECT 4: Sanden! Shake those twigs.

MOLLY BLOOM: You're listening to *Brains On!* from APM Studios. I'm Molly Bloom, and my co-host today is Amelia from Edinburgh, Scotland. Hi, Amelia.

AMELIA: Hi, Molly.

MOLLY BLOOM: Today, we're answering a very interesting question.

PHOENIX: Hello. My name is Phoenix, and I'm from Reno, Nevada. And my question is, do plants sleep?

MOLLY BLOOM: So, Amelia, do you like plants?

AMELIA: Yes. We have a really nice greenhouse in our garden that we like to grow vegetables in.

MOLLY BLOOM: That's so cool. So, do you help with the growing of the plants?

AMELIA: Yeah, I mainly grow carrots and potatoes.

MOLLY BLOOM: Do you grow other things besides food?

AMELIA: Yeah, we have obviously the grass and lots of vegetables, lots of vegetables and fruits, but also flowers as well and trees.

MOLLY BLOOM: And what would you say is the trickiest plant to get growing?

AMELIA: A few years ago, I tried growing parsnips, and they were still just roots after six months.

MOLLY BLOOM: Oh.

AMELIA: I couldn't figure out how to make them any bigger.

MOLLY BLOOM: When you are with your plants, do you-- do you talk to them? Do you do anything to them that you might do to, like, another human?

AMELIA: Sometimes you do speak to them a wee bit like they're babies when you're watering them and say, there you go, and things like that.

MOLLY BLOOM: That's really-- yeah, I mean when you're taking care of something, it's hard not to think of it as a baby, I think.

AMELIA: Yeah.

MOLLY BLOOM: All right. So let's get to it. Do snapdragons snore? Do dahlias dream? Do lilies need lullabies?

AMELIA: So we know sleep is really important for us, humans, and for so many other animals.

MOLLY BLOOM: Plants are pretty different from animals, but we do have some things in common.

AMELIA: And that's because way, way back in history, plants and animals share an ancestor. That means every plant and animal you can think of-- tomatoes, daisies, jaguars, and butterflies-- they all came from the same creature.

MOLLY BLOOM: But we're talking way back in time, super far back, at least 2 billion, with a b, years ago, way before dinosaurs.

AMELIA: Earth was basically just a teenage planet back then.

MOLLY BLOOM: And on that awkward teen planet was a living thing that was probably just one teeny tiny cell. Cells are the building blocks of all living things. We're made up of trillions of cells, but this life form was just one cell.

AMELIA: And back then the Earth, was a pretty different place.

MOLLY BLOOM: Most of it was covered in water. And that's where scientists believe life on Earth first began, with those tiny cells floating around in the water doing cell stuff.

AMELIA: But then, something changed.

MOLLY BLOOM: It was so long ago that we don't know exactly what happened. But one idea is that one of these super simple cells somehow absorbed another cell.

[SLURPING SOUND]

Instead of the other cell being digested like food, that smaller cell stayed inside of the first cell. The two cells became one more complicated cell.

SUBJECT 6: Whoa, my dude! What in the primordial soup is going on with your midsection?

SUBJECT 7: Do you like it? I'm trying out a new look.

SUBJECT 6: Yeah. It's bold, kind of edgy. What's it for?

SUBJECT 7: Oh, mostly for holding stuff. For now, I'm keeping some DNA in there. What better way to keep all my genetic materials safe, you know?

SUBJECT 6: Ooh! Stylish and practical. It's like a backpack but on the inside. I want one!

MOLLY BLOOM: When these new, more complicated cells made copies of themselves, those new cells also had the same bonus cell backpack inside.

AMELIA: Over a very long stretch of time, those cellular backpacks changed and grew to take on specific jobs like making energy or storing extra proteins.

MOLLY BLOOM: And then over another very long stretch of time, these cells grew into much more complicated creatures with lots of cells. Some formed bodies that can move and seek out food.

AMELIA: Humans and other animals came from these.

MOLLY BLOOM: But other living things stuck with getting energy from the sun like they had always done.

