

Sawbones: King of Sting

Published July 8th, 2025

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Clint: 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!

["Medicines" by The Taxpayers plays]

Justin: Hello, everybody! And welcome to Sawbones, a marital tour of misguided medicine. I'm your co-host, Justin McElroy.

Sydnee: And I'm Sydnee McElroy. Justin?

Justin: Yeah, Syd?

Sydnee: I'm so grateful for our listeners.

Justin: Oh, yeah, me too. They make our entire way of life possible, and I care about them all a great deal.

Sydnee: I—

Justin: In an equal amount, as much as they try to trick me into picking a favorite.

Sydnee: I agree with all those sentiments. And I also appreciate that they routinely send me wonderful topic suggestions, that take me down very interesting rabbit holes, that I otherwise may not have explored.

Justin: Do you want to hear a toe-pic suggestion? [in a high-pitched voice] toe-pic. [titters] It's from the hit—hit... do you remember that hit movie? About the... it's about... the hockey player that falls in love with the ice...

Sydnee: Oh?

Justin: Ice skater.

Sydnee: Oh, yeah.

Justin: About the toe-pic and...

Sydnee: Sure.

Justin: It's cute.

Sydnee: I don't—I never saw that.

Justin: You never saw that? We should watch it. We should watch that.

Sydnee: Should we?

Justin: It would be a good Still Buffering.

[group chuckle]

Justin: It has a lot to say about our current... our current state, yeah.

Sydnee: So, Jonathan, a listener—thank you, Jonathan—sent in a recommendation that it was interesting to hear that there is a pain scale for insect stings. We referenced that on our last episode about wasp stings. And maybe there would be more out there about the guy who invented this pain scale.

Justin: Yeah.

Sydnee: The Schmidt pain scale. And maybe we'd want to delve into it. And I thought, well, I don't know. Yeah, I mean, I... I'll dig around. Let me see... It is kind of interesting that somebody came up with a pain scale, because it kind of begs the question—

Justin: What's the most? What's the least? What's wrong with that person?

Sydnee: No, no.

Justin: [chuckles]

Sydnee: But like definitely what's the most, what's the least. But also, if I was developing a scale of like, I don't know, the best sodas, I would like—if I had like—if I rated all the sodas, I would try the sodas, right? To develop the scale.

Justin: Oh.

Sydnee: So—

Justin: How are you doing the testing? How is this—yeah, how are you developing the scale?

Sydnee: So, I mean, that's the assumption, right? He must have been stung by all these things if he made a scale of them. Because pain is such a subjective experience that you can't just ask like, "Okay, you get stung by these ten, I'll get stung by these ten, and then we'll do it together." You know what I mean? Like, you've—

Justin: Compare notes, you've gotta have a base.

Sydnee: Right?

Justin: There has to be a control that is... something.

Sydnee: So, I did look into Schmidt, Dr. Schmidt. Dr. Justin O. Schmidt.

Justin: Of course he's a Justin!

Sydnee: He's a Justin.

Justin: We know it didn't—you know we love a Justin. Nature too. Nature's favorite child, a Justin. As they say, nature abhors a vacuum, and loves a Justin.

Sydnee: I wanted to dig into this, Justin, why... why did he—how did he develop the pain scale? Why? Who is he? And I am so glad that I did, because I am—I am just obsessed with this other Justin. Not as much as I'm obsessed with—

Justin: Oh? Love to hear it.

Sydnee: You Justin.

Justin: Oh, yeah, that's definitely the verb I think of when I think of your relationship to me. "Yeah, Sydnee's obsessed with—[chuckles] yeah, dude."

Sydnee: But this man was—

Justin: "Dude, this chick, *obsessed*."

Sydnee: A stellar Justin, let's just say.

Justin: Fantastic. He's welcome aboard.

Sydnee: So—

Justin: The S.S. Justin.

[group chuckle]

Sydnee: Dr. Schmidt always loved chemistry. I found a great—man, I love when people do like interviews. You can—this was with like an alumni magazine. He went to Penn State. And so, you can find these really like open, honest, kind of fun interviews in those settings. You know what I mean? Because it wouldn't have been for like a gigantic, like national publication.

