

Sawbones 470: Alpha-Gal Syndrome

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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. [pause] You usually launch in and...

Justin: Yeah...

Sydnee: ... then you didn't say anything and—

Justin: I know, I know I do. I know I do.

Sydnee: That pause was too long.

Justin: I didn't know how to lead in to this, so I was staring at you...

Sydnee: Yeah, uh-huh.

Justin: ... willing something to come to me, but I got nothing.

Sydnee: Well, I mean, I could have come up with something, but I didn't know it was—

Justin: I should've warned you.

Sydnee: You should have warned me that you were gonna stare at me.

Justin: Um... I am looking at the title of this episode and I have no earthly idea what this is. Uh, I do have to say, though, alpha-gal syndrome sounds like another way of saying, like, boss babe. You know what I mean? Like...

Sydnee: [laughs]

Justin: "Oh, me? [laughs] I'm not hard to work with. I just have alpha-gal syndrome."

Sydnee: Mm-hmm. Yeah. That's what— That's when I get, um, Facebook messages from people I knew in high school who are, like—

Justin: [laughing] "Hey, girl! Looks like you got alpha-gal syndrome!"

Sydnee: "You have alpha-gal syndrome. Are you interesting in joining my MLM so that you can be your own boss babe?"

Justin: "I have terminal alpha-gal syndrome. I am chronically addicted to finding opportunity and making the life that I want."

Sydnee: "Hey, girlie. Remember how I ignored you all through high school and had absolutely nothing to do with you ever? Well... "

Justin: [laughs] "Do you want some cream?"

Sydnee: "Join my MLM." Uh, no. This has nothing to do with MLMs or boss babes. Um, you requested this. You just— I guess you just didn't know what it was called.

Justin: Yeah, I guess—

Sydnee: You requested this!

Justin: Okay, what was it— I guess you're right... [crosstalk]

Sydnee: You said, "Syd, what's that thing? Is that thing where people get bitten by ticks and have an allergy to meat, is that real?" That's what you said.

Justin: Oh, cool. And it's called alpha-gal syndrome?

Sydnee: And it is real.

Justin: "Girl, I'm making my own opportunities now. I got bit by a tick—" [wheezes with laughter]

Sydnee: [laughs]

Justin: "I got bit by a vicious tick and now I have terminal alpha-gal syndrome and I'm gonna be making huge stacks of cash until I die."

Sydnee: It is not terminal.

Justin: Well, I'm gonna be...

Sydnee: It is not terminal.

Justin: ... huge stacks of cash until I die.

Sydnee: [crosstalk] Okay.

Justin: Because it's, like, terminal alpha-gal syndrome.

Sydnee: Gotcha. Gotcha.

Justin: Yeah. Like, you can't shake it.

Sydnee: I can't for those Facebook messenges. Messenges? Mess—

Justin: Messenges!

Sydnee: Oof. Um. Okay, so, I think one of the most interesting and difficult parts about, especially, like, kind of doing what we do...

Justin: Mm-hmm.

Sydnee: I mean, I practice medicine anyway, I do that daily. But then we also do a podcast about medical history and we also have to talk about current medical things that sometimes are fake, right? And it is hard, I think, to both be skeptical enough to, like, show me the evidence, show me the proof if something—

You know, if you want me to accept something as scientific fact, I need the evidence to back that up, right? This isn't, you know, this— We don't just believe these things. We know what's real, we know what isn't, and then we're figuring out everything in between. Um... But what's hard is that sometimes, really weird stuff is real.

Justin: Yes.

Sydnee: Like, our bodies are weird.

Justin: They're weird.

Sydnee: The human experience is weird.

Justin: Yes.

Sydnee: And there are things that, on the surface, sound made up and aren't. And so if you're going to look at, like, you know, sort of, modern alternative medicine through the lens of a skeptic, you always have to keep the open mind that sometimes it is true. It is weird and it is—

Justin: It is weird, but it is true.

Sydnee: That's a really hard line to walk, I think, in science. Is to both be open minded, but evidence-driven that I... I will keep an open mind until the

facts show me that no, this is the answer. Um, and I think this is a good story about that because how in the world did we ever figure out that sometimes when you get bitten by a certain tick, you become allergic to red meat? How did we ever...?

Justin: It's so wild.

Sydnee: Right? Like, that's a—

Justin: So wild.

Sydnee: It's crazy that we were able to—

Justin: It's like a House— I mean, I know that's cliché, but, like...

