Sawbones 588: What's More Edible, Paper or Cotton?

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Intro (Clint McElroy): *Sawbones* is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have *fun* for an hour, and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from… that weird growth. You're worth it.

[theme music plays]

Justin: Hello, everybody, and welcome to *Sawbones*, a marital tour of misguided medicine. I'm your cohost, Justin McElroy.

Sydnee: And I'm Sydnee McElroy.

Justin: And we're about to head out to the beach here, for the annual McElroy family vacation.

Sydnee: I'm wearing my parrot earrings.

Justin: Yes.

Sydnee: Not everyone can see that, so I'm just showing— Like, there's…

Justin: But— Bef—

Sydnee: And I'm prepared. There's the parrot. It's a little— It's just a parrot. Since you can't see, I'll describe it. It's an earring, but it's a parrot.

Justin: Yeah. If you can imagine—

Sydnee: If you can imagine a parrot…

Justin: Imagine some other parrots you've seen, but much smaller, and still.

Sydnee: Yes. Very small.

Justin: Very quiet.

Sydnee: And hanging from an earlobe. That.

Justin: It's *exactly*— And imagine two. One for each ear.

Sydnee: Yeah. There's one on each ear.

Justin: Yeah. So we are headed out, but we wanted to take a moment before we go, and do one of our favorite kinds of episodes. Take your questions, mix 'em up with a little bit of Syd's research and her book learning, and a little bit of my street smarts.

Sydnee: No, we just answer the questions. [chuckles]

Justin: And then see if we can't come up with an answer, you know?

Sydnee: Justin, I decided— I sat down to do this episode, and of course it's summer, so our children are with us a lot more, as you're aware.

Justin: An unbelievable amount. 26 hours a day, somehow.

Sydnee: What I also love is that they sing the entire time, or talk.

Justin: All the time! God.

Sydnee: Usually—

Justin: It's just different songs from *Mean Girls*, so loud. And they're different—

Sydnee: Yeah, usually two different songs at the same time. No, I'm joking. I love having them home.

Justin: Sometimes, it's the same song ten seconds separated, because one starts, "I'd rather be me than be with you."

And then the other one's like, "Ah, I love that joint! I'm gonna start that one 20 seconds after yours. And maybe, we can finally just drive Dad fully insane. He'll fully go absolutely cuckoo."

Sydnee: I love it.

Justin: Yeah, yeah, yeah. Different brains!

Sydnee: I love having them here. And I—

Justin: Different brains, it's beautiful. Different brains.

Sydnee: I sat down to research, and they sat down right next to me. As in physically squished against me, and are like, "What are we doing?"

And I'm like, "Well, I'm trying to research a podcast."

Justin: They sensed I was in the bathroom and couldn't protect Sydnee from them, for a moment.

Sydnee: Mm-hmm. And so they came in, squished in with me, and they were like, "What are you doing it on?"

And I was like, "Well, I was gonna do some weird medical questions."

They were like, "We have some." And so they just rapid-fired the first five questions at me.

Justin: Wow.

Sydnee: So I've got— Our first five come from Charlie and Cooper. They insisted – well, Cooper insisted – that I give her credit for hers specifically.

Justin: Okay.

Sydnee: And then the other five are from our listeners, so…

Justin: Okay, alright.

Sydnee: Actually, the other four. 'Cause then at the end, we're gonna do a Cyclospora update.

Justin: Oh, okay.

Sydnee: 'Cause there's news. There's new news.

Justin: That's fantastic.

Sydnee: There's new news.

Justin: New news! We've got a lot to talk about.

Sydnee: Our first question is from Cooper. And it's, "Why do we fart?"

Justin: Okay. Are you— Maybe I could take a shot at these?

Sydnee: Yeah. Well, I mean, do you want to take the existential, philosophical [chuckles] "Why do we fart?" Or—

Justin: Why do we fart? We fart to remind ourselves that we are human, and that nothing is that serious. Because at any time, you could fart. So it can't be all that big of a deal.

Sydnee: So your answer is that we fart 'cause it's funny.

Justin: We fart— You know, well, it's funny because we're human.

Sydnee: Okay.

Justin: We fart because we fart. It's funny 'cause we're people.

Sydnee: Do you know why we fart? Like, what is it?

Justin: Sometimes, when the food is *so good* that you cannot take stock of your chewing or your swallowing, you can't really be mindful of all of that, sometimes the food is so good, you gotta keep piling it in. And some air gets in there with the food, and the only way out is through.

Sydnee: Well—

Justin: The butt.

Sydnee: What you are really answering is more why we burp.

Justin: Burp— Well, farts are just burps. [wheeze-laughs]

Sydnee: No.

Justin: Farts are just burps that come out your butt!

Sydnee: I mean, I guess it's possible that swallowed air could make it all the way through your intestine. Although more than likely, if you're swallowing a lot of air while you're eating, that's gonna come back up as a burp. Or just be resorbed, if you don't burp.

Justin: Okay.

Sydnee: But most of the gas that we produce that is flatulence, that is a fart, is being produced by bacteria in the intestines during the digestive process.