Justin: Smaller audience and—

Sydnee: Yeah! And so you get some really interesting kind of like color and... Anyway, I found this interview where he talks about—because I was trying to dig into, there's—obviously, there's a Wikipedia article, and you can

read more about him in a couple scientific ways. But I wanted like, who was he?

Justin: Yeah.

Sydnee: I need to get a sense for who is—who is this guy. So, he always loved chemistry, like way back to middle school. He went to Penn State because he wanted to study chemistry. But he worked with a lot of inspirational professors and advisors. And so, this happens sometimes in science. You kind of think you know what you want, and then you start working with somebody who, all of a sudden you feel like, "I want to see the world the way they do, I want to..." I found that for myself, in family medicine.

Justin: Mm-hm.

Sydnee: I thought I was going to do infectious disease, and then when I started working with family doctors I thought, oh...

Justin: Ooh.

Sydnee: That's...

Justin: "Maybe this is me."

Sydnee: I feel like we're kindred spirits, maybe this is where I belong. So anyway, he began to become interested in some other scientific pursuits as well; biology and physics. And he kind of wanted to combine all of these interests into one area. And what he came up with was chemical ecology, which didn't—at first I was like, I don't—I don't even know what I'm reading. Chemical ecology, I mean, I know what those words mean, but what exactly are we studying? And specifically, about three years prior to him entering this field of study, the first insect pheromone had been discovered.

Justin: Oh?

Sydnee: So, this sort of like chemical look at the ecological world, at the animal world, the insect world.

Justin: Wasn't the—hey, wasn't the dung wheel of curiosity? Because that would—I feel like that'd be so embarrassing. [chuckles]

Sydnee: You know, I don't know. That's a great question. What was the first insect pheromone that was discovered? It was three years prior to Dr. Schmidt entering the field of chemical ecology [chuckles] I know that fact. So anyway, there weren't a lot of primary chemists involved in this field at the time. Which, again, I was like, well, it's called chemical ecology, so I am... shocked.

Justin: Yeah.

Sydnee: But he decided he wanted to pursue that. And he had to play a little bit of catch up, because entomology was the hot area, insect studies was the hot area at that point. And he needed a PhD in it if he was going to pursue it. So—

Justin: Listen, we know some entomologists through our lecturing to them about bugs. And they can party. So, I don't blame—

Sydnee: Yes.

Justin: People for wanting to get in—get in on the action.

Sydnee: And they're nice to you when you use the term 'bug' loosely and the term 'insect' loosely. And then sometimes—

Justin: Like when I got up on stage and I said, "Bats, giant bugs that terrorize." And they were like, "Bats aren't bugs!"

Sydnee: And when you—when you—because, colloquially, cicadas are so often called locusts. But they're not locusts, because that's like a grasshopper. But when you make that mistake, they're very nice about it.

Justin: I think—can make—can I lodge one other complaint, as long as we're here? It sucks that 'colloquially' is so hard to say.

Sydnee: Colloquially. [chuckles]

Justin: Like, for the topic that it is discussing, it sucks that like—*colloquially*. Every time I say it, I have to turn into freaking John Travolta. "You know, colloquially speaking!"

Sydnee: [chuckles] Well, and I don't want to say—I feel like an alternative—because I'm—my mind's always looking through like, what else could I say? Like, I'm flipping through synonyms.

Justin: Yeah.

Sydnee: 'Layman's terms' sounds demeaning. "Well, in *layman's* terms..."

Justin: I prefer it because I think of myself as a layman in pretty much every—in every regard of my life. So I like things boiled down to that. That doesn't hurt my feelings. But we do end up having to say 'colloquially' a lot on Sawbones.

Sydnee: Colloquially. Colloquially. Colloquially.

Justin: None have suffered as we.

Sydnee: So, he's doing his research in entomology. Not had been—not much had been explored in insect venom. And so, he had this, he talks about in his interview, he had this chemistry ability, and that would be a good area for him to sort of start doing his research.

Justin: Mm-hm.

Sydnee: Specifically, he discovered that the stings of southern harvester ants hurt for a long time and produced unusual local skin reactions, but nothing was really known about their venom. And so he thought, "Ah-ha, here is a topic that I can jump into and use my chemical background to solve some mysteries."