Sydnee: It is like a House episode. It is. Um, and sometimes, House was right. I know in the reality of the show, he was always right. I will tell you that I'm rewatching House currently and in the reality of reality... [laughs] There are lots of things that are happening that now I'm, like, "Aw, man. Did I not pick up on how ridiculous that was?"

Justin: Maybe you just willingly ignored it just so you could be fun.

Sydnee: Was I doctor the first time we watched House? Probably not, right?

Justin: Ooh. I'd have to check. I don't know when it first aired.

Sydnee: I mean, this patient has been in the hospital for two weeks and you're just now getting a complete blood count?

Justin: Uh...

Sydnee: Why does it take three doctors to get a TSH?

Justin: It's, uh... Yeah!

Sydnee: I don't know.

Justin: I mean, that's what I'm, like, saying.

Sydnee: Anyway, so this story—

Justin: Do you know how many years? Do you know how many years it—
Okay, so House started in 2004 which would have put you...

Sydnee: I hadn't, uh, graduated med school yet.

Justin: Okay, so you were, like, in medical school.

Sydnee: I was— No, I hadn't started med school. I started med school in 2005.

Justin: Throughout the run of the House show.

Sydnee: So I watched it while I was in med school. I didn't know enough to know how wrong all of it was.

Justin: Do you know how long it took me to realize the whole thing was a play on Sherlock Holmes? I'm gonna tell you, years. I'm gonna tell you, years.

Sydnee: There is literally a character in the first season who is called Moriarty.

Justin: Yeah, no. I guess that I didn't have the subtitles on or something because I didn't know that and... Years.

Sydnee: Yeah, the guy who shoots House, if you're a fan of House and you didn't know this, the guy who shoots House is listed as Moriarty.

Justin: Spoilers. House gets shot.

Sydnee: He does live, though, because there's more...

Justin: He's actually— House...

Sydnee: There's more that happens.

Justin: ... gets shot and it makes him better, actually, is what happens in the story.

Sydnee: That's—

Justin: It makes— It heals him.

Sydnee: Listen, I really enjoy House, but I will tell you that a lot of the medicine is not, eh... Not totally right.

Justin: Oh.

Sydnee: Anyway. Especially the process.

Justin: We have episodes on TV medical shows, by the way, if you go back into the...

Sydnee: Yeah.

Justin: ... archives, I'm sure we discussed House at length.

Sydnee: So this story isn't very old. Um, I want to tell you a little bit about Dr. Thomas Platts-Mills who is one of the doctors who figured this out. Um, he wanted to be a doctor since he was nine. Um, he was— It's kind of cool. So, his name is Platts-Mills because his grandmother... He went to New Zealand on a trip when he was nine to, like, visit his grandma.

And his grandmother was a very, uh, prominent, like, cool physician and it really excited him to, like, see her in action. And he was, like, "I want to be a doctor like grandma." And she had hyphenated her name, Platts-Mills and

that is why the Platts-Mills has carried on in their family line. Which is cool, right?

Justin: Yeah, very cool.

Sydnee: It is cool!

Justin: Yeah, very cool. I'm just sitting over here, "Yeah, absolutely."

Sydnee: Have we ever— We tried to do that. Like, connect our names.

Justin: Yeah, that's true.

Sydnee: Both of us.

Justin: Yeah, they wouldn't let us at the courthouse.

Sydnee: No. I mean, they would let me. Like, I could have been—

Justin: And they would have let me, but I would have had to, like, pay a fee that we did not have at the time and go to court and everything to get it changed.

Sydnee: No. Justin— It's very sexist. Justin would have had to go pay and petition the court to change his name to Smirl-McElroy. Whereas I could just do it for free right there if I had wanted to.

Justin: Yeah.

Sydnee: And even if we both wanted to change our name to Smirl, you still would have had to petition the court to change it.

Justin: Wild. Think about that, folks.

Sydnee: Yep. Anyway...

Justin: Sometimes I worry the system is rigged.

Sydnee: Yeah. Well, you think? Watch the Barbie movie.

Justin: I saw Barbie, okay? I get it.

Sydnee: Anyway, um. So he went into the field of allergies and, uh, prior to...

Justin: That sounds like a really bad place for a kid with asthma. [laughs]

Sydnee: Well, he— [laughs] To a field of allergies? I don't have— I don't believe he has asthma. That was not part of any of the history I read about him.