AMELIA: And plants come from those sunlight-loving creatures. Over the next 2 billion years, the food eaters and the sunlight storers, or as we know them, animals and plants, branched off into many, many, many new species.

MOLLY BLOOM: Some of those species stayed in the water and others moved on to land. And over time, they branched off into even more plants and animals, creating the diverse and amazing world we know today.

AMELIA: So even though plants and humans are pretty different now, scientists think we do in fact share a great, great, great, great, great, great, great, great, great--

[CLOCK TICKING]

SUBJECT 8: One hour later.

AMELIA: --great, great, great grandparents.

MOLLY BLOOM: So it makes sense we still have some things in common with plants. We each need some basic things to stay alive-- a source of energy, water, and rest.

AMELIA: Humans and lots of other animals get their rest in the form of sleep. We stop moving, things in our bodies slow down, and our brain enters a rest mode.

MOLLY BLOOM: In that rest mode, our brains recharge and sort through the memories from the day, like cleaning up your bedroom after a busy day of arts and crafts.

AMELIA: So there are times when our bodies are really active and times when they are less active and resting.

MOLLY BLOOM: Plants also have times when they are more active and less active. But they don't have brains like we do, so they don't sleep like we do. We'll dive into that more in a minute. But first, don't sleep on this. It's the--

SUBJECT 8: (WHISPERS) Mystery sound!

MOLLY BLOOM: OK, Amelia, are you ready for the mystery sound?

AMELIA: Yes.

MOLLY BLOOM: Here it is.

[MYSTERY SOUND PLAYING]

What is your guess?

AMELIA: Um, I think maybe peeling something sticky or crunching something, like standing on it.

MOLLY BLOOM: Very good. Do you want to hear it again?

AMELIA: Yeah.

MOLLY BLOOM: Let's hear it again

[MYSTERY SOUND PLAYING]

Any more specific thoughts about what it might be?

AMELIA: Maybe peeling an orange or peeling Velcro, maybe?

MOLLY BLOOM: Uh-huh. Very good guess. Well, we'll hear it again and get another chance to guess and hear the answer at the end of the show.

AMELIA: So, stick around.

MOLLY BLOOM: We love hearing from you. Your mystery sounds delight us. Your questions inspire us. And your drawings make our hearts so happy.

AMELIA: You can send those to us at brainson.org/contact.

MOLLY BLOOM: Maybe you'd like to draw us a picture of Sanden hanging out with plants. Amelia, you've hung out with a lot of plants. What would you do at a party with them?

AMELIA: Maybe ask them what some of their hobbies would be. Like, would a carrot go skydiving or--

MOLLY BLOOM: [LAUGHS]

AMELIA: --orange would go play hockey.

MOLLY BLOOM: Exactly. You got to chat them up and see what's going on. Do you have a favorite plant?

AMELIA: To grow or to look at?

MOLLY BLOOM: How about both, like one of each.

AMELIA: To grow would definitely be carrots. To look at would probably be lupins, the flower.

MOLLY BLOOM: Ah, I love lupins. Can you describe them for people who might not be familiar?

AMELIA: They've got quite a thick stem, and almost like bubbles instead of petals, and lots of different colors, and they kind of change colors as they go further up.

MOLLY BLOOM: Yeah, they're very pretty. And why are carrots your favorite plant to grow?

AMELIA: I don't know. They're just so classic. And there's something very pleasing about them. And because they're so big once you've let them grow. It's so satisfying to see that.

MOLLY BLOOM: Sometimes they grow in kind of cool shapes, right?

AMELIA: Yeah, sometimes they have almost a pair of legs and it looks like a pair of trousers.

MOLLY BLOOM: [LAUGHS] That's so fun. So send us your drawings to brainson.org/contact.

AMELIA: That's where we got this question.

SUBJECT 9: Why is money valuable?

MOLLY BLOOM: You can find an answer to that on our *Moment of Um* podcast. It's a daily dose of facts and fun every weekday. You can find it wherever you listen to *Brains On!*

AMELIA: And keep listening.

SUBJECT 10: Ba, Brains On!

SUBJECT 3: Meanwhile, back at the greenhouse.