Justin: Okay, honey—

Sydnee: And I think that is the coolest intro!

Justin: Okay, it is one hundred—you are talking, like so far, this is one hundred percent a like... silver era comic book origin story. This is absolutely like, "Dr. Paul... you know, Stingsworthy, went to the jungles to test the limits of chemical stings in insects, using his different knowledge to solve mysteries. And then he got stuck by some crazy one! Some like crazy big one, and it's radioactive!" And then now he's, you know—

Sydnee: I—

Justin: Bug Man.

Sydnee: Listen.

Justin: [chuckles]

Sydnee: I feel like, here's gonna be the—

Justin: Stingore!

Sydnee: I feel like the bumner side of this is that, if you wandered, "Is there an insect out there that could sting me, that would—it would give me some sort of superpowers," right? Instead of just like, "Ow." I feel like he has answered that question definitively. [laughs]

Justin: Definitively, he has fought zero crime.

Sydnee: Now—

Justin: Or created crime on a mass scale, apropos a super villain, to be fair.

Sydnee: So, now, to be fair, he admits very openly in his book that he has not been stung by everything out there. That would be impossible. He's been stung by lots of stuff, but there's always new insects out there, right? So, it would be—scientifically speaking, he certainly has not been stung by everything. But he's asked about—so he developed the sting—the Schmidt

Sting Pain Index, and became known as the King of Sting, which is his book as well. Which I'm gonna talk about—

Justin: I'm gonna call it the sippy.

Sydnee: But basically, he said he didn't set out to do that. Because nobody sets out to say like, "I know my goal—" Well, somebody probably does, but "My goal in life is to get stung by everything that stings."

Justin: No. No way. My—I actually have a long-standing goal to the—to the contrary.

Sydnee: What he was—what he was trying to figure out is the societal nature of some insects. So we talked about on the last episode that some wasps are solitary and some live in social groups.

Why are different ants, bees, wasps, why are some of them social? Why are some of them—you know, why do they build these nests together? Like, what is that? And does their venom have anything to do with it? If their venom is more toxic, does that tell you something about them? Or if their venom produces more of a pain response, you know, is that because then it deters large predators, and so you can live a better solitary life?

You know what I mean? If you're solitary, you need that kind of ability. Or does the social thing, "I'm able to go, you know, immobilize large predators, bring them back to my social group—" You know what I mean? So like—

Justin: Or—

Sydnee: This is what he was trying to study.

Justin: Or the most troubling cases like, is it just for kicks? Is that just how you get your jollies? [chuckles] There are some bugs, that's just how they get their jollies, man. That's just how they get their—

Sydnee: It's just stinging.

Justin: It's how they get their rocks hard, man. They got their—

Sydnee: They sting large predators.

Justin: Sting other large predators, just for—or anything! Just like, just for fun.

Sydnee: He—so he goes on to dis—like, he decides, basically, "We need to have a—like, if I'm going to talk about what stings hurt the most, and then try to apply that knowledge scientifically. Like these are the ones that hurt the most, and so this is what it means about their social behavior. Like, if I'm gonna make that correlation, I have to know what hurts the most. And there has to be a pain scale."

Justin: Yeah.

Sydnee: And so it wasn't that he wanted to, but he had to, for science.

Justin: Yeah, yeah, yup, yup. Gotta do it.

Sydnee: He said, by the way, he was asked, "Were you ever afraid like of getting stung by something?" Because you know, it hurts. And so, "Did fear ever hold you back?" And he said, "My greatest fears were of catching some horrible tropical disease, being mugged in the field, or getting struck by lightning while out in the barren expanses of desert environments." I think this is a cool dude. He never worried about stings themselves. Wasn't worried about that.

Justin: I mean, I think that that's very legitimate. It's like, "Are you worried about bugs?" Like, "Look where I have to go to get stung by the bugs. Like, I could get killed by some—you know where the bugs are? Where there's tigers. Like, what are you talking about? The—are you—I'm gonna be scared of the pain?"