Justin: You know, in much the same way that we're—

Sydnee: So breaking stuff down, creating gas.

Justin: Like how yeast, if you mix it with some sugar and warm water, will dissolve that sugar and start to consume it, and the byproduct of that is the air bubbles that give the bread texture, right?

Sydnee: Yeah, make bubbles. And that's why different foods will create different amounts of gas. It depends on what is in there that the bacteria breaking down, or fermenting, or whatever they're doing, how much CO2 and other gases, sulfurous gases and whatnot, they create. Which is why some foods are notorious for making you fart, like beans. There's more gas produced. And then that also – this is so gross – that also affects the smell [chuckles] of the gas.

Justin: It's gross that farts smell?

Sydnee: Some things that are broken down create more sulfurous compounds in the gas. And so they are…

Justin: Stinkier. Some foods are stinkier farts.

Sydnee: Yeah. So like…

Justin: Like broccoli, right? Broccoli's a pretty stinky fart.

Sydnee: Well, I mean, all of the cruciferous vegetables are gonna create a lot of gas.

Justin: Oh.

Sydnee: I think protein, while it doesn't create as much as fiber, I think if you eat a bunch of meat, that's… Those are stinky farts. [laughs]

Justin: It's whatever our kids are eating. It's whatever our kids eat, that's what makes the most farts.

Sydnee: And then it's all just— And it's all very individual, right? It's all—

Anyway. That's why we— Most farts are not swallowed air. They're actually gas that is being generated in our intestines, and needs somewhere to go. And of course, some gas can be resorbed, but some cannot. And if there's a lot of it, it's gotta come out. Gotta come out.

Justin: Gotta come out.

Sydnee: Except for those of us who don't fart.

Justin: Ever.

Sydnee: Ever. As far as you know.

Justin: Our next question. Syd, I don't have any questions in front of me.

Sydnee: Yes. This is from Charlie: "How do taste buds work?"

Justin: Shoo. Dang.

Sydnee: Good question, right?

Justin: That's good.

Sydnee: I know! It is a good question. It's not something that I get asked very often.

Justin: I feel like we've said— Have we busted the myth that there's different parts of your tongue that taste different things? Is that true? I feel like I've heard that before, but I don't know if it's accurate.

Sydnee: That is a myth.

Justin: Okay.

Sydnee: Yeah. Generally speaking, all parts of our tongue can taste all flavors.

Justin: Okay.

Sydnee: Yeah. So no, that is a myth. They are not— There are patterns you can look up where it compares where you sense different tastes like sweet and salty and whatever the best, and it's all overlapping. So anywhere.

Justin: I wonder if it's sometimes, you can get some pain on the side of your tongue after you've been eating a lot of sour stuff. I wonder if that's what gave people the idea, like if you can feel it more in the sides of your tongue. I don't know.

Sydnee: I don't know. That's a pervasive myth, though. But no, you can taste everything pretty much everywhere on your tongue.

Justin: Well, that's out, then. What else do we have? What other options?

Sydnee: So taste buds, or taste papilla if you prefer…

Justin: Buds are fine.

Sydnee: [chuckles] They're the bumps on your tongue that sense taste.

Justin: Okay.

Sydnee: Okay. First of all—

Justin: So far, I am— You have not lost me.

Sydnee: So at the top of each bud, there's a pool of liquid.

Justin: Okay.

Sydnee: That's got to dissolve the substance enough— What? Why are you looking so strange—

Justin: This is just wild!

Sydnee: Yeah. It has chemicals in it that will then— Enzymes that will break down, and then sense what in— 'Cause it's not the entire food, right? It's different substances in the food that you're going to sense the sweetness, you're gonna sense the umami, you're gonna sense the salty, whatever it is. So first, it's gotta enter the fluid. It's like a little funnel. And when it's in there, the enzymes break it down. They detect certain substances, okay?

Justin: That's *wild*.

Sydnee: And then those substances will activate nerve cells there by— They change a protein in the wall of the sensory nerve cell.

Justin: That's cool.

Sydnee: And then that change releases a little messenger chemical, which will then continue that impulse on down the track of nerve cells up— Well, I shouldn't say down— Up to your brain.

Justin: That's wild! That's so—

Sydnee: And tell your brain, "This is sweet."

Justin: That's wild! That's so complicated!

Sydnee: It is very complicated.

Justin: How do we do that?

Sydnee: The senses are very complicated. I mean, I know that sounds like a very broad statement, and I've talked about the way the inner ear works.

Justin: Yeah. That was— Forget about it.

Sydnee: Which is wild. And I won't go through that, 'cause it's too fascinating. It needs a whole episode all over again, which we've already done. But hearing the way we taste, even touch seems so simple, but there's numerous different kinds of nerve cells involved in light touch, and firm touch, and pain, and pressure, and vibration. Our sense are incredible.

Justin: That's amazing. I had no idea.

Sydnee: But in short, that is what is happening when you taste something.

Justin: Alright.