Justin: I'm just saying, if your parents are, like, "I'm taking you to the field of allergies," I would be really freaked out.

Sydnee: He went into the scientific study of allergies and immunology. Anyway, he had prior...

Justin: That's what the wicked witch tried after the posies, going, "and now my field of allergies! Watch their eyes puff up!"

Sydnee: [laughs] He had done a lot of research that was important, prior to this tick stuff that we're gonna get into, about dust mites and their allergic—

And how we have allergic reactions, whereas the allergen, figuring out that it was actually in the feces of dust mites and that it causes a lot of people, specifically with asthma, actually, they get a lot of issues from this, like, chronic exposure to this dust mite allergen.

Anyway, I know this sounds like, okay, that's not particularly exciting, but this was really important in helping to understand, like, the chronic inflammation we might see in the lungs of somebody with this exposure and then how to target, like, treatments to prevent that, right? And to prevent lung damage.

And so this was all really important stuff that isn't what the episode is about. But I'm giving you some context, like, he is a good researcher. He's a good doctor. He figured this stuff out, so...

Justin: Yes.

Sydnee: Anyway. He is working at UVA, um, in the early 2000s on a, um, specifically, why are patients getting this, uh, reaction to a certain cancer drug?

There was this chemotherapeutic agent, siltuximab, which they were using in patients with certain kinds of colon cancer and certain kinds of head and neck cancers, and there were some people who had these sort of unpredictable allergic reactions to their first infusion...

Justin: Mm-hmm.

Sydnee: ... of the medication. And when patients start having an allergic reaction to something and it's inconsistent, you start trying to figure out, like, what is it in the medication that is causing the reaction, right?

Justin: Right.

Sydnee: Like, what— The medicine isn't just one thing. What is in there? What piece of it is causing this reaction? And what they had uncovered was that there was a certain carbohydrate in the drug called galactose-alpha-1,3 galactose.

Justin: Say it one more time?

Sydnee: Galactose-alpha-1,3-galactose.

Justin: It does absolutely does sound like a Marvel villain, I have to say.

Sydnee: Well, it's alpha-gal is what we're gonna call it for short.

Justin: Okay, that's easier, yeah.

Sydnee: This is why we call it alpha-gal, because nobody wants to say all that. So, this carbohydrate specifically... Some patients seem to be primed to react to. Like, they had, um, so in order to have an allergic response to something, you have to be primed to it. We've talked about this before, right? Like you encounter the thing, your body creates antibodies to it...

Justin: Mm-hmm.

Sydnee: And then the next time you encounter the thing, your body attacks it intensely.

Justin: Yes.

Sydnee: And that's the allergic— And then you get all the symptoms of an allergic response.

Justin: Yes.

Sydnee: Okay. So for some reason, these patients who were having a reaction to this chemotherapeutic drug, were primed to react to this carbohydrate and not everybody was. And so then, you start thinking, like, when were they exposed to the carbohydrate the first time, right? Because they had to have had a previous exposure.

Justin: Yes.

Sydnee: And this was, this was all part of, like, trying to figure this out at this point. So he's in the midst of doing all this research to figure out where does this allergic reaction come from? We know that it's this alpha-gal, but, like, why?

Justin: Quick question. If your kid has a peanut allergy, does this mean that they wouldn't have a reaction the first time they eat peanut butter?

Sydnee: Now, let me say, there have been, like, studies have shown in many cases of peanut allergy, specifically, and I'm sure this would apply to

other things, but peanut allergy is where they do a lot of these studies. There are children who seem to be reacting the first time. Like, as far as the parents know, this is their first exposure. Which doesn't really make sense, right? Like, why would that— And we're still trying to figure out, like, was it some occult exposure, something we didn't realize they—

Justin: Occult exposure!?

Sydnee: No, not like the cult— Oh-cult. With an O.

Justin: Yeah! The occult!

Sydnee: Like, was it breast milk or just some powder of a peanut or something— Like, how did they, like, is there some other— Because that's what you expect to happen. So—

But I don't want to give you the impression that, like, if your kids never had peanuts before that that first time you're absolutely safe, because there are cases, like, many cases where kids react the first time that seemingly they're exposed to peanut butter or peanuts or whatever. And we're still not sure when that initial sensitization may have happened. Does that make sense?

Justin: Yeah.

Sydnee: So this is the way allergies work, but we don't always know about the initial sensitization. So. I know. [laughs] I know that— It's, like, the scariest thing, I think, so far about parent— No, all of it's scary. But one of the scariest things was the first time we gave our kids peanut butter.

