But Why: A Podcast for Curious Kids
Why do we get growing pains?
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Jane
This is But Why: A podcast for curious kids from Vermont Public. I'm Jane Lindholm. On this show, we take questions from curious kids just like you, and we find answers.

Jane
Our bodies are always changing. Even as an adult, your body changes, but the changes are especially noticeable and fast when you're a kid. We have a doorway in my house where our family measures our height every six months or so. My height stays the same every time, but my kids have grown an inch every time we check, and a lot of kids grow three or four inches in just one year when they hit their growth spurt. But not everybody experiences these changes at the same time, so it's no surprise that a lot of you are wondering what is the deal with how we grow and why we stop.

Jane
Let's talk with someone who can help demystify the business of growing.

Zurisadai
My full name is Zurisadai Gonzalez-Castillo.

Jane
Dr. Gonzalez is a pediatric neurologist at the University of Texas Southwestern Medical Center,

Zurisadai
and what that means is that I am that doctor that takes care of the brain and the nerves for kids. And you can think of the nerves as those wirings that go all over your body to help you move and send messages to your body.

Jane
Neurologists like Dr. Gonzalez study the brain and the system in our body that makes sure the messages from your brain get where they need to go. That system is called the nervous system, and we should actually talk about the nervous system for just a second because it's amazing. We have this system that can carry messages between our brain and the rest of our body and growing is all about how the brain communicates with our body. Your nervous system is made up of two main parts. The first is called the central nervous system, which is your brain and your spinal cord. Dr. Gonzalez says you can think of the central nervous system as the command center for your body. The other part is called the peripheral nervous system. The peripheral nervous system includes all the nerves that come off your brain and spinal cord and run through your body. These nerves are really important because they're the ones that get those signals out to faraway places like your fingertips and your toes or your eyes. Here's an example of how your nervous system works. Let's say I'm out running around playing with my friends, and at the last second, I see a puddle, and I'm about to hit it, but I don't want to get my sneakers wet. So at the very last second, I quickly lift up and sail over it and jump clear of the puddle. I don't even really think about it. I mean, it happens in a flash, but Dr. Gonzalez says there's a lot going on in my brain and body to make sure that I didn't get my sneakers wet.

Zurisadai

Yeah, right. That that is actually pretty complex because everything starts in your brain, but that idea has to become actually a signal and go run through that neuron or cell, that worker that is gonna transmit or send that signal all the way down to your spinal cord, to those big nerves or wirings, then get into your muscle and tell your muscle that engine to move. Hey, let's jump and have fun. So it it it sounds easy, and yes, we don't think about it. But it's a very complex thing that happens inside our brain, and our peripheral nervous system, and our whole body works as a team. Yes, the the nervous system is amazing, but we wouldn't be able to do the things that we do without our heart beating and sending blood, or us breeding while our muscles move. So it is amazing.

Jane
We humans are complex creatures. All right, let's get down to the business of growing.

Sophie
Hi, my name is Sophie. I'm five years old. I am from Kansas City. I want to know how bodies grow.

Ethan
My name is Cosmo, and I'm four years old. I live in London, and my question is, how do you grow? I love the show.

Eitan
Hi, my name is Eitan. Um, I'm 10 years old, I and I live in Israel, and this is my sister.

Tal
Hello, my name is Tal. I'm six and a half, and we're curious about...

Eitan
how do people grow?

Amelia
Hello, my name is Amelia, and I'm five years old, and I live in Tarrytown, New York.

Avery
My name's Avery, and I'm four years old.

Louis
My name is Louis. I am 10 years old. I'm from Kansas City.

Grayson
Hello, my name is Grayson. I'm eight years old. I live in Richmond, Virginia.

Maya
My name is Maya, and I'm six years old, and I'm from

Nola
My name is Nola. I'm four years old. How do people grow?