Sydnee: Which was a good question. Charlie also had a good, but much simpler, question: "How long is the digestive tract?"

Justin: 12 feet.

Sydnee: Not exactly, but close!

Justin: Ten to 12 feet.

Sydnee: Well, could be around that. Not exactly. The—

Justin: Mine is 11 feet.

Sydnee: [laughs]

Justin: I had it measured. Oh, I had it extended. It was the '90s, and we were all doing a bunch of different stuff, and…

Sydnee: You got your belly button pierced, or your extended your intestine.

Justin: I got my belly button pierced, and I was like, "While you're in there, give me the extension." And I can go, buh, 16 hours without, you know— God, it's a nice perk.

Sydnee: So the small intes— I mean, it varies. There's a range. Not all intestines are the exact same length. The small intestine can vary— And man, I will tell you. I started searching, "What is the exact length?"

And every popular— 'Cause all the big academic centers, like Harvard and everybody, will put out their own "Here's some fun information for patients. This isn't for clinicians; this is just for patients. The answer's like this." So you can go to websites and find this kind of stuff, from all these different academic med centers. And everybody is giving slightly different answers to this question, by the way.

Justin: So nobody knows.

Sydnee: Well, I think it's because there's a range. And different studies show slightly different ranges, but generally speaking, the small intestine can be anywhere from nine to 16 feet. I did find a couple areas where they claim the small intestine is closer to 20 feet, so I think the point is, it's somewhere in that range. The large intestine is usually around five feet. So…

Justin: It's something else.

Sydnee: So then altogether like 15, 20 feet, maybe up to 25 feet, depending on the individual, and yeah.

Justin: I know it didn't work like that, but can you imagine the moment when someone was making people, and they were like, "I gotta get *how* many feet of it? *20 feet* inside of there? That's impossible! And another five feet of the big stuff? Dang! I don't know how I'm gonna get— Aw, I'm gonna have to open him up in the back, maybe." Is this where butts came from? They needed a little extra room? Dang. That's a tough order. 20 feet of that. Can't they just do it quicker? [laughs]

Sydnee: No, it takes a while to get all the stuff we need out of the food in us, and the stuff that we don't need out of us. [laughs]

Justin: It's exactly how the queueing system at Disney or any other theme

park works, though. You wrap the line in on itself, so it doesn't seem as long. And people have other people to distract themselves. You know that that's why lines do that? 'Cause people like to look at other people, so if you make the line spiral like that, then people can look at the other people in line, and they like it better?

Sydnee: See, I—

Justin: Helps to entertain 'em.

Sydnee: But what they didn't prepare for is that it gives boomers too many opportunities to comment on what everyone in line is wearing.

Justin: That's true.

Sydnee: [laughs]

Justin: That's true, but someday we'll be boomers, right? And then we'll want to do that? Is that how it works?

Sydnee: Um…

Justin: When we grow up into [through laughter] boomers, as we get older?

Sydnee: Well, I don't think we'll be boomers. We'll just be elder millennials, who get slammed as much as boomers do.

Justin: Judgmental zillennials. [laughs]

Sydnee: I shouldn't perpetuate the boomer hate. I think it is part of aging that we begin to look at younger people around us, and go, "Why are they wearing that?"

Justin: And Sydnee told me that—

Sydnee: And then we all do it, we all do it.

Justin: And then Sydnee told me also, they had a lot of lead. And that has led to uh, a brain poisoning of an entire generation.

Sydnee: I did not— Okay. That is not coming from me; that is a pervasive theory on the internet that I am aware exists, and I told Justin exists.

Justin: And now I'm settled.

Sydnee: I do not know that there's any evidence for that. I have not—

Justin: It makes it— If you met my dad, lead poisoning is the only thing that tracks.

Sydnee: If you're not familiar, if you don't know what we're talking about, there is a theory out there that all of our boomer parents—

Justin: Not a scientific theory, right?

Sydnee: No. Were exposed to a lot more lead in childhood, because we didn't know the dangers of it, and that that's why…

Justin: [holding back laughter] It's why they are the way they are.

Sydnee: … all of the stereotypes exist. I have never seen any studies.

Justin: It's so funny.

Sydnee: I have not seen any evidence, no.

Justin: I know it can't be right, but it's so funny to me, the idea that there's this entire generation that's like, "Never mind." [laughs]

Sydnee: Yeah. No, and I don't— I don't want to perpetuate that theory, because it's not— I have not seen a study where they're like, "Yeah, and then we analyzed lead levels in all of our parents, and—"

"What's more edible, paper or cotton?" This came from our genius daughter, Charlie.

Justin: Oh, gosh. Um…

Sydnee: [laughs] My mom answer was, "Neither. Don't eat those. Don't eat those." [chuckles]

Justin: I mean, paper is almost certainly nontoxic. Because if it's a paper that is made in the US, it is probably designed for kids to eat pretty safely. I know that there might be some dyes, but it's mainly paper, so I think you're going to be able to digest that okay, except for maybe some of the cellulose that's in there. I would guess that the bigger problem might be with cotton. I feel like that would be— I don't know. In my head, I feel like that would be harder to digest, but I don't know.

