

Sawbones 559: Monkey Escape

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["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: The hardest thing about doing video stuff, Syd, is that I have to fight my compulsion to always be crisscross applesauce, in the chair like a baby. That's the way I—

Sydnee: Oh, you do?

Justin: That's the way I always sit. And it's very hard to not sit crisscross applesauce like a baby. Even though I know that is bad for my posture and my health to sit that way, it's just the way I do it.

Sydnee: I understand, because for the longest time at my office, my clinic, I have just been sitting on a stool.

Justin: Mm-hm.

Sydnee: Specifically, our hairdresser uses the saddle stool. And I was so impressed with this like saddle-shaped stool, I thought it was so cool that I— Justin got me one for my clinic. And I just roll back and forth, because it's a very small clinic, from my desk, to like my lab, to into the exam room and back.

Justin: Yeah.

Sydnee: I'm just always mobile, like on wheels, and it's great. Except it's killing my back.

Justin: Yeah.

Sydnee: But I look so cool, rolling around on my stool. I think?

Justin: You look cool.

Sydnee: Do I?

Justin: No one has the—well, even if you don't, you're gone so fast, you don't hear 'em make fun of you. Because you're on your stool, you're like, *zoom*, you're gone.

Sydnee: Now, I don't know—now, I'm questioning...

Justin: What would—can you imagine a conversation that someone would feel comfortable having with you where they're like, "Sydnee, we have to talk about the stool." [chuckles]

Sydnee: I mean, you would, though? I wish—I mean, is that why—

Justin: Would I? Would I?!

Sydnee: Justin bought me a stool with a little like lumbar support like back, tiny like thing on the back, for me to start using, ostensibly for my back pain. However, however, is it because I didn't look cool? [titters]

Justin: No, you look so cool, babe. So cool. Hey, speaking of cool stuff that's happened, you were telling me about a headline you were reading, and I said, wait, wait, wait, Sydnee, you could keep telling me about this, and I'd love to hear it, but I'm gonna deprive myself and say, let's record it. Let's record you telling me about this, so we can really unpack this medical history as it happens.

Sydnee: So, Justin.

Justin: Yes?

Sydnee: I thought we would have a little fun today.

Justin: Okay?

Sydnee: I know that while you're listening to this, it is after Halloween, but we are actually recording on Halloween.

Justin: Mm-hm.

Sydnee: So...

Justin: And anything, as Mr. Curry says, anything can happen on Halloween.

Sydnee: Anything can. Now this—

Justin: I read a story on Facebook today, that when he originally filmed that scene from Worst Witch, he and the woman who was the head—played the headmaster of the school, was a friend of his, and she had brought a bottle of sloe gin that the two of them drank all night. And he said it kept them very warm, but apparently, it wasn't great for their concentration, because it was basically unintelligible. And they had to make them reshoot the entire scene when they got back to London in the studio—but the end of the story was, Tim Curry said, "But hooray for gin!" Yeah.

Sydnee: Hooray for gin and the—

Justin: Hooray for gin!

Sydnee: With the lyrics to the song, I don't know that it matters?

Justin: No, it is a very sort of like ambling... ambling narrative. [sings]
"Anything can happen on Halloween."

Sydnee: Is that—why is that why the line, "Has anyone seen my tambourine?"

Justin: He was—he might have just been sloshed like, [sings] "I know I had it around here a second ago!"

Sydnee: [chuckles] Justin, this story did not happen on Halloween, but it sounds like the beginning of... kind of a fun, scary movie, I think.

Justin: One of those 28—one of those 28s. [chuckles] One of those 20—

Sydnee: Yeah, one of those 20—it could be the beginning of a zombie movie. So, I heard this story, initially, I was at work, and my very dear friend, John, told me this story like, "Did you read about this in the news?" And I—he is a brilliant doctor of psychology, and he did get some details wrong initially. Now, I do like his version of the story better.

Justin: Okay?

Sydnee: So, thank you, John, because my—this is what made my imagination run wild. [titters] The original story he said is, "Did you hear about that truck somewhere that had like 50 monkeys in it? And they were all infected with covid and herpes and hepatitis. And it crashed, and all the monkeys are loose."

Justin: I mean, chilling. Can I say—

Sydnee: Chilling! Yes.

Justin: Chilling, chilling. But in the year of our Lord 2025, a mere Tuesday, I would say, honestly. Very impressive, but not outside of the realm of possibilities, as I understand it currently.

Sydnee: Yeah, no, it felt right. It felt—I mean—

Justin: Yeah, it felt right!

Sydnee: And you have to know, when I heard this, I initially did not question all of the details.

Justin: Why would you?

Sydnee: Because I thought, yeah, sure. Yeah, that—

Justin: Yup, yup, yup, it sounds good! Yup, yup!

Sydnee: That sounds right.

Justin: Yeah, a truck full of monkeys, super sick, crashes why wouldn't it? Why wouldn't it?

Sydnee: Now, the reason that—the reason that John got some details wrong is actually not his fault, it was that the initial reporting of the story was a little inaccurate. There were some... I don't know, I'm going to unravel this. There was some confusion as to the nature of the monkeys, in terms of their health status.

[both chuckle]

Justin: It's important, monkeys, know your status.

Sydnee: It was—it was confusing as to how many monkeys there were initially, and what the threat to humans was. And so, there were some initial details that were released, that were wrong.

Justin: Mm-hm.