Justin: And who—

Sydnee: And the second time that we gave them peanut butter.

Justin: Well, I didn't know that the first time was who cares, right? First time, who cares, unless they've secretly gotten some peanuts...

Sydnee: Yeah.

Justin: You know how kids are.

Sydnee: It's— Also, food allergies are weird.

Justin: Oh. [laughing] Is that your medical opinion, Dr. McElroy?

Sydnee: Yeah. Food allergies are weird. I'm gonna tell you this because we're talking about allergies and so I always think this is important to note and we've talked about this, maybe, on the show before. Those tests that you can get through the mail and online and stuff for food allergies? Don't do them.

Justin: Oh. Okay.

Sydnee: If you think you have an allergy, go talk to your doctor and they may refer you to a specialist like an allergist to discuss this, but don't do those online tests. A lot of them are completely inaccurate, made up, not standardized. They will tell you all kinds of nonsense that may or may not be true.

Justin: Yeah.

Sydnee: Please don't waste your money on those. That is a big, um... That is a part of medicine that has a lot of fake stuff and a lot of opportunistic individuals trying to make money.

Justin: Mm-hmm.

Sydnee: Which is to convince you that you have a bunch of food allergies that you might have or you might not have. They don't know. Their tests suck. So, none of it's— So don't do that stuff. This is a real food allergy that we're talking about today.

Justin: Okay.

Sydnee: So, anyway, um... This particular carbohydrate, alpha-gal, it exists in most mammals outside of a certain group, okay? Called catarrhines.

Justin: Okay.

Sydnee: Within that group are, and this is a, uh, parvorder, which is like a subclassification of an order. You know there's order—

Justin: Yeah, kingdom...

Sydnee: Yeah, you remember all that? King Philip...

Justin: King— Phylum... Kingdom, phylum...

Sydnee: Came over.

Justin: Came over... Class?

Sydnee: Mm-hmm.

Justin: Order.

Sydnee: Mm-hmm. From great Spain.

Justin: From great Spain. Uh, family?

Sydnee: Mm-hmm.

Justin: Genus.

Sydnee: Mm-hmm.

Justin: Species.

Sydnee: Got it! Nice. This is like a suborder. Um...

Justin: So you're inventing new ones after I just did such a good job.

Sydnee: Hey, listen. I didn't even know how many there were. I started looking into— Because it was, like, this is a parvorder and I was, like, "Where does parvorder fall in the...?"

And then I was reading a page about this, there are so many different orders under order and I'm assuming that— This is beyond what I usually do in my doctory job. So, in this parvorder is us, humans, old world monkeys...
[laughs]

Justin: As we're... [laughs] As we're known.

Sydnee: Well, they're called old world monkeys...

Justin: [overlapping] It's what we prefer.

Sydnee: ... because there's a lot of scientific debate as to whether, like, we can call these great apes monkeys. You know? They're not monkeys, but they are!

Justin: Are you talking about us?

Sydnee: But they're not! And us!

Justin: Are you talking about humans?

Sydnee: Well, us and then other old world monkeys.

Justin: Okay, got it. You're not saying we're old world monkeys.

Sydnee: [overlapping] We don't have this alpha-gal in us naturally.

Justin: Okay.

Sydnee: Like, if you ate our meat— Please don't.

Justin: Please don't.

Sydnee: Don't do that.

Justin: Please don't.

Sydnee: But we don't have this.

Justin: We've been clear on this, you don't need us to...

Sydnee: Yes. Don't eat people. Did we need to say that?

Justin: We have before!

Sydnee: Okay. This is an important distinction because we don't have this in us, okay? So these researchers, Platts-Mills and then, uh, another researcher, Commins, was working with him.

They were trying to uncover what exposure primed patients for this reaction to the drug. They thought there was some sort of fungus they were exposed to or a parasite? Sometimes those things can trigger future allergic reactions, you know?

Justin: Yes.

Sydnee: Stuff looks similar, your body misinterprets... There you go. Um, and other researchers at the same time were working on this new red meat allergy that they were observing. Patients who were having this, sort of, constellation of allergic symptoms three to six hours after eating certain types of animal products like red meat or pork.

And these symptoms were everything from, like, hives and sneezing, uh, wheezing, shortness of breath, anaphylaxis... So, like, your typical, like, upper respiratory and then lung-based allergic symptoms, right? That kind of stuff that we associate with an allergic response.