Sydnee: Well, so edible and digestible I think are two different—

Justin: Ooh, good point.

Sydnee: It's important to say those are two different things. I guess edible, either one you could put into your mouth and get wet enough to then swallow.

Justin: [snorts]

Sydnee: If that's what we're saying, edible.

Justin: Mm-hmm.

Sydnee: You can get either in there. And more than likely—

Justin: I've never really thought that's what edible meant, and I don't *think* anybody else— Are matchbox cars edible, Dr. Smirl-McElroy?

Sydnee: [laughs] I—

Justin: Sorry, Syd? Are—

Sydnee: Are we saying digestible?

Justin: Sorry. If I broke down a Swingline stapler into its small component parts and consumed them, would it become an edible stapler? [laughs]

Sydnee: Corn is edible, but not all parts of corn are digestible, because…

Justin: Right.

Sydnee: … you see it when you— I mean, look when you go to the bathroom after you've eaten corn. You see it again, right? You see pieces of it, because you didn't digest that. It went right through you.

Justin: Okay.

Sydnee: You couldn't digest it. We cannot digest paper or cotton. And I'm just talking about if we're picturing a tiny piece of a cotton ball, and a corner of a piece of notebook paper, right? If we get into what's on the cotton and the paper, it gets weird.

Justin: That's what— Yes.

Sydnee: You can't digest either. It is, as you said, plant cellulose. We can't break it down. So it's just gonna pass right through you. It shouldn't be toxic, if it's a tiny amount. So I guess edible, in the sense that you're not gonna die if you eat it.

Justin: Okay, this is the— No. I think edible has to mean that you can derive some nutri—

Sydnee: Nutrients?

Justin: I think you have to be able to derive nutrition from consumption. I wouldn't describe gum as edible.

Sydnee: Okay. Well, then neither are edible, if that's the definition.

Justin: Okay.

Sydnee: If we're talking about safety to pass through your intestines, if they're tiny pieces of paper, that will probably pass easier than cotton, only because cotton can clump. And if you ate a lot of cotton, that could be dangerous, theoretically. If you ate a whole bunch of cotton, you could create a blockage.

Justin: Yeah. There you have it, folks.

Sydnee: But my advice is, don't eat either.

Justin: Don't eat either.

Sydnee: [laughs] Don't eat either.

Justin: Don't eat 'em. Don't do it.

Sydnee: The last question from our kids, before we take a break, was from Cooper. "How do we catch a cold, if we aren't near someone who has one?" She amended to, "Or if we don't do something dirty, or something."

Justin: Germs are—

Sydnee: Yeah, how do you—

Justin: They live on surfaces for a while, right?

Sydnee: Mm-hmm. That's, I think—

Justin: What was the word for that? There was a word we talked about.

Sydnee: Fomites?

Justin: Yeah, fomites. We talked about it a lot.

Sydnee: I think it's good for— And maybe it's something that, as adults, we understand a little more intuitively. But it's always a good reminder that just because you weren't around somebody who was sick, doesn't mean you weren't around the particles that someone who was sick left behind.

Justin: Mm-hmm.

Sydnee: Doorknobs, and surfaces, and you know, the handles in the bathroom we always worry about. But if you think about phones, or things that we would use in an office space that a lot of people might touch…

Justin: People really should be more scared all the time.

Sydnee: No! I'm saying, it's the importance of handwashing.

Justin: Mm.

Sydnee: It is why, if you're sick, you shouldn't be out in public. If you're sick with something contagious, you should stay home until you're not contagious. And if you— Either way, you should wash your hands every time you go to the bathroom. You should wash your hands when you touch your mouth or face. Because that's what happens, right? You rub your nose, 'cause it itches. And then you touch a surface, and now you maybe have left some residue behind that then Cooper, even if she's not doing something dirty, [laughs] could pick up.

Justin: Let's take a quick break. Let's see what's happening.

Sydnee: Let's go to the Billing Department!

Justin: Yeah, let's go.
[ad break]

Justin: Our listeners also had some queries you're gonna help stamp out, Syd.

Sydnee: Yes, Justin. I'm reading the questions this time.

Justin: Yeah, I love it.

Sydnee: It's unusual. You like this?

Justin: Well, you didn't share it with me. So I'm just kind of your beautiful cohost.

Sydnee: I did share it with you.

Justin: Well, I don't have a— I didn't open it.

Sydnee: You just weren't prepared today. I was. I was overly prepared.

Justin: It's true. We got a lot going on.

Sydnee: This is from Caroline. And she addressed it to Dr. Sydnee and Mr. Justin Notary Public, so I thought you'd like that.

Justin: Fair enough.

Sydnee: "I've got one heck of a canker sore." Sorry, I censored you there, Caroline. But I can't say H-E-double-hockey-sticks on this show. "I've got one heck of a canker store— canker score— sore, or a mouth ulcer."

Justin: [with old-timey cadence] "Welcome to my canker store!"