Sydnee: He said that he has no stinging—he has no favorite stinging insect. He—like harvester ants have fascinating venom chemistry, but they hurt a lot. Velvet ants are beautiful, but they're hard to find. Fire ants have amazing chemistry. They're easy to find, but they suck to work with. Like—
[chuckles]

Justin: [laughs]

Sydnee: He has—and this is all throughout his book, by the way. He has very like complex opinions about all stinging insects and their behavior, and the way that—I mean, they're capturing them and... And then the stories about his adventures to go find all of these different stinging insects. And so, I thought it was really interesting then, I wanted to look at his book—The King of Sting, which you can, which you can purchase—to see, first of all, like more about how this—how this came to be, and then to learn about the pain scale itself.

Justin: You know what—sorry, Sydnee, I realized we are now twelve minutes into this episode, and did not mention the fact that we are dovetailing off last week's episode of our—

Sydnee: Yes.

Justin: Incredible... drama.

Sydnee: Mm-hm.

Justin: And subsequent heroic, triumphant recovery over wasp stings.

Sydnee: That's right, Justin.

Justin: So, which we thought, honestly, in our naiveté, that were pretty darn bad, all things considered, on the great scale of stinging.

Sydnee: Well, and that's what I wanted to go ahead and tell you where our wasp stings, so—

Justin: Or trials.

Sydnee: So, Justin and I got stung by paper wasps, as far as I could tell.

Justin: Yes.

Sydnee: I think that is what they were. Well, now there is also an unstable paper wasp, I'm just learning.

Justin: Okay, these guys were definitely those! You did not see them the way that I did, okay? These were absolutely—if there's an unstable kind, it was absolutely those! They were—I'm America's favorite podcaster, and they stung me three times. Like, no question. Unstable. Textbook.

Sydnee: Oh, but there's also golden paper wasps. Well, crap, there's all kind of paper wasps! These are in North America.

Justin: Okay.

Sydnee: Okay, so here's the point. Most wasps fall into like the two range. It's a scale of one to four.

Justin: Okay?

Sydnee: And he gives like half—like there's one, one point five—like he gives, you know...

Justin: What a—hey—

Sydnee: I think there are even some broken down further, there's like a one point eight on here somewhere.

Justin: Does he delve into the logic of that? Because one to four is like, is he leaving room for a five? [chuckles] The mythical five.

Sydnee: He has said that if there was a five—well, I won't ruin that yet. There is a five.

Justin: Okay, ooh?

Sydnee: I mean, there isn't a five. But if he was going to, there's one.

Justin: He was like, "This is like, I have to change the scale." [chuckles]

Sydnee: But to give you—I want to give you a flavor—

Justin: [chuckles] Sorry, go ahead.

Sydnee: Of what this is like. Okay, so, for your standard paper wasp, it's a pain level of one point five. And he—and they—they've got descriptions. It's not just a number. "Burning, throbbing and lonely. A single drop of superheated frying oil landed on your arm."

Justin: Yeah... Lonely?

Sydnee: Lonely.

Justin: Lonely is so interesting.

Sydnee: Now, if it was an unstable paper wasp, it would be a two. So, a little—a little worse. And he describes it as, "Like a dinner guest who stays much too long, the pain drones on."

Justin: Yes.

Sydnee: "A hot Dutch oven lands on your hand and you can't get it off."

Justin: That's—okay. That is what happened to me. That describes my ordeal.

Sydnee: But they're all—like, listen to this. If it was an artistic wasp—which I didn't know, I didn't ask about its artistic abilities. But if it was an artistic wasp, it would be a two. And he describes it as "Pure, then messy, then corrosive. Love and marriage followed by divorce."

Justin: Sounds like a lot of artistic roommates I've had.

Sydnee: This—the whole thing is like this, it's incredible, the way that all of these different stings—and these, I'm just pulling from some of the wasps. Like there's also all of the ants and the bees and, I mean, all the stinging insects are described throughout this book. And he was asked like why do we need this, from a practical standpoint? And I mean part of it I guess is

like, now we know what's worse, so we know what to stay away from!
Although—

Justin: Yeah.

Sydnee: I'd rather stay away from all of them.

Justin: Just like, just none. None please, thank you.