And also things like stomach pain, diarrhea, nausea, vomiting... So, like, all of that was happening and you could imagine how hard this was to figure out, right? Because it was happening anywhere from three to six hours after you ate the meat.

Justin: It's so random— Like, it's gotta be some— It's—

Sydnee: That would be tough to— 'Cause, like, especially if you've eaten pork your whole life and then one day you eat pork and six hours later, you're in anaphylaxis, you're not gonna think it was the pork.

Justin: Yeah.

Sydnee: Right? There's nothing in you that's gonna— And because of the time gap, because it's a delayed allergic response...

Justin: It's got to be— I mean, it's a needle in a haystack.

Sydnee: Right. It would be very difficult to link all this together. Um, so we're all— So you can see, we're in this moment where, like, everybody's trying to research this stuff and figure it out and then, as sometimes happens in these stories...

This is wild that this is how this was partially brought together. A lot of minds went into this, but I want to focus on Platts-Mills because this is a cool piece of the story. Something happened specifically to this doctor that helped pull it all together and I'm gonna tell you what that is.

Justin: What?

Sydnee: But first we got to go to the billing department.

Justin: Let's go!

[theme music plays]

[ad break]

Justin: He ate bacon for six hours straight. And he was, like, "It's got to be the bacon. It's the only possibility."

Sydnee: While studying...

Justin: "Why did I eat bacon for so long?"

Sydnee: While studying this, uh, allergic response to alpha-gal in the chemotherapeutic agent, and then within the milieu of all these patients who are getting these red meat allergies, uh, Dr. Platts-Mills gets bitten by a tick.

Justin: No kidding, really?

Sydnee: And develops an allergy to red meat.

Justin: No kidding— No.

Sydnee: Yes.

Justin: That cannot be real.

Sydnee: He did.

Justin: Are you kidding?

Sydnee: I read— Listen, I didn't believe it either. I read that initially in a Wikipedia article and I thought that can't be true. And then I found from, uh, 2019, there was an interview in UVA Today, because that's where he worked. Works still, I believe, I think.

Or did he— Has he retired yet? I'm not sure. But anyway, there was an interview at UVA— No, he's not retiring, he works too hard. Um... Where he talks about this specifically. Like, it is an interview directly with him, um, by Wesley Hester, is the author of this article.

And he talks about his discovery of this, um, allergy and he says, you know, "I'm covered in biopsy scars from doing research on myself." Dr. Thomas Platts-Mills. That's a direct quote.

Justin: That's very— That's very death metal. [wheezes] I had to say, that sounds, like, [in a death metal growl] "And who's the best? I'm covered in scars from doing biopsies on myself!"

Sydnee: He broke out in hives after eating—

Justin: [growling] "I broke out in hives after eating lamb!"

Sydnee: Yep.

Justin: That's not as good, but, yeah.

Sydnee: So, anyway! That's— I mean, like, how does this— Just incredible. Just incredible!

Justin: That's wild, really nuts.

Sydnee: Just— I know. Perseverate on that for a second. Incredible. So anyway, this really— And I think that, you know, a lot of patients will say this too, that when they find a doctor who has been through either the same illness they're going through or, like, also has some sort of chronic disease that they have to manage on a regular basis, they feel like that those physicians have a better understanding and are better at, like, listening and hearing out what's happening because they have this personal experience.

Justin: That's what's so hard, though. This story sounds— [laughs] This is getting a little bit abstract, but if you're a Sawbones listener, I think you'll be able to grock what I'm laying down here. This feels like one of the made up stories that we hear about made up treatments and ailments, you know what I mean?

Sydnee: Right.

Justin: Like, I had this mystery thing, no one could diagnose it, and just by the randomest happenstance, I happened to figure out that I got bit by this other thing and I made this connection." And that is, like, a foundational text of snake oil and, like, alternative therapies and stuff.

Sydnee: Yes.

Justin: Which is wild.

Sydnee: That's— And that's what makes some of this so hard to suss out, um, is that sometimes this weird stuff is true. I mean, sometimes this stuff happens. Like, humanity is vast and strange.

Justin: We live in a world of mysteries, yeah.

Sydnee: So, anyway, he develops an allergy, the same allergy as these chemo patients have, the same allergy as the red meat eaters. It's an alpha-gal allergy. Um, and a lot of how he kind of pieced all that together, like, he experienced it and then proved it through a lot of patient interviews where he had an open mind to, like, hear this story.