Sydnee: [laughs]

Justin: "Where we have all the finest cankers. What sort of size can I assist you with?"

Sydnee: "I know there's all sorts of reasons—"

Justin: "There's some fine new cankers, in from Paris."

Sydnee: [laughs] "I know there's all sorts of reasons people get canker sores. I usually develop them after an accidental lip bite, or an overzealous brushing incident. But what I can't figure out is why does an *ulcer* form, as in why a crater shape? When I get a cut or scrape on my arm, it stays in that shape, gets better over time, doesn't turn into an ulcer. Is there something different about mouth bacteria? Do they have instructions in their DNA to turn all minor mouth injuries into a stinging cereal bowl of agony?"

Justin: I have a theory about this, but I don't know if it's right or not. And I would like for you to tell me before you tell me the right thing.

Sydnee: Go for it. This was a fascinating question, Caroline. It took me on quite a journey.

Justin: Okay. I would say that the healing mechanism for these two things is different, by which I mean that the skin closes over to protect the— It has a mechanism for closing over to prevent further stuff from getting in there, right? We have scabbing technology in our arms.

Sydnee: Mm-hmm.

Justin: But you can't have scabbing technology in the mouth, because it's super wet. So the healing has to be a little bit more of an open-ended healing style, and so it just doesn't have the mechanism to close over in the mouth, so it has to heal a different way. That's my theory.

Sydnee: You're sort of right, but I will say, don't feel bad about not being completely right. Because as I began to research ulcer formation in general, like the pathophysiology of ulcers, we are still understanding this.

Justin: Hmm!

Sydnee: This is still not a completely understood— Because there are *lots* of reasons why ulcers form, not just one. And every one is slightly different, and we are still trying to figure out the exact series of inflammatory, and immune response, and pathogenesis from the offending organism. Everything that goes together to make not just a cut, but an ulcer.

Justin: From a biological standpoint, these things are the pits.

Sydnee: Yes.

Justin: Because what— It sucks, in your body, to bite your cheek *one time*, and then your body's like, "I gotta remind you about this for a week. I never can have this happen again." Why do you need such a stringent reminder about this? [through laughter] Why does this have to be such a production?

Sydnee: Sometimes, what has happened, and you may not have known because we use our mouths so much, is that there was a blister first.

Justin: Oh, yeah?

Sydnee: Whatever mechanism of injury, whether it was a bite, or sometimes these just appear from viral illnesses or from if you eat really acidic foods, right?

Justin: Mm-hmm.

Sydnee: Sometimes, there was actually a blister there briefly, and then it popped, and you didn't even know.

Justin: Ugh.

Sydnee: A lot of patients won't necessarily catch what we call the vesicle, or blister form, of these ulcers.

Justin: Hmm!

Sydnee: And then it opens. But it's basically what is happening, you've got some sort of inflammation. And then there's this cycle of our body trying to fix it, and heal it, and recover it. And we are increasing blood flow to that area, and this is similar in skin ulcers. So we're gonna increase blood flow, we're gonna increase all of these little signals for healing. And then, to draw more things to it, these little signaling proteins and things to say, "Come here, white blood cells! Come here, cytokines! Come here, inflammatory mediators! Come here, we need your help! We've got to heal something!"

And all of this increased blood flow increases swelling and fluid accumulation in this area. And we're actually doing damage as we're trying to heal. So part of it is our body's immune response attacking the area, and then creating more damage.

Justin: Mm. Mm.

Sydnee: It's a really complex process that has to do with increased vascular pressure in the area of the injury, which then leads to fluid leakage from the vessels. And then we get areas that are kind of being crushed by the increased fluid, so then you've got more cell death. It is an incredibly complex pathophysiology that leads to an ulcer.

It was fascinating. I started reading about it, because I treat *tons* of skin ulcers. I mean, every day of my life, I am treating some sort of ulcerative skin lesion. And I have not taken the time to sit down and think about, "I don't know exactly all of the mechanism—" I mean, I understand why it happened pragmatically. But then every little cell-signaling pathway that's happening inside that ulcer, I have not taken the time to think about all of that. It's fascinating.

Justin: So ulcer is like— It reminds me of if there is a crime in someone's house, then the police and the ambulance and everybody just go to the house. This reminds me, if there's a crime in a city street where they have to do the perimeter, you know what I mean? They're telling everybody,

"Back up. Give us room, we gotta help these people." And just the people come in, but around the circle, around the edge, people are getting angrier 'cause they wanna see. You know? They wanna get in.

Sydnee: Mm-hmm.

Justin: But you can't— It's an open crime scene, 'cause it's in the middle of the street, so you can't get everybody out of there and clean it out. That's what it reminds me of.

Sydnee: Yes. Yes! It is, it is like that. And I was reading through specifically oral ulcers, this—

Justin: Oh, gosh!

Sydnee: I know. Sorry, there was a picture.

Justin: Man, I can't believe the illustrations. You swiped it right up on me there, big dog. Sheesh.