[CLUB MUSIC PLAYING FAINTLY]

Wait, where did all this karaoke equipment come from? How many plant parties have I missed?

SUBJECT 4: Aww, you're always invited, Sanden. It's just you're usually asleep when we get the party going. Ooh! Here come the succulents with a classic.

SUBJECT 11: [VOCALIZING]

(SINGING) Why do you build me up, buttercup, baby, just to let me down?

SUBJECT 3: Whoa! Well, it's a good thing I had an extra long nap today. Say, does anyone need some extra fertilizer? If I'd known you were all in here partying down, I would have brought some other snacks!

SUBJECT 4: Is that the good stuff with extra phosphorus? I love that one. It's so spicy!

SUBJECT 5: Oh, yeah. I'll take some. Oh, thanks, Sanden.

SUBJECT 3: Huh, you bet. Only the best for you, my friends. Now, hand me the mic. It's my turn.

(SINGING) So come on and let me know, should I stay or should I grow? Should I stay or should I grow now?

SUBJECT 12: (OPERATIC SINGING) Brains On!

AMELIA: You're listening to *Brains On!* I'm Amelia.

MOLLY BLOOM: And I'm Molly.

AMELIA: And we're answering this question-- do plants sleep?

MR. SOILMAN: Shablazzle! Hm. Does lumber slumber? Great question.

MOLLY BLOOM: [SHRIEKS] A tiny man with wings just floated into the studio?

AMELIA: And he's carrying a bag of dirt?

MR. SOILMAN: Dirt? Oh, no, no, no, no, no. This is high-grade, organic, pesticide-free, magic soil. I'm the soil man. I hope plants rest. You know.

(SINGING) Mr. Soil Man, help those plants rest. Bum, bum, bum, bum. Your beard is long and you're wearing a vest. Duh, duh, duh, duh.

AMELIA: Oh, like Mr. Sandman?

MR. SOILMAN: Pshh. My brother. He stole my idea. I mean, putting sand on human eyes so they fall asleep? I mean, that makes zero sense. Putting soil on plants so they rest, that makes slightly more sense, am I right?

MOLLY BLOOM: I guess?

MR. SOILMAN: Exactly. So, yeah, I'm the perfect fairy to ask if saps take naps, if a rose can doze, if trees catch Zs.

AMELIA: So?

MR. SOILMAN: So what?

AMELIA: So, Mr. Soilman, do they sleep?

MR. SOILMAN: Oh, right. Well, kind of, not really, no, but yes. Glad I could help.

MOLLY BLOOM: Hey, wait. Shablazzle back here, Mr. Soilman. That didn't help at all.

MR. SOILMAN: Shablazzle. Oh, it didn't?

AMELIA: No. You said yes, and no, and kind of. Which is it?

MR. SOILMAN: Hmm. I see I may need to be a little more explicit in my explanation. Here, let me shablazzle in an answer from Heidi Appel. She's a plant biologist from the University of Toledo. Shablazzle.

HEIDI APPEL: I'd say that plants don't sleep in the same way as humans do, but they do have more and less active times like we do.

MR. SOILMAN: You see, you humans sleep when your brains rest and your bodies are still. But plants don't really have brains, so they don't really sleep the way humans think of sleep. So that's the no part of the answer

MOLLY BLOOM: OK. So what about the yes and the kinda?

MR. SOILMAN: So for humans, your bodies want to rest at night and wake in the morning. It's like a built-in clock you have that's linked to the rising and setting of the sun. That's called your circadian cycle.

MOLLY BLOOM: Oh, right. That cycle controls lots of things in our bodies like our appetite and energy.

MR. SOILMAN: That statement is as good as wood. Now, plants also have a circadian cycle that follows the rising and setting of the sun. That means they're getting active as the sun comes out and slowing down when it gets dark. So it's kind of like resting.

AMELIA: OK. But what does getting active mean for a plant? They can't exactly pop out of bed, eat a bowl of cereal, and start the day.

MR. SOILMAN: Here, let me show you. Wait, have you shablazzed before because I'm going to shablazz us somewhere, and if it's your first time, it may feel weird?

MOLLY BLOOM: I have never shablazz before.