Sydnee: So, Justin, I want to give you—I know the answers everybody wants, like what are the best and the worst? The best thing to get stung by, the worst thing to get stung by. And I've got a couple other stories about his travels from his book that I think kind of elaborate on this. But before we do that, we gotta go to the Billing Department.

Justin: Let's go!

[theme music plays]

[ad reads]

Justin: You know, Syd, it's interesting, as I was thinking about this, and about this scale, there was something kind of novel about the pain of that exact sting. It was like a different experience, obviously hugely unpleasant. But there was a specificity to it that like changed and evolved. It was a—it was a very different kind of—you feel how different it is from like a physical pain or a physical trauma, because it really is like an evolving sort of pain, and it's—there was a specificity to it.

Sydnee: Well, and I think that's what—that's what's really fascinating about this research is because he comes from a chemistry background, his question isn't just like "What hurts most?" It's how it hurts and what it's doing to you, and how that's reflected in the components of the venom. So I mean, the reason that he was getting stung so much, in part, is because he's collecting these things.

He's going out with his nets, and he's collecting these various insects, and then he is, you know, breaking down the compounds in the venom,

collecting the venom, looking at what's in there. Why does it do this to you? What's also interesting about that is, you know, being able to synthesize different aspects of venom in a lab, making a synthetic compound, you could perhaps desensitize someone who has an anaphylactic reaction.

Justin: Hm?

Sydnee: Which they've worked on, with like bees.

Justin: Interesting.

Sydnee: And so—so there are—there are practical applications to this as well. And then part of it, I think, is just, you never know when you start exploring this kind of—this kind of science where it will lead you to, or what compounds you'll find that you'll say, "Well now, that could be useful against this inflammatory condition, or against this autoimmune condition. Or maybe we'll try that against cancer, we don't know." Well, I mean, the—you—we saw Medicine Man! It was in the ants!

Justin: It's in the ants, folks.

Sydnee: Remember, it was in the ants!

Justin: Don't you think it's weird that there aren't any of these that feel good? [chuckles]

Sydnee: He does say that there's a type of parasitic bee, a *Triepeolus*, and he rates it at a point five. And his description is, "Did I just imagine that? A little scratch that dances with a tickle."

Justin: Yeah.

Sydnee: That doesn't sound bad, does it?

Justin: No, it sounds like, you know, in New Orleans, when the mosquitoes bite you, you don't say "ow," you say "ooh."

Sydnee: Well, he actually says the an... the anthep... the anthephor—anthophoridae bee is a one, and "It's almost pleasant. A lover just bit your earlobe a little too hard." Ooh, okay!

Justin: Ooh!

Sydnee: All right, Dr. Schmidt! All right! But I mean, that's—and so, did you want to know what the worst is?

Justin: I'm assuming it was whatever stung us. [chuckles] Or me, specifically.

Sydnee: No, ours was not the worst.

Justin: No.

Sydnee: No, not even close.

Justin: Not even close.

Sydnee: Not even close.

Justin: No.

Sydnee: So, he talks about, as I said, he really loved the harvester ants, and he really gets into the harvester ants. They're almost at the top. They're not the worst. They're threes. They're not fours.

Justin: My guess would be something-okay. In my gut, it's I feel like something African plains or rainforest. Like something like that, something exotic is what I feel like. Because I feel like we would have driven these extremely painful bugs out of anywhere we inhabit. So that would be my guess.

Sydnee: Well, so the most intense are in Central and South America.

Justin: Mm-hm.

Sydnee: The harvester ants, the Argentinian harvester ants of South America, he describes as "A ferocious pang lasting twelve hours or more. Flesh eating bacteria dissolve your muscles one by precious one."

Justin: [shudders] Hoo-oo-oo!

Sydnee: Now—

Justin: [shudders] Hoo-oo-oo!

Sydnee: That is not the worst.

Justin: That's not the worst?

Sydnee: That is not the worst. The worst is the bullet ant.

Justin: The bullet ant?

Sydnee: The bullet ant. "It is a pure, intense, brilliant pain. Like walking over flaming charcoal with a three inch nail embedded in your heel."

Justin: Holy crap.