Zurisadai
Our bodies are very complex, and growing is actually very complex as well. And there is actually a whole team that work together to help us get bigger and grow. And I'm gonna just mention a few of these team members. One of those are what we call the hormones, and those are the chemical

messengers that are circulating in our body, telling us, well, it's time to grow. We also have these cells that are the builders, right, that do a lot of this work to help us grow. Another thing that help us grow, and you will see that's why we get taller and taller are actually our bonds. And then, not the less important, actually, I would think that is one of the most important members or of the team is actually our genes. Those are the instruction manual that have again all all of the recipe to tell our body how we should grow.

Jane
And the genes those are the the pieces those instructions that came from your two biological parents so the two humans that created you each shared the genes, and those genes packaged together in a way that makes you unique. But that's how you got that instruction manual,

Zurisadai
Right. So the genes are inside a big DNA book that is the bigger instruction manual, and just as you said, these come from our parents, and so we have two copies for each one of our genes. Then one that comes from mom, one that comes from dad, and we have one pair of these jeans for each one of every single feature that you can imagine in your body, color of your eyes, your hair, how tall you're gonna be.

Giovanna
Hello, my name's Giovanna. I'm seven years old, and I live in the UK. Why do we grow?

Luca
Hi, my name is Luca. I am seven years old, and I live in Bryant Cliff Manor, New York. And my question is, why do we grow?

Jane
Why do we need to grow? Why can't we just all be born fully grown?

Zurisadai
Wow, that's a very complex and a really great question at the same time. Why don't we, when we are born, instead of being babies, as you said, we are not already grown-ups. When we start growing in the belly of our moms, right? We need certain time for each one of our organs to develop and function properly. So growth needs actually time, and needs a lot of energy that we cannot get just at once. And so that's why we start as little babies, and while time goes, we continue to grow until we reach that adult size. But we also reach those functions that we need as adults.

Ellie
I'm Ellie. I'm four years old, and my question is, how tall do people grow?

Jane
In the United States, the average adult male is five feet seven inches tall, or 175 centimeters, and the average adult female is five feet and three inches tall, or 161 centimeters. That's according to data published in 2025 by a government agency called the CDC, the Centers for Disease Control and Prevention. The tallest living person in the world is said to be a man named Sultan Kösen, who is eight feet three inches or 251 centimeters tall. But lots of people are way taller or way shorter than the average. There's a huge range of heights, lots of variation.

Max

Hi, my name is Max. I am eight years old, and I am from Jacksonville, Florida. My question is: Why do some people grow taller than others?

Zurisadai
Remember those genes that we were talking about, and I would say those are the biggest reason why some people are taller than others. As we said at the beginning, the genes are those little one-page instruction or recipe that has the information to tell us how tall we are gonna be, and that is gonna depend on again the information that you were passed on from your mom and your dad.

Jane
If you're wondering how tall you might grow up to be, one clue is to look at how tall your biological parents are. But genetics alone isn't going to determine how tall you'll grow up to be. Your health, nutrition, sleep, and other environmental factors all contribute to your body's growth, and we each have a slightly different recipe, as Dr. Gonzalez described it, that makes us who we are and how big we are.

Layla
My name is Layla. I'm four years old. I live in in , and my question is: Why do people grow up so slowly?

Zurisadai
Great question. First of all, because growing it is one very complex. It takes a lot of energy. So our amazing brain, right, is growing during this time. The same applies for our muscles, our bones, several other organs in our body. But while we do all these things, we're also learning, so we cannot use all of our energy just to make our brain and our muscle and our bones to grow. We also have to use some of that energy to learn new things and new skills that are going to be really helpful once we become adults.

Jane
Hannah is wondering though:

Hannah
Why do kids take a long time to grow, but other things don't?

Jane
You know... Why are there such different rates of growth in some things, not others?

Zurisadai
A couple of things. One, each one of us, each human, each animal, has a different instruction manual about how fast they'll grow, and when they will stop growing, and for how long they will stop or continue to grow. But also, we go through phases where we have or we grow faster than others. So you might see that you go visit your grandparents, and they will say, "Oh, look how tall you are, and I just saw you a few months ago, and that is what we called growth spurts. So those are the times where our body might get taller, or you might look that you grow faster than others. But most of the times, growth actually is very slow and takes a lot of time to happen.