Justin: Mm-hmm.

Sydnee: These patients had these allergic symptoms, it happened after they— "Yes, had you eaten red meat? Yes, when was it? Okay, it was 3-6 hours," whatever. And then, "have you been bitten by a tick?" And the patients would, "Oh, yeah, well, actually I pulled one off myself this day or whatever."

But, again, these are only stories that you would— I mean, most of the time you hear something like that in the clinic or the ER or whatever, and you're, like, "I don't need to know about every time you got bitten by a tick or, you know, that you fell off your bike or whatever."

Like, I mean, you know, you kind of get that sort of cynicism in medicine. Like, [sighs] "Just tell me what's going—" You know? Usually it's simple. But sometimes it's this complex. These patients really did get bitten by a tick

and then at some ate meat and had an allergic reaction and it was all connected. And they didn't know.

Um, now, as often happens, I think it's important to say, like, while Dr. Thomas Platts-Mills was figuring all this out with the researchers in his lab and all the patients he was interviewing and all the work that was being done, stateside, there was a physician— Or, there was a researcher in Sydney, Australia who was doing a lot of the same work.

Sheryl van Nunen, uh, an immunologist who works mainly in allergies was working in an area of Sydney where there are a lot of ticks, like, just an area where— I don't know. I don't know where— I don't know how— Like, we live in an area where there are a lot of ticks. I feel like everywhere—

Justin: You guys just got one off me, like, two days ago when we were waiting at the doctor's office, remember?

Sydnee: We were literally sitting in an exam room and I looked over on Justin's arm and thought, "That freckle looks new." And then I pulled it off of him and it was a tick. Um, anyway...

Uh, when— So this researcher, Sheryl van Nunen had, um, 25 patients in this area all report, "Hey, we have allergies to red meat."

And you have to imagine, like, some of this, like, we are living in an age at this point... It's 2007, so we have the internet. People are finding things out quickly. Um, "we also think we have red meat allergies because of tick bites."

And so she actually was studying why was this happening, why were we having all of a sudden these tick bites and what was going on and this red meat allergy because it was kind of a new thing in that area. And it's really interesting, there had been, uh, as of 2003, this part of Australia had started a fox baiting program.

Justin: Oh, okay.

Sydnee: Um, because foxes had decimated the local bandicoot population.

Justin: Oh, no.

Sydnee: Yes. And so, as they started this fox baiting program to, like, allow the bandicoots to live, basically. Like, fewer foxes, more bandicoots. Um, as more bandicoots, like, were in the area and not being killed by foxes, uh, there was a rise in ticks because ticks like bandicoots.

Justin: Ooh. I didn't know that.

Sydnee: So this was like an unintended consequence of save the bandicoot, except for the bandicoot carries a lot of ticks.

Justin: This is a...

Sydnee: And so, the more...

Justin: This is a layer of Crash Bandicoot never explored.

Sydnee: Exactly.

Justin: I mean, this was never a part of it.

Sydnee: That Crash Bandicoot is covered in ticks.

Justin: [cackles]

Sydnee: At all times.

Justin: That is the least surprising thing I've learned on this show. I mean, yeah, of course he is, obviously. You know Crash.

Sydnee: [overlapping] And if you do get close— If you get close to Crash Bandicoot, you will also be covered in ticks, and then maybe those ticks will transfer this allergy to you.

Justin: Like Crash isn't dirty enough, now he's got this other stuff to worry about.

Sydnee: So, she published a paper explaining this link and, like, citing the fact that, like, this was a good place to study this because Australia, and I think this still holds true to this day, although a lot of what I was reading was in the last— Was about two years old.

So not terribly old. But Australia seems to have the highest concentration of this specific syndrome, of this allergic reaction to meat from a tick bite anywhere in the world.

So she was publishing this and, like, directly linking it to the increase in ticks from the bandicoots and the red meat allergies and these patients had the alpha-gal and... This— Obviously, you know, we see this a lot in science. Like, two different places, same research going on...

Justin: Mm-hmm.

Sydnee: ... because we're seeing— You know.

Justin: Yeah.

Sydnee: They weren't necessarily— It wasn't who got their first. They were both doing it at the same time kind of thing. Um, also, I think this is interesting. She made a freeze spray that you could—

Justin: A freeze spray?

Sydnee: That you could, like, spray on a tick if it was on you and kill it instantly.