Sydnee: And he rates that a four. He said, if you could—if it could be a five, the bullet ant would be a five. He talks about—

Justin: Do you know—Syd, do you know how—do you know how like—that's so wild. If it could be a five, it would be a five. Do you know how crazy that is? It's his—

Sydnee: He made up the scale! [chuckles]

Justin: He made up the scale! And this is what this man said. "When I created this scale, I imagined in my head the upper limits of how painful something could be. I imagined what that could be with my entire human mind, and I said, that is a four. And then I got stung by this guy, and that pain was so great, it exceeded the limits of my human imagination. To an

extent where it would make a mockery of my scale to do so. But it does exceed the possibilities of pain that I set out for us."

Sydnee: He recounts—so, throughout his book, he talks about how he got these stings. And like, again, he doesn't—he is not setting out to like put his arm out there and then wave it around to get a wasp to sting him. You know what I mean? Like he is trying to collect them, but he is also getting stung a lot. He, very intentionally, is trying not to get stung by the bullet ants, as he's collecting them, because he knows. He knows.

Justin: [chuckles] He can't do it again.

Sydnee: And during the collection process, he upsets the hive or hill or colony—colony, that's the word, colony of the ants. And they're all kind of going wild, and they're all over the place. And he's trying to collect like the last ones and like toss 'em in a bag. [chuckles] And get the ants. And this is when he finally gets stung by the ants. Like they finally get to his foot. And he sustains a couple of different stings on his foot. And he talks about just the severity, the intensity, and he's trying to get away from the colony. And he's trying to get back to where they're staying.

Justin: So I'm gonna ask why he was barefoot, obviously.

Sydnee: I think I got his ankle or something, I don't know. But anyway—well, they're ants, they can crawl up on your pant leg. So, but he gets, but he talks about like he makes it back to where they're staying. And he's like just in absolute agony. He's just—it's excruciating. He can't even think. And he recounts it; he drinks a beer, and then he's finally able to eat a little bit, and the food was really good. So then he drinks another beer, and it's still throbbing, but he's at least—but like this is the story—the tells the story as he's—I mean, they're really fascinating. He talks about getting stung by the tarantula hawk, which is one of the worst wasp stings you can get.

It's a four on the wasp sting chart. The bullet ant still beats everything because of the duration, he said, but tarantula hawk's really high up there. And he describes it as "Blinding fierce, shockingly electric. A running hair dryer has just been dropped into your bubble bath." And he talks about that the best thing—they asked him, "Well, if you get stung by a tarantula hawk,

what should you do?" And he said his advice is lie down and scream.
[chuckles] Because he said, "First of all, the pain is so all-encompassing that you cannot think straight, and you are in more danger of running about and flailing uncontrollably."

Justin: [laughs]

Sydnee: [chuckles] And running into something, or tripping over something, or maybe upsetting another stinging insect. But you will be so out of control of your body in pain, that you may cause more harm to yourself.

Justin: It's like the advice for somebody having a seizure. Similarly, you're trying to protect—

Sydnee: Don't just do something—stand there.

Justin: Yeah, don't—

Sydnee: Yeah.

Justin: Like you're trying to protect them from—

Sydnee: That's what they said, it's just—

Justin: Like damage—hurting themselves.

Sydnee: Exactly. Lay down. And then he said, and the screaming is just because it usually feels good to scream. [chuckles]

Justin: Sure, okay.

Sydnee: When you're in pain, to scream!

Justin: Hey, listen, I'm gonna trust him, honestly! Like I'm gonna—I'm gonna—I trust the expert.

Sydnee: If you—if you—so, if you get stung by a tarantula hawk wasp, his advice is, lay down and scream. The—I want to talk about one of the

experiments he did, but the one—the last one I did want to mention is the warrior wasp or are—warrior wasp or armadillo wasp. He described as "Torture. You are chained in the flow of an active volcano. Why did I start this list?"

Justin: [laughs]

Sydnee: The whole book is really, it's very cleverly captured all these stories. If you're interested—I mean, I didn't know I was interested in entomology or the stings of insects. But I found like the descriptions really fun and fascinating and clever and, you know, told with like an appropriate amount of humor for what it is. He talks at one point about he's out looking for a specific insect, and there's a snake.

Justin: Mm-hm.