Jane
You mentioned the grandparents, and it sometimes it feels funny because you might have a grandparent or a friend of your adults who comes in and says, "Oh, you're growing so quickly, and you think, "What do you mean I'm growing so quickly? I don't feel like it's very fast." But the adults seem to have a different sense of of our our time and the movement of time than we do when we're kids.

Komu
Hi, my name is Komu. I'm four and a half years old, and I want to know why coming off your body's growing.

Saya
Hi, my name is Saya. I am eight years old and live in Dallas. Why do we grow, but we don't feel it?

Zurisadai
I will start with the bones, right? Because that's probably one of the the things that we might notice, and is more evident how tall we are getting while we grow, and the part of the bone that has these growing zones that are kind of squishy and allow for the bones to make new areas, so the bone continues to get bigger and larger, actually do not have nerves that help us feel, and because do not have those nerves that help us feel whenever we are growing, we do not feel that growing.

Jane
And when you talk about the parts of our bones that are squishy and growing that don't have nerves, are those our growth plates?

Zurisadai
Yeah, correct. Yes, those are the growth plates, or we can also call them growing zones. Right? Yes, those are the squishy areas of the long bones mainly, and those are typically at the near end of the long bones, and that's exactly where a new bone is being added by these cells or work builders, and that's how the long bones grow.

Jane
And if kids, if you're interested in learning more about bones, we actually did a whole episode on what happens when you break a bone, and it can be really different depending on whether you break it in the middle or you break it near a growth plate. So go and look for our episode about broken bones if you want to learn more about the bones. And broken bones can certainly hurt, but one of the other questions that kids have asked us is, we do sometimes kind of feel ourselves growing. We might not feel that skin stretching out or that bone stretching out, but a lot of kids have had the experience of feeling just kind of pain in your legs, maybe or your knees, and having an adult or a doctor say those are growing pains.

June
My name is June. I'm eight years old and live in Bellingham, Washington, and. My question is: What is a growing pain, and why does it hurt?

Eva
I'm Eva from Wisconsin, and I'm six years old.

Cass
My name is Cass. I'm eight years old, and I live in Jersey City.

Lily
Hi, I’m Lily from Washington and I'm five and a quarter years old.

Darcy
My name is Darcy. I'm eight years old. I live in Caldwell, Idaho.

Bridget
My name is Bridget. I am 10 years old.

Lily
My name is Lily. I'm nine years old. I live in Raleigh, North Carolina, and my question is, why do I get growing pains?

David
Why do we get growing pains, and how does it happen?

Sage
My name is Sage. I'm five years old. I live in Seattle, Washington. Why do we get growing pains?

Zurisadai
Well, that is an excellent question. So, even actually, though in the name, the word "growing" is present, we actually now know, and again, doctors and scientists have looked at this, and we know that the pain does not come actually from the actual growing. And then you might ask me, well, why didn't you guys change the name? Well, we have been using this name for quite a long time. That it just made sense to keep it.

Jane
So what is it?

Zurisadai
So I'm gonna be honest with you. The reality is that we don't really know exactly why does it hurt, but we have some ideas. We think that it hurts because it is a way your body is actually telling you after a very long day that you've done a lot of things that you need a break and you need rest and is mostly again this sensation achy sensation of your legs because you have done a lot of things.

Jane
And how can you tell the difference between growing pains and other kinds of pain that you might need to see a doctor about? Well, if your pain happens in both legs and it's kind of achy, but it usually goes away by the time you get up in the morning, you're probably experiencing those things called growing pains. But if the pain is related to an injury, like maybe you twisted your ankle, or if you're seeing swelling or redness, or if it hurts badly enough that it's preventing you from doing fun things, you should definitely talk to your adults. After the break, why do we stop growing, and is it true that our ears and our noses never stop? Stay with us.

Jane
This is But Why. I'm Jane Lindholm. Today we're talking with Dr. Zurisadai Gonzalez-Castillo, a pediatric neurologist at the University of Texas Southwestern Medical Center. We're learning all about how our bodies grow, and we have some questions from you about specific body parts.

Jolene
Hi, I am Jolene, and I am six years old, and I live in Omaha, Nebraska. And my question is: Do bones grow?