Justin: Whoa.

Sydnee: Because, based on the idea, and this is always something that we talk about, like, how to remove a tick? Because if you squeeze the body of the tick as you're removing it, you're just basically squirting all the tick juice into you?

Justin: [laughs] Gross.

Sydnee: And so there's always been this thought, like, we need to be careful. Like, that's why they say to, like, use the tweezers, grab the head and pull by the head.

Justin: Mm-hmm.

Sydnee: Don't grab the big— Especially if, like, the tick is engorged...

Justin: Oh, yeah.

Sydnee: ... then it's a— You know. Then it's a big fat tick body and it's just, like, a little...

Justin: Yeah. I gotcha. I gotcha.

Sydnee: Yeah, so don't— Grab— Use tweezers, grab the head, pull that way is always how they tell you to get them out. And what she was saying is actually, there's some evidence that if you kill the tick first and then pull it off, it's better.

Like, you're gonna avoid whatever's in the tick getting inside you and so this freeze spray, you just instantly kill the tick and then remove it. So, that's out there. You can buy that. That's a product that exists.

Justin: Great.

Sydnee: If you want tick-freeze spray. Man, I hate ticks. I hate ticks so much. Um, if you're curious, like, what exactly is happening, I don't know if I've elucidated the pathway. The tick bites a mammal that has this

carbohydrate. So, some other mammal, not human. And then it gets alpha-gal in it. And then it bites you, human, and injects this alpha-gal into you.

Justin: Mm-hmm.

Sydnee: Your body sees this invader and sends a bunch of antibodies to it. They're IgE antibodies, if you're curious. A lot of allergies are mediated this way. And so you create this antibody memory, right?

Now your body remembers, "Hey, if you see that alpha-gal again, we hate that. We don't like it, it's an invader. We've got all these soldiers ready to attack it." And so you eat the red meat, that has the alpha-gal in it. Your body goes, "Oh, it's back!" And you get this allergic response.

Justin: Mm. There you go.

Sydnee: So. There you go. And again, you can see how hard this would be to piece together because of all the time lapses in there and about the fact that you probably have been eating meat most of your life and never had a problem.

Justin: There were no problems.

Sydnee: Right. The main tick that can carry this is the lone star tick. There are some chiggers that can, but, like, a lot of these cases are getting linked to this lone star tick. There are some other ticks that can do this, but this seems to be the one that is the biggest culprit.

Um, we have seen alpha-gal in 17 countries and all 6 continents where there are humans and ticks, basically. Uh, so the United States and Australia seem to be the most effective, um, and again, so far, it looks like Australia has the highest, although we are definitely seeing a rise in the central and southern US.

Justin: Okay.

Sydnee: Uh, in the southern area, allergy rates are 32% higher than everywhere else.

Justin: Wow.

Sydnee: Yes. So, definitely if you have the lone star tick in your area, this is something that could happen. Um, which is good to be aware of. Um, but we don't really know the exact—

This isn't, like, a reportable illness, you know? We don't necessarily keep track of exactly how many cases of alpha-gal there are. There are some illnesses that are reportable, so, like...

If I diagnose HIV or syphilis or something like that, I have to report that. Like... Well, I don't do it. The lab does it. I don't personally do it. Um, but not all illnesses are, obviously, reportable. Every time I diagnose somebody with, uh, diabetes, nobody reports that.

Justin: Right.

Sydnee: So this is— This is not a reportable illness. So how many people are walking around with alpha-gal allergy? We don't know exactly. Um, we know that anywhere that there are mammals that have alpha-gal, ticks, and humans, this is obviously possible.

Um, the animals can be cows, pigs, lambs, rabbits, buffalos, bison, kangaroos... There are lots of animals that obviously have this that might get a tick bite and then you got to think about things that have animal products, like, gelatin?

Justin: Ugh.

Sydnee: Um, so sometimes you can get these reactions to gummies or to Jell-O or marshmallows or...

Justin: So what do I do?

Sydnee: Um— There are certain tattoo inks that sometimes—

Justin: Oh, God, Syd!

Sydnee: There have been some weird cases of people who got, like, um... I think there was one case report of somebody who got a pig valve, like, sometimes we'll replace a heart valve...

Justin: Sure.

Sydnee: ... in a human with a pig heart valve and that caused this reaction because it's from a pig and... Anyway. So, you got to be careful. And there are certain, um, like, medications and things that sometimes can contain these things.