AMELIA: I have.

MOLLY BLOOM: Wait, you have?

AMELIA: Molly, there's a lot you don't know about me.

MR. SOILMAN: Well, grab onto my magic soil bag. And Molly, you might want to just clench up because shablazzing can be a bumpy ride. Here we go! Shablazze!

MOLLY BLOOM: Uh! It feels like my molecules just did a somersault.

MR. SOILMAN: Totally normal. First timer shablazzers always feel like that.

AMELIA: Totally.

MR. SOILMAN: So my, leafless friends, here we are in a field of thale cress flowers as they greet the morning.

AMELIA: Do you mean those tiny white flowers on spindly green stalks? They're waking up right now?

MR. SOILMAN: Correct as a chrysanthemum. Good morning, my plant pals. How are you doing?

SUBJECT 14: Hey, Soilman!

SUBJECT 15: Good morning!

SUBJECT 16: Just being chill and staying still.

MR. SOILMAN: Now, they may look all still and motionless, but scientists have studied these plants as the sun starts rising. They found that when day breaks, there's all kinds of activity inside the plants.

MOLLY BLOOM: Wait. Does anyone else's mouth taste like baking powder? Eugh!

AMELIA: Oh, yeah. Common shablazzling side effect.

SUBJECT 14: She's a first time shablazzler?

MR. SOILMAN: Ha, yeah.

SUBJECT 14: Classic.

MR. SOILMAN: Just wink twice, Molly, and the taste will go away.

MOLLY BLOOM: Why would that-- oh, hey, it worked! But that makes no sense.

MR. SOILMAN: Molly, it's magic. None of it's supposed to make sense.

AMELIA: So what do plants start doing when they wake up?

MR. SOILMAN: One big thing is that they start ramping up a process called photosynthesis.

AMELIA: Oh, yeah, photosynthesis. That's how plants turn sunlight into energy.

MOLLY BLOOM: Right. Plants absorb sunlight, water, and a gas called carbon dioxide. Then they use those things to make sugar and oxygen. They breathe out the oxygen and use the sugar for food. Photosynthesis, it's how plants eat.

SUBJECT 14: That's right. We scarf on sun.

SUBJECT 15: We lunch on light.

SUBJECT 16: We dine on daytime.

MR. SOILMAN: Precisely, my petunias. So they have little circadian clocks that wake them up when it's morning.

[ALARM CLOCK RINGING]

Then they start photosynthesizing. Here's Heidi again.

Shablazzle!

HEIDI APPEL: So they wake up and they start doing that. But they're also-- the roots are really busy finding water and nutrients. And, of course, they're fending off diseases and insects. So their day is full.

MR. SOILMAN: And like me when I'm asked to explain my life choices, plants sweat. And they start sweating as soon as the sun comes up.

AMELIA: Oh, yeah. Plants release water to cool themselves, kind of like how our sweat helps us cool down.

MOLLY BLOOM: And releasing that sweat creates a pull in the plant that helps the roots absorb more water.

SUBJECT 15: Yeah, it's called evapotranspiration. We feel better when we make the air wetter!

MOLLY BLOOM: So it all goes back to when the plants start sensing that sunlight?

MR. SOILMAN: Yes and no.

AMELIA: What does that even mean?

MR. SOILMAN: Well, yes, some of the plant's morning routine is triggered by sunlight. But no, it's not all just the sun? Just like you still wake up when it's cloudy and there's no sun, plants wake up in the morning, too, even if it's dark. It's like-- you know when you lock flowering plants in a dark closet for a few days?

MOLLY BLOOM: No. Wait. Is that a thing you do?

MR. SOILMAN: [SCOFFS] Don't judge my hobbies, Molly. Like I said, you know how when you lock a flowering plant in a dark, dark closet? Those flowers will still open during the daytime hours and close at night even though there's no sun in the closet!

SUBJECT 5: Really?

MR. SOILMAN: Yeah. Some famous human science guy named Carl Linnaeus did this experiment back in the 1700s. So it's not just me! It's a totally normal hobby, Molly! So that circadian clock works within without the sun!