Sydnee: And as Justin can attest, these are all different ways that ulcers form. And every one of these are different pathways to an ulcer formation, depending on was it from an infection, what was the infection, was it an immune condition, was it what a lot of us have, which are just recurrent aphthous stomatitis, recurrent aphthous ulcers, which is what you're often— In my family, we called 'em fever blisters.

Justin: Mm-hmm.

Sydnee: Some people call them canker sores, cold sores.

Justin: Cold sores, yeah.

Sydnee: And they're inside the mouth. Because if it's an outside-the-mouth, then we're probably talking about herpes, and again, that's a different formulation. But it's a fascinating thing why ulcers form, and the answer is,

it's different for every single reason [laughs] you get an ulcer. Generally, we're talking about a breakdown in the surface. The surface mucosa – or epidermis if it's skin – has broken down, revealed the inner layers, and now it's gonna take a long time to heal. And that healing process is gonna perpetuate the ulcer for a while.

Justin: There you go!

Sydnee: It's fascinating.

Justin: It is fascinating. I had no idea. I hate those things. Ugh.

Sydnee: Yeah. I'm gonna be reading about it a ton after this.

Justin: For fun. I mean, we're headed to the beach. So what better beach read could there be?

Sydnee: For fun. This is what I'm gonna do while I'm at the beach. I'm gonna study ulcer formation in the mouth and skin.

Our next question. "What's the difference between nightmares and night terrors, and is there an age limit to either of them? Doctors told me that my son had night terrors most of his childhood. He's now 17, and still has them from time to time. I, middle aged, woke up screaming and kicking my legs because I saw someone standing over my bed. The entire house woke up. It took me a long time to fall asleep again. And even now, I remember every moment and every emotion. Last night, my son had a similar experience. He was yelling and kicking, and everyone in the house woke up. He says he remembers it all. A family friend said it's ghosts."

Justin: Is it ghosts?

Sydnee: So the question is, "Were they nightmares, were they night terrors, or ghosts?"

Justin: Or ghosts.

Sydnee: Night terrors and nightmares are different. Nightmares, most anyone, at any age, can experience. They are dreams, so they happen during rapid eye movement, or REM, sleep. And they are of some sort of terrifying nature; they upset you. A nightmare, you typically wake up from. The physical reaction is one we would expect of fear, so maybe your heart's racing. Maybe you're a little sweaty, you feel anxious. You remember it. You remember the dream, you remember waking up. And usually after, you can kind of calm down and you can go back to sleep.

So what has been described here would be nightmares. Because in both cases, our patients remembered the event, right?

Justin: Mm-hmm. Okay.

Sydnee: And you can scream, and yell, and make noises as you wake up from a nightmare. Because you're waking up in that process. A night terror happens in the *deeper* stages of sleep. In deep, slow wave sleep. So that is not a *dream*, necessarily. It's a very physical reaction that the patient is having to something that has been triggered in the brain. It's *different* than a nightmare. You don't remember it, and you're usually never fully awake in a night terror. And it typically is in children, although we can see cases of this in adults. This is typically something that we primarily see in children.

Someone having a night terror, if you hear them screaming or yelling, or they're kicking in bed, and you go to talk to them, they are not going to be awake. They will not know what's happening. The most important thing you can do is keep them safe in that moment. Make sure they either stay in bed, or get back to bed, if they've tried to get out of bed. And then they'll go back to sleep, and most likely, the next morning they'll have no memory of any of that. And like I said, it's kind of a different pathology, because it's happening in a different form of sleep than dreams typically happen.

Justin: Now, Syd, nightmares, night terrors, I guess the question I have is which one can Freddy get you in? Can Freddy get you in both?

Sydnee: Freddy is in your nightmares.

Justin: Can Freddy *get you* in a night terror?

Sydnee: I think I— Listen. I don't know what the lore is of what stage of sleep must you be in for Freddy Krueger to get you, but my sense would be it has to be dream sleep. 'Cause he's in the dreamland. He's in dreamland.

Justin: Yeah.

Sydnee: And dreams happen in REM sleep, so it has to be a nightmare.

Justin: Not a night terror, though.

Sydnee: Now, is it ghosts? That is not my area of expertise. I don't— I—

Justin: It's not Freddy. I mean, Freddy's a ghost. Nightmares, could be ghosts, that might be Freddy.

Sydnee: I will say that, if you remembered it, it was a nightmare. It is interesting, you said you thought you saw someone standing over you. In night *terrors*, classically – and there's a painting famously that represents this, a sleep paralysis demon sitting on someone – night terrors can feel like a presence. But that's not a ghost.

Justin: Not a ghost!

Sydnee: "I just did a workbook on neurodivergent sleep with my occupational therapist. In it, it claimed that REM sleep was critical for, quote, 'detoxifying the brain…'"

Justin: [sputters]

Sydnee: "… and as a longtime listener of your podcast, I'm always wary to believe anything that 'detoxifies' the body other than our livers. However, I don't know enough about this process to know if it's true or not. Does REM

sleep do something to detoxify our brains? What are the toxins in our brains that they're getting rid of? Thanks, Liam."