So, my point is, people who have been diagnosed with this allergy need to always inform, you know, any sort of health care provider you ever get in contact with. You need to make sure you tell them that you have this allergy, because while it is unlikely that your doctor is gonna prescribe you a steak...

Justin: Yeah.

Sydnee: They may prescribe you something else that, you know, that could have that. And so it's always good to make sure that's part of your medical history. Um, it takes a long time, historically, to figure this out. Like, patients took years to get diagnosed with this.

Justin: Yeah, it's so random, yeah.

Sydnee: Yeah, and now, I mean, as awareness has increased and our understanding is more— And also, like, you can imagine there were a lot of people who first heard this and were like, "That's not real." So...

Justin: Yeah, fair.

Sydnee: Um, hopefully that diagnosis time will get shorter. Um, and it's just a blood test, by the way. That's how we diagnose it.

Justin: Wow.

Sydnee: Yeah, it's a blood test that they can order. Again, you will see, like, online food allergy tests to tell you, like, are you really allergic to red meat? Don't do that.

Justin: Don't do that.

Sydnee: Food allergy tests are difficult. Especially, like, skin tests. We don't do them, typically, but there are blood tests for it. But talk to a medical provider. Don't buy the stuff—

That online stuff makes me so mad because a lot of those tests are— They're just not standardized and the information you're getting, it's bad science, it's bad data. It's junk.

Justin: There you go.

Sydnee: Go to a healthcare professional. Um, there are, by the way, they've genetically engineered pigs that don't have alpha-gal in them now.

Justin: Oh, really?

Sydnee: Yeah, so there are certain pigs that, even if you have this allergy, uh... What are they called? GalSafe.

Justin: GalSafe pigs.

Sydnee: That's the trademarked name.

Justin: That sounds like a— [laughs] That sounds like a line of pig products just for girls.

Sydnee: They're gal safe. GalSafe pigs!

Justin: [laughing] We dyed it pink and now it's gal safe. Your little princesses are gonna love this gal safe bacon!

Sydnee: So— And they're working on, like, how can we cleanse all of these different, like, medications and everything from any of these products so we don't have to worry about, you know, about the alpha-gal issue. On a side note, as I was researching this, there is something called, um, pork-cat syndrome.

Justin: Gross.

Sydnee: [laughs]

Justin: Sounds bad.

Sydnee: Which is, like, a cross-reactivity in an allergy to pork and to cat dander, which is different. This is not the same. Pork-cat syndrome is not the same as alpha-gal syndrome, but... Um, I just like that name. That's the only reason I'm throwing it out there. There was something called pork-cat syndrome that is real and weird.

Um, anyway, the practical thing that you should take home from this is if you have been bitten by a tick, if you are observing this... And this should be, I mean, you should be able to, like, having that in your mind, if you have these symptoms and you ate a pork roast 3-6 hours ago, it's something to consider. Please go see a medical professional to discuss it and ask the right questions.

Um, it can get misdiagnosed as, like, irritable bowel syndrome or something like that when actually, it's a very specific, you know, allergy you have to something that can be avoided then, right? Or you can eat the GalSafe pigs instead, if you need to. And there are other animals that you can eat that are okay.

Justin: Mm-hmm.

Sydnee: Um... I liked one quote from, uh, our main allergist in this story, Dr. Platts-Mills, that I thought was really important for what we do, since we do take a skeptical lens to a lot of things.

He said that, "The thing that has driven my career has been willing to go off the deep end and be totally unafraid of pushing an idea that other people don't believe. Too many people are afraid of getting involved in an idea that's too far away from perceived normality."

And that's a, man, it's a tricky line to walk, but it's important that you let the science lead you. Keep an open mind and let the science lead you. And now, often the things we talk about on this show, science has led us very far away from.

We know these things aren't real. We know that a lot of the stuff you'll see on Goop is not evidence-based, right? We know that. We have the evidence.

Justin: Right.

Sydnee: But until you've proven something, you've got to allow yourself to ask that question. Could that tick bite be linked to an allergy to red meat? The answer was yes. And if he hadn't had an open mind enough to ask the question, then we would never have figured this out. So.

Justin: Uh-huh. Uh, thank you so much for listening to our podcast. Uh, we hope you've enjoyed yourself. Uh, thanks to the Taxpayers for the use of their song, Medicines, as the intro and outro of our program, and thanks to you for listening! That's gonna do it for us for this episode. Until next time, my name's 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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