MOLLY BLOOM: So plants can still bloom in the dark. But are they still making energy?

MR. SOILMAN: Not a chance, cabbage plants. They need light for that. So once it's dark, they stop photosynthesizing.

AMELIA: Make sense.

MR. SOILMAN: Some plants close their flowers at night, others, like desert plants, actually burst their blossoms open when the sun sets. And some trees seem to rest at night, too. Let me show you. Ready to shablazzle again?

MOLLY BLOOM: Not really--

MR. SOILMAN: Grab that soil bag, and here we go!

Shablazzle!

AMELIA: Whoa, it's dark in here. Where are we now?

MOLLY BLOOM: And why are my glasses upside down and my pants on backwards?

MR. SOILMAN: You forgot to clench, didn't you? I told you to clench. To your question, Amelia, we're in a birch tree forest at night.

MOLLY BLOOM: I'm just going to go behind these birches and fix my breeches.

AMELIA: Hey, birches.

SUBJECT 17: [YAWNS] Hey, human.

SUBJECT 18: Oh. Hi, Soilman.

MR. SOILMAN: Yo.

AMELIA: So, why are we here?

MR. SOILMAN: I want to show you one way plants seem to rest. These birch trees actually droop their limbs at night like a sleepy person droops their arms. Some human scientists use lasers to scan birch trees overnight. With these lasers, they could see that trees drooped almost four inches. That's like a popsicle stick or a toilet paper roll! Scientists think drooping helps them rest.

SUBJECT 17: Kind of like how you humans slouch on the couch or lay down on the ground.

MOLLY BLOOM: So, are they sleeping? Oh. Hi. I'm back, and my pants are on the right way.

MR. SOILMAN: No, it's not sleep. Here's Heidi again to explain.

Shablazzle!

HEIDI APPEL: You know, that looks like sleep because we lay down to sleep, right? But it's not really sleep in the way that we think of it because they're a lot more active during the night than we are. And you can't tell that necessarily because all, most of the activity that plants have is internal.

MR. SOILMAN: At night, plants do a lot of repairs to any parts that are inside that were damaged during the day, like sending out a whole team of tiny little plant surgeons to fix them up. They can also keep growing roots underground. But even still, they're less active at night, for sure.

AMELIA: This is all really cool. So plants have a day and night cycle. They're less active at night, and they seem to use that time to rest and recover, which is kind of like sleep, but it's also definitely not sleep.

MR. SOILMAN: Exactly. Now you got it. Let's head home. Night, night, birches.

SUBJECT 18: Stay groovy, Soilman. And Molly, don't forget to clench.

Shablazzle!

MOLLY BLOOM: We're back. And all my clothes are the right way!

AMELIA: Good job, Molly. Now you're a seasoned shablazzler.

MR. SOILMAN: So there you have it. Plants do all kinds of things at night, and it's all thanks to me.

MOLLY BLOOM: Wait. How is it thanks to you? I thought you said they worked on a circadian cycle. You did not mention sprinkling magic soil on them at all.

MR. SOILMAN: Oh, yeah. The soil is just a gimmick. It doesn't actually put anything to sleep.

AMELIA: So what part of this is thanks to you?

MR. SOILMAN: Well, OK, fine. I'm mostly just moral support. I do my part by watching the plants all night, but not in a creepy way, you know, in a normal fairy staring at you for hours on end when you're trying to rest kind of way.

MOLLY BLOOM: Um.

MR. SOILMAN: It's not creepy! It's a normal behavior!

AMELIA: Well, thanks for all of that, Soilman.

MOLLY BLOOM: Yeah, fascinating stuff.

MR. SOILMAN: My pleasure. Now if you'll excuse me, I got a shablazzle on my way over to an oak grove so I can stare at them all night, which is a totally normal thing to do.

Shablazzle.

SUBJECT 3: Holy moly! This has been a blast. Oh, but I think I'm all danced out, pals. I'm beat! Look, this human body needs some human sleep.

SUBJECT 5: Why don't you curl up here for a nap? The moss in the corner over there is actually really soft.

SUBJECT 4: Yeah, come on, Sanden. There's plenty of room for those long branches of yours.