REM sleep is important.

Justin: Yeah.

Sydnee: You have to have REM sleep. It is not— I don't know that I would use the word "detoxify," because it's not getting rid of toxins. It is doing something. It is doing something vital, but not *detoxifying* the brain.

Justin: What is it doing?

Sydnee: Okay. So there are several things we know REM sleep does. So while you are in rapid eye movement sleep, that's the sleep where you can dream—

Justin: Where Freddy can get you.

Sydnee: [laughs] Your brain actually goes through, and can rewire the spaces where neurons, brain cells, connect. It's like pruning. It's going through, and making new connections. And getting ample REM sleep will improve your ability to solve problems and improve your memory.

Justin: Mm.

Sydnee: We know this. It is critical to memory formation, and then tackling new things the next day.

Justin: It's when Bing Bong does his thing. It's when Bing Bong gets in there, and sorts everything.

Sydnee: Yeah. Well, you are kind of getting rid of stuff, yes. It is like that. It also helps with mood, because dreams help you process emotions.

Justin: Mm.

Sydnee: Dreams are actually important for that. They process fear, they process anxiety, they process sadness. And so you are more emotionally regulated if you get REM sleep.

Justin: You know what's tricky about this, to hear you tell it? It is— The word detoxifying could be a useful metaphor, in a sense. Like, metaphorically speaking, you are talking about a mental version of it. But it has been so misused by so many parts of the medical community, it's lost its metaphorical power, you know what I mean? You can't say it's detoxifying, even though in a sense, you're sort of metaphorically talking about that. But it's not…

Sydnee: But it's not, yeah.

Justin: It's not. [laughs] It's not.

Sydnee: Infants need a lot more REM sleep than adults, and that makes sense, because it's part of brain development. We know that it is essential to the central nervous system being fully formed.

Justin: Yeah.

Sydnee: And we also have some evidence that it protects against dementia. There was a study in neurology that showed for every one-percent reduction in REM sleep, there was a nine-percent increase in the risk of dementia.

Justin: Woah. So if you had a— Wait, say it again?

Sydnee: For every one-percent reduction in REM sleep, there was a nine-percent increase in the risk of dementia.

Justin: So if you had a ten-percent reduction of your REM sleep, you have ten percent less than— If you had 11 percent less REM sleep, then you would be almost guaranteed to have dementia.

[pause]

Sydnee: I'm assuming this is on a regular, sustained basis.

Justin: So if you— That's a wild thing to think about.

Sydnee: We need REM sleep.

Justin: We need it.

Sydnee: We need REM sleep so much that, if you have a night where you don't, you will rebound— Or during the night, if you're not getting REM sleep, as soon as your brain can, it will rebound into more REM sleep. Every time you fall back asleep, you'll immediately be back in REM sleep, 'cause your brain needs it so much.

Justin: Hmm. Fascinating.

Sydnee: Uhh, Justin.

Justin: Yes, ma'am.

Sydnee: "I was just soaping my pits with Selsun blue."

Justin: Incorrect. You were just podcasting with me.

Sydnee: [laughs]

Justin: Nice try. [laughs]

Sydnee: "And I'm wondering, is the shampoo naturally blue, or is it just dye?"

Justin: There's no way it's natur— Well, hold on.

Sydnee: Our listener thought that this would be a good ploy to get you to talk about brands. Do you think Selsun blue is naturally blue?

Justin: I haven't researched this, so I don't wanna just guess. So I don't—

Sydnee: Go ahead. I know the answer.

Justin: But I would say that, if Selsun blue is called Selsun blue, it's because there is something in the chemical makeup that makes it blue, and they just lean into it.

Sydnee: No. They added dye.

Justin: Son of a gun!

Sydnee: It's selenium sulfide.

Justin: *Gosh*!

Sydnee: Selsun comes from a combination of the words "selenium sulfide." That's the active compound in there that actually treats whatever condition you're using Selsun blue to treat. And it is a pale yellow color.

Justin: Depra— [sighs]

Sydnee: So without the dye, it would be a pale yellow. I don't know if it's just because it looks soothing, or pretty, or it looks like something— I don't know. I don't know why blue. I mean, that is beyond my medical expertise. I feel like this is a branding thing.

Justin: I would never sit here and try to question the judgment of brands, but sheesh.

Sydnee: I will say, like…

Justin: I feel so misled.

Sydnee: … a pale yellow color is not necessarily— I don't know, maybe it's

just to differentiate it? Because a lot of shampoos and conditioners are that white to cream to yellow kind of spectrum, so maybe this is to make it look like something different?

Justin: Okay, this is my theory. What's the— Head and Shoulders, Selsun blue is dandruff, right? What's the one that I use that's like, prescription strength?

Sydnee: Nizoral?

Justin: Nizoral, right. They're all blue. Here's my theory: dandruff is white. So they want something that is a different color from dandruff, so it feels like a cleaning thing, that you're getting the white stuff out? I don't know; that's a theory.

Sydnee: Well, and I would wonder if one was blue first. And this is a brand research, not a medical research.