Sydnee: And he knew it was a dangerous snake, and he sees it. And he's like, "Ah, I don't know, like the snake is like up, rearing up with its mouth open in a way that says like 'go away, you're messing with me.'" So he uses his insect net to scoop up the snake and decides his safest bet is just to carry the snake with him, because then he knows he can't step on it if he's carrying it. But eventually it gets really heavy. [chuckles]

Justin: Can't carry the snake around anymore?

Sydnee: Because he's just carrying this like huge snake around with him in this net. And I imagine the snake's getting progressively more upset, because he's carried around in a net. And so he eventually has to like sort of like roll it down a hill and then run away from it. [chuckles]

Justin: Do you think there's a part of him that's looking at the fangs and he's just like, "I gotta know. I gotta know. I wanna expand."

Sydnee: "I gotta know. I gotta put it on my—"

Justin: "I gotta branch out. I'm gonna—"

Sydnee: He did—

Justin: "Expand. This is a DLC expansion pack for my list."

Sydnee: Here's a—here's an experiment he did. He wanted to know... he saw a king bird outside of his office. He worked at the University of Arizona for a while. And he was—the king bird was eating a colony of Africanized honeybees. And he was trying to figure out like, how in the world can it just eat all these bees and not get sick or something, right? Like, there's venom.

Justin: Tummy ache.

Sydnee: You know? And so, he collected 147 regurgitated pellets that the bird left below its perch.

Justin: Okay?

Sydnee: Okay?

Justin: Fantastic.

Sydnee: And as he dissected them and looked at the honeybee carcass inside, he discovered they were all male.

Justin: Okay?

Sydnee: Now, only female insects sting, right?

Justin: Yeah.

Sydnee: Because they—that's ava.. ava... positor. Ovipositor.

Justin: Yeah.

Sydnee: And so, how is the bird telling the difference? How does the bird know which ones?

Justin: Stinging?

Sydnee: How does he know which ones are male and which ones are females? How is he only scooping up the males, just like that? How does he know?

Justin: Because they're stinging?

Sydnee: So, he... no, but how—no, he's eating them. How does he know which ones are male and which ones are female? I know this—but like that's the question. How would the bird know?

Justin: Yeah, I know, but I don't—it's hard for me to tell the difference in the social cue between this is a trivia question and this is a thought starter.

Sydnee: Oh, this is a thought starter.

Justin: Okay, thank you.

Sydnee: Okay, I will tell you from now on.

Justin: I was just really panicking.

Sydnee: No, this is just a thought starter.

Justin: Thank you.

Sydnee: Okay, so he captures a bunch of male and female bees from that hive.

Justin: Yes.

Sydnee: And then he dissects them, okay? Head, thorax, abdomen. And then one by one, he eats them. This is Justin Schmidt.

Justin: Okay.

Sydnee: He's eating the bees.

Justin: Oh, man...

Sydnee: Because he wanted to use—he wanted to be like the predators.
How can I use—

Justin: So he's like testing their methodology, yeah.

Sydnee: He says "Sense of taste is pretty much generic. In other words, what something tastes like to me is probably similar to what it's gonna taste like to a raccoon, possum, skunk, shrew or other—"

Justin: Sure, makes sense.

Sydnee: Right. So, he ate the heads of the different bees to see if female and male bees taste different.

Justin: Sure.

Sydnee: And female bee heads taste like nasty, crunchy fingernail polish.

Justin: Okay! Gross, yes, good.

Sydnee: "And the abdomen echoed a sort of corrosive turpentine."

Justin: Great. Glad that he bit 'em in different parts. That's so smart and good.

Sydnee: The males, he described, the male heads tasted—

Justin: Like Fritos.

Sydnee: A bit like custard.

Justin: Oh, okay, gross.

Sydnee: That's why the bird eats the males.

Justin: Because they're more delicious!

Sydnee: They're more delicious. Can you imagine doing a study where you eat the heads of bees to see if it—it's fascinating! But that answers the question, they taste better!

Justin: It's fascinating!

Sydnee: They taste better.

Justin: You're right. It's hard for me, the only thing that I can think is that somewhere out there, there's probably a bee who's like, "Oh, my greatest fear? I just don't want to die like my Aunt Janice." [chuckles] "What happened to your Aunt Janice?"