Ethan
My name is Ethan, and I live in Colorado. And I'm six years old. And I want to know how bones grow.

Zurisadai
Yeah, I think we we touched a little bit about this earlier, we have many many bones in our body. The most important ones that will help us get taller are the long bones, like the ones on our arms, the ones on our legs, and again at the end of our long bones, we have these growing zones or growth plates that are more squishy and have these areas that will allow to make new bone, so our bones keep getting longer and longer.

Hunter
Hi, my name is Hunter. I am nine and I live in Calgary, Alberta, Canada. And here is my question: Do tongues grow as we get older?

Zurisadai
The tongue is a muscle, and as a muscle, again, is one of those cells that will continue to grow. While I mean, our entire life, the difference is though that again, even though the tongue right is a muscle, compared to other muscles in our body that help us move, there is also going to be a time when our face has reached right the size of an adult. Well, it wouldn't make more sense for our tongue to continue to grow because that space within our mouth wouldn't be able to hold or keep that size of our mouth. So compared to other muscles, it will you will get a time. Well, it will stop growing.

Jane
Okay, so our tongue will stop growing as we once we're adult size, because otherwise we would have too much tongue for our bout, and we wouldn't be able to talk anymore.

Zaya
Hello, my name is Poppy, and I am seven. I am from Boston, Massachusetts. I was wondering, do your eyes grow as you get older?

Zurisadai
Yeah, that your your eye will continue to grow also up to that point. That again, that cavity or that area that will hold the globe, your eye, right, has reached that adult size, then it will stop growing.

Allegra
Hi, my name is Allegra. I'm eight years old. I live in Orange County, California, and my question is, why do our ears and nose keep growing when our bones don't?

Eli
My name is Eli. I am seven years old. I am from Franklin, Wisconsin, and my question is, why do your nose and ears never stop growing, but your eyes do the same.

Jane
Lots of us have heard that our ears and noses just keep growing our whole lives, right? And it's kind of true in that your ears and your nose will continue to get bigger as you grow older. That's because our ears and noses are mainly made of cartilage, which is a flexible tissue that's harder than skin but softer than bone. But it's not really that the cartilage never stops growing; it's that as people age, their cartilage tissue wears down, and the skin on top also becomes less firm, and all of this ends up making your ears and nose look bigger because they're kind of sagging. So if you've noticed Grandma's ears have gotten bigger, you're not wrong, but it's not because they're still growing.

Nina

Hi, my name is Nina. I'm five years old, and I live in Hopkinton, Massachusetts. Why does hair keep growing?

Cameron
My name is Cameron. I'm five and a half, and I live in Ohio, Toys Burg. Why do people's hair keep growing even when they cut their hair?

Micah
My name is Micah. I am eight years old, and live in New Rochelle, New York. And my question is, how do your hair and toenails grow back after you cut them?

Jane
Because hair does keep growing your whole life, and it can grow pretty fast.

Zurisadai
That is true, and that's what we talk about. Each one of our organs have a different rate for growing the speed. How fast does it grow? So your hair is one of those that will continue to grow, and it will be significantly faster than other parts of your body. And I will put also within that same group your fingernails and your toenails, and that's why you keep knitting a haircut fairly often, and you also have to trim your fingernails and toenails.

Jane
Let's talk a little bit about ways that we can help ourselves grow up and grow healthy and strong.

Ellie
My name is Ellie. I am eight years old. I live in New York. Why does sleep help us grow?

Zurisadai
Really good question. Sleep is very important. I agree, and there is a few things that will happen during our sleep. Remember that I said that our brain is part of that central nervous system, right? Inside our brain, there is a tiny gland that is called the pituitary gland. Now that glands make a hormone, and you might recall that I said at the beginning that growing is complex, and there are several players on this team, and one of those are the hormones, right? The growth hormone, it is actually one of those chemicals that is released from this gland onto your blood and sends the message it is time to grow, and actually this growth hormone works harder at night. So we do need a good sleep, right, to be able to grow and grow healthy.

Jane
So, if you want to be really tall, you should be getting a really good night's sleep, just to give yourself any little boost you can.