Justin: Well, maybe.

Sydnee: I wonder if one was blue first, and so the others followed suit.

Justin: And now I gotta find it out. Now, I'm fascinated.

Sydnee: Well, you'll have to give us a follow-up on our next episode. Right now, I'm gonna give you a brief update on Cyclospora. This is as of three minutes before I finished researching.

Justin: [laughs] We used to do history.

Sydnee: I know. So the CDC has expanded the Cyclospora outbreak. It is now in nine states. So in addition to Indiana, Kentucky, Michigan, Ohio, and West Virginia! Now, [chuckles] that's not a great—

Justin: Mama, take me home!

Sydnee: Illinois, Kansas, Oklahoma, and Pennsylvania are now linked to the outbreak. So okay, it's really interesting. Because if you read, they're still saying, "We think it was the shredded iceberg lettuce that people ate at Taco Bells, and that it was from Taylor Farms de Mexico." That is still what they're saying. However, again, we do not have conclusive evidence that it was in those products. There is still a voluntary recall of all of them, so still don't eat them. If you have them, don't eat them. But we now have 1,947 people infected across the nine states. 98 have been hospitalized. Thank goodness, no one has died at this point.

Justin: Y'all have gotta stop getting lettuce on your tacos!

Sydnee: [laughs] Um—

Justin: Come on! It's a fast food taco! You don't have to get lettuce on it; nobody's making you. I've ordered tacos there without lettuce every single time. I'm 45 years old, and doing fine.

Sydnee: What's interesting is that in North Carolina, they have individuals that do not appear to have eaten any shredded lettuce from Taco Bell. And that maybe they think it's from some parsley or cilantro. So that's confusing, because then that would mean we've got multiple outbreaks going on. I mean, this does happen. Every year, there are some Cyclospora cases, right? So the idea that there would be in one state, you'd have some connected to parsley, and in another state it would be shredded lettuce, it's not brand new.

Justin: I mean, we got some confirma— I don't know what the word is, but when we're already looking for it, so we're lumping these together?

Sydnee: Well, I think we are. Because right now, a lot more people are ordering tests. Everyone who's going in for diarrhea is saying either, "Should I be tested?" or "Can I be tested?" Or maybe the clinicians are testing more frequently, because it's on their minds. So we're gonna catch more of that baseline Cyclospora we would have anyway.

Justin: Yeah.

Sydnee: But if you look at— There's a very impressive chart that the Washington Post put together.

Justin: [laughs] That is wild!

Sydnee: Where, for this year, we are at 7,909 total Cyclospora cases in the US. And that's compared to, at this point last year, we were at… What is this? I don't know, it was less than 1,000. It's very low. You can't even tell. The graph is weird. The point is… [laughs] we have way more cases than we usually have this time of year. Are we testing more? I would guarantee we are. I *know* we're testing more, because in my healthcare system, right now the turnaround if we order a Cyclospora test is almost three times as long, I believe, as it normally would be.

Justin: Wow.

Sydnee: Because of the bulk of testing that Labcorp is having to do right now. They just can't keep up with the demand for testing. And the testing already has a lag of multiple days.

Justin: So of course, we're gonna find more cases.

Sydnee: So yeah, we're gonna find more cases, because we're testing more. But it does appear— And there's also an unrelated outbreak somewhere that they have said. The FDA has said there also appears to be another contamination somewhere, but we don't know where, or how big that is yet. [laughs]

Justin: Great. Perfect.

Sydnee: So there's more cases. I would still avoid the shredded lettuce from Taylor Farms de Mexico. I mean, there's been a recall, so my expectation is they're not serving that at any Taco Bells at this point. That

would be my expectation. But if you do have those bags in your fridge, please throw them away. Don't eat them.

And I don't know what to say about parsley and cilantro. This is— Listen. I will say, I know I said not everybody can grow their own food, and I stick by that as a privilege, if you would like to get a couple little herbs and start a little windowsill garden, some parsley and cilantro, this may be a good moment. If you've thought about it, if you want to take the plunge, you can start them from seed, even. And that's pretty cheap to do.

Justin: Yeah.

Sydnee: Right there in your windowsill.

Justin: This could be your moment.

Sydnee: This could be the moment. Maybe grow a couple little herbs. And it's fun! And listen, it's very fun. [laughs]

Justin: You don't make it seem fun. You make it seem like you're pretty angry a lot of the time, Syd, I'll say. You don't seem happy about the outcomes.

Sydnee: I'm angry because the vine borers destroyed all my zucchinis. And I'm not gonna have zucchinis this year. That is why I'm *angry*. I'm not angry about the parsley and the cilantro.

Justin: Alright. Thank you so much for listening to our podcast. We hope you liked it. Thanks to The Taxpayers for the use of their song, "Medicines," as the intro *and* outro of our program. It's been that way since we started, and I see no reason to change. That's gonna do it for us, for this week on *Sawbones*. Until next time, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

Justin: And as always, don't drill a hole in your head.

[theme music plays]

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