SUBJECT 3: My-- oh, my legs?

SUBJECT 4: Legs, branches, whatever. Come hunker down for a snooze.

SUBJECT 5: You always take such good care of us-- weeding and trimming, and pampering. It's our turn to take care of you!

SUBJECT 3: Aw, thanks, plants. This moss is really soft. I'll just rest for us right here.

[SNORES]

Shablazzle.

MR. SOILMAN: Aha! Plants-- wait, is that my brother, Mr. Sandman?

MR. SANDMAN: Is that my brother, Mr. Soilman?

MR. SOILMAN: What are you doing here?

MR. SANDMAN: That human over there is asleep, and I was going to sprinkle sand on him, and then watch him sleep all night.

MR. SOILMAN: Those plants are resting, and I was going to sprinkle soil on them and watch them rest, which is a totally normal thing to do.

MR. SANDMAN: So normal. Who told you it wasn't normal, because it's so normal. Now if you excuse me, I've got to stare at this person.

MR. SOILMAN: Yeah, I get it. I'll be over here staring, too. Very normal.

MR. SANDMAN: So normal.

AMELIA: Plants and humans are very different, but we both evolved from a common ancestor long, long ago.

MOLLY BLOOM: Both plants and humans have little built-in clocks that tell ourselves when it's day and when it's night.

AMELIA: Plants are more active in the day, doing things like photosynthesizing and sweating.

MOLLY BLOOM: And they are less active at night.

AMELIA: But they are not really sleeping in the way that we understand sleep.

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

AMELIA: This episode was produced by Anna Goldfield, Molly Bloom, Rosie Dupont, Ireland Waldice-Lassey, Anna Weggel, Nico Gonzalez Wisler, Ruby Guthrie, and Marc Sanchez.

MOLLY BLOOM: Our editors are Sanden Totten and Shahla Farzan. This episode was sound design by Rachel Breeze. Beth Perlman is our executive producer. The executives in charge of APM Studios are Chandra Kavati, Alex Shaffer, and Joanne Griffith. Special thanks to Allison Smyth, Brant Miller, and Alex Simpson.

AMELIA: *Brains On!* is a nonprofit public radio program.

MOLLY BLOOM: There are lots of ways to support the show. Head to brainson.org.

AMELIA: While you're there, you can send us in your questions.

MOLLY BLOOM: Or you can subscribe to your smarty pass, or you could just tell your friends about us.

AMELIA: And you can even buy our books.

MOLLY BLOOM: That's brainson.org.

OK, Amelia, are you ready to listen to that mystery sound again?

AMELIA: Yeah.

MOLLY BLOOM: All right. Here it is.

[MYSTERY SOUND PLAYING]

It does have something to do with gardening.

AMELIA: Oh, I know what it is.

MOLLY BLOOM: Oh, yeah. What is it?

AMELIA: Pulling a weed with the roots all breaking.

MOLLY BLOOM: Hmm. Very good guess. Do you want to hear the answer?

AMELIA: Yeah.

SYDNEY: I'm Sydney. I live in Downer, Minnesota. This is the sound of me separating roots of a plant. I was transplanting flowers into a pot. I have to separate the roots to make sure they will grow out so that the plant will get the nutrients it needs to grow.

AMELIA: Oh, yeah.

MOLLY BLOOM: It's kind of satisfying, isn't it?

AMELIA: It's very satisfying.

MOLLY BLOOM: Yeah, so you were really close. I give you a really high mark for that. Well done.

AMELIA: OK. Thank you.

MOLLY BLOOM: You knew the sound of roots.

AMELIA: Yeah.

MOLLY BLOOM: Which is not a sound I thought-- I would never say that roots made a sound until I heard that. And I was like, oh, yeah, that's the sound of roots.

AMELIA: Yeah.

[SOUND OF ROOTS BEING SEPARATED]

MOLLY BLOOM: Now it's time for the Brains honor roll. These are the incredible kids who keep this show going with their questions, ideas, mystery sounds, drawings, and high fives.

[LISTING HONOR ROLL]

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

AMELIA: Thanks for listening!