"I was there, it was crazy. Freakin' giant comes out of nowhere, I swear to god, bites her head clean off." [chuckles] "Biggest thing I've ever seen is like a bee with no wings, and two legs and two arms, I guess you'd call him? And he just bites my Aunt Janice's head off!"

Sydnee: "He just ate her head."

Justin: "And he goes—and then this is the worst part, he goes, 'Yuck!' And it's like—and then he bites my Uncle Dan's head off and says, 'Yes!'"

Sydnee: [chuckles]

Justin: "That's my greatest fear."

Sydnee: So, I just, by the way, I've been saying King of Sting. That's what he was known as. His book is actually called The Sting of the Wild. So, The Sting of the Wild, which is available if you—if you're interested. I have been fascinated with it. I'm really glad I own it now, because I've read some of the stories and then I really wanted to delve into the Schmidt pain scale, because that was, you know, the point. But it's really fascinating! And there's all kinds of stuff like... why—he did an experiment where he was trying to see if he could like walk into one of these colonies of Africanized honeybees and not get stung.

Justin: Mm-hm?

Sydnee: And he had like a big tube that he was breathing through, so that he would direct his exhaled air somewhere else, away from the bees, and he was able to like walk among them.

Justin: Oh, weird?

Sydnee: Because of the carbon dioxide is some—is part of the trigger. Because predators exhale carbon dioxide, and that can trigger the bees. And so, by redirecting his carbon dioxide—which would tell you like if you were around a bunch of bees and you held your breath long enough to get away, you might be able to get away.

Justin: Did he ever mention like treating these stings? Or like did he ever do anything that was like equivalent to the glass of milk when you've been taking some sort of wing challenge. Was there a like, "Okay, that's enough. I get it now. The novelty is over." Or did he just have to ride it out?

Sydnee: I'll have to—I haven't read the whole book, I will say, full disclosure. In the instances where he talks about recovering from the stings, he most often references like getting some ice on the sting. And then, I mean, I guess in that one episode, he drank beer, but—[chuckles] But I mean, I don't think—I don't remember him mentioning specifically. There is a chapter I haven't read yet on honey.

Justin: Hm.

Sydnee: About like bees and honey, and honey for stings. But I haven't delved into his thoughts on that. I think it's the answer for most stings is usually going to be ice and anti-inflammatory. And then, of course, if you're allergic. Which he notes again and again, he is not. So, he didn't have to worry about that. He won, in 2015, there's the Ig Nobel Prize.

Justin: Mm-hm.

Sydnee: It's the like Ig Nobel Prize, it's like a little joke, little joshy thing—for something that was really interesting. It kind of raises—it's always good to do science that people find interesting, like good science that also draws public interest, because it reminds people why science matters and why it's

important. So, there's value to it, even if it can kind of seem sensationalist or silly sometimes, if it's done well. If it's science done right, it's valuable. And obviously, his work was done very well. I also liked the advice. They asked him if he had any advice, and he said, "Be curious. Be passionate about what you love to do, and work hard. Do not dwell on finding your passion. Just have fun exploring life and science, and your passion will find you."

Justin: Hm, that's nice.

Sydnee: Yeah. And again, I think if it's the kind of thing you might be interested in, *The Sting of the Wild* is the book that he wrote all—and you—and his whole pain scale is in there. They're all like that. Those descriptions are all that fantastic. So, if that's the kind of science writing you like, which, as you may—as you may have noticed, I do—

Justin: Yeah.

Sydnee: I'd recommend it.

Justin: That's gonna do it for us this week on *Sawbones*. Oh, thanks to The Taxpayers for use their song, *Medicines*, as the intro and outro of our program.

Also, I wanted to mention that I'm gonna be doing *My Brother, My Brother and Me* on July 11th in Anaheim. July 12th, we're doing *The Adventure Zone* in Anaheim. July 13th, we're gonna be in Sacramento, doing *My Brother, My Brother and Me*. You can get tickets at bit.ly/mcelroytours.

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. I really appreciate you. And that's gonna do it for us this week. 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.

["Medicines" by The Taxpayers plays]

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