Zurisadai
That is correct. That's that's one of the the reasons your parents will say, well, it is very important that you go to bed on time, that you give your body time to rest and to grow.

Zaya
My name is Zaya. I live in a van, and my question is: Why do we need to eat healthy foods to grow?

Zurisadai

So there are building blocks that are needed, so our body continues to grow, and it is better when those building blocks are of good quality, right? And where do we get those building blocks? That actually comes from what we eat, and some of the big categories for these blocks include the. Proteins that we can get right from eggs, meat, right? We need vegetables because we can get vitamins and minerals that are those helpers to build several systems in our body. We need healthy carbs. We need the rice, the bread to give us that energy, right, to grow. So it is very important that we get all of these blocks with good quality, so we can continue to grow.

Jane
So there are lots of parts of our bodies that grow our whole lives, and other parts that stop at a certain point. But Abe and Esther from New York are among the kids wondering why any parts of our bodies stop growing at all.

Milo
My name is Milo. I live in Chicago, Illinois. I'm six years old, and my question is, why do our dots stop growing?

Addison
My name is Addison. I am eight years old, and I live in Greenwich, Connecticut. My question is: Why do people stop growing when they become adults?

Charlotte
I'm Charlotte, and I'm from Rockaway, New Jersey. And my question is: Why do adults stop growing when they become grown-ups?

Nora
Hi, my name is Nora. I'm six years old. I live in Rochester, New York, and my question is: Why do grown-ups stop growing?

Franklin
I’m Franklin, five years old. I live on an island called the Isle of Wight of England. Why do plants keep on growing, but people stop growing?

Zurisadai
So the main answer will be because of again each one of our body parts has a time or signal when it will either has to stop growing or has to slow the growing. Plants actually do not have growing zones, right? So there is no signal that tells the plants, well, it is time to stop growing, and so that's why they keep growing and having branches and new leaves, the entire life of the plant. But humans were not like that, right? We need to maintain the energy to function well. So when we have reached our adult size, most of the energy that was actually being used to grow, it is used to maintain our function, so we can keep again having fun, spending time with our loved ones, and learn still a lot of new things.

Jane
So, what is it that we gain then from not growing anymore as adults? You know, if that energy is redirected into things other than growing, then there must be some benefit, right? Like, what's good about being an adult who's not growing anymore? Where's that energy going?

Zurisadai
The energy is actually going into several things. I would say we're not growing taller, but the the energy is still being used not just to learn, but there are other ways to grow. So the bone is not growing taller,

but it's getting thicker, which is a different way to grow, right? the The muscle again was not a tiny muscle, but it continues to grow, and we talk about several other systems that are not growing in length, but are still growing are being replaced, so we ensure that each one of our systems is still working well.

Jane
I have to say too, as a parent, if I had to devote all of that energy to growing, I would be even more exhausted with all the energy that I'm supposed to give to my children instead. So maybe yeah, our energy is redirected into other things to help the next generation grow.

Zurisadai
Well, yeah, and just as you said, as we grow, we have new responsibilities and new things that we have to do, right? That we weren't doing when we were kids, right? And some of those activities can be more complex, so we might use that energy to replace from the growing and take that for these other tasks and activities.

Jane
That's it for today's episode. Thanks so much to Dr. Zurisadai Gonzalez-Castillo for helping us understand how our bodies grow. As always, if you have a question about anything, have an adult record you asking it on a smartphone, you can use an app like Voice Memos. Then have your adults email the file to questions@butwhykids.org. We take questions on all kinds of topics, so whatever you're curious about, ask your adults to record you.

Jane
But Why is produced by Sarah Baik, Melody Bodette, and me, Jane Lindholm at Vermont Public. We're distributed by PRX, our video producer is Joey Palumbo, and our theme music is by Luke Reynolds. If you like our show, please have your adults help you give us a thumbs up or a review on whatever podcast platform you like to listen to. It helps other kids and families find us. And if you want to know more about But Why, you can always have your adults sign up. For our newsletter, you'll find it right at butwhykids.org. We'll be back in two weeks with an all-new episode. Until then, stay curious.