Sydnee: And that was in the news, and then corrections were released. But there's still, I mean—

Justin: History—

Sydnee: There's a grain—I don't know, there's a grain of truth in this story.

Justin: Listen, media is often the first draft of history, and it can take a couple passes to figure out exactly how many monkeys were on there, what kind of viruses and illnesses they had...

Sydnee: Or didn't, or didn't.

Justin: If they were in—if they were in funny costumes at all. That's a huge thing with monkeys sometimes, is if you are going to be doing research, are you putting them in funny outfits that look like people? Are you dressing them like a ballerina or a firefighter?

Sydnee: Well, I don't—now, I will say—

Justin: Are you doing a calendar?

Sydnee: No one—

Justin: Are you even doing a calendar with them?

Sydnee: No one commented on whether or not the monkeys were in costume, in any updated or previous versions.

Justin: I'm just saying, if they're going to do monkey research, there should be someone whose job it is to play with the monkeys and make sure they're having a lot of fun and whimsical times.

Sydnee: Sure, no, that makes sense.

Justin: Okay, good.

Sydnee: Okay, so what actually happened?

Justin: I don't know?

Sydnee: There was a truck, transporting research animals. So, rhesus macaque monkeys.

Justin: Research monkeys.

Sydnee: [chuckles] Rhesus monkeys! They're the monkeys—if you've watched—

Justin: Oh, yeah, I know about the rhesus monkeys.

Sydnee: What do you know about rhesus monkeys?

Justin: They're really important in evolution.

Sydnee: Well, and—

Justin: And they're important in DNA.

Sydnee: And if you have seen movies where monkeys infect people—

Justin: Punnett square.

Sydnee: It's usually a rhesus monkey. Like, I think that in common understanding of what is a rhesus monkey, people are like, "Well, that's the one that got everybody sick in Outbreak," or something. I mean like, right? Like, isn't that what we—if you have any sort of cultural understanding, you think about the—are these the monkeys that have things that you can catch?

Justin: You can catch things from these monkeys.

Sydnee: That's not really fair to rhesus monkeys, that's really our fault. But—

Justin: Yeah, but they're not Max Fun donors, so whatever. [titters]

Sydnee: [chuckles] So, they were transporting research animals from Tulane National Biomedical Research Center, and the truck overturned on Interstate 59, in transit. It was just north of Heidelberg.

Justin: A four lane, ironically. [chuckles]

Sydnee: This in Mississippi. There were 21 rhesus monkeys on board, not 50. There were 21. Still, I mean, if they're running at you all at once, that's still a lot of monkeys. I'm not thrilled, whether it's 50 or 21, either way, I'm running the other direction.

Justin: I feel like, if I'm a truck driver and they—and I have 20 monkeys in here, and I'm looking at the truck like, "Guys, I don't know. I don't know. I don't know." And they come to you and they're like, "We gotta get another 50 monkeys in this bad boy." There's no way! There's absolutely no way. You can't account for 50 different monkeys? All those personalities, bathroom breaks, all that, it's too much! Structurally. They might write Hamlet eventually, but you're gonna have to stop for the bathroom like constantly. [chuckles]

Sydnee: I don't think that the truck driver was worried about stopping for the monkeys to go to the bathroom.

Justin: Okay, he's gonna have a big cleanup, but I guess it's his truck!

Sydnee: Now, what the—but the truck driver is where some of this information starts. So, what was initially reported, so, this truck carrying 21 monkeys did go off the interstate.

Justin: Yeah?

Sydnee: And flip.

Justin: Okay?

Sydnee: And the monkeys did escape.

Justin: Yeah.

Sydnee: Okay? Those are true elements.

Justin: Did they escape before the crash?

Sydnee: No. But well—

Justin: That would be my—think about this for a second, Syd.

Sydnee: Not that I'm aware.

Justin: Yeah, not that they would tell you. But I saw—I've seen all the Kingdom of the Planet of the Apes movies, and I don't remember them, but I've seen them on planes and stuff. And I feel like maybe they started—like, I feel like 21 monkeys, heck, 15 monkeys working together could take the truck.

Sydnee: If they—yes, if they were cooperating.

Justin: 15 minimum, right?

Sydnee: But they—I mean, they probably are—like, they're social creatures. They probably were cooperating.

Justin: Yeah, but how do you like get the—get it going? It's a complex thought. [chuckles]

Sydnee: Somebody has to be the leader.

Justin: That's why they have to develop human speech. In the Planet of the Apes movies, which I've seen but don't recall, they do develop human speech. I believe that is an element of them.

Sydnee: Well, and I will say that the reason that rhesus monkeys are so often used in research is because we share about 93% of our DNA. So it's a good model, if you're trying to figure out a disease or a treatment or a vaccine, or whatever, that would work in a human.

Justin: I would—

Sydnee: It makes sense.

Justin: I would also say up front, I am going to be interchangeably using 'monkey' and 'apes.' I'm 44 years old, and I'm not doing it.

Sydnee: All right, you are going to get emails about this.

Justin: I'm not doing it. I'm not doing—

Sydnee: You're going to get emails about this.

Justin: I'm 44! I'm not doing this. I'm not doing crocodile and alligator. I'm not doing it. Okay? I'm not. I'm sorry, I'm not gonna get it right, and I'm not gonna learn at this point. So, monkeys and apes, crocodiles and alligators, dinosaurs and dragons, it's all the same.

Sydnee: What about frog and toad?

Justin: Yeah, frog and toad's a really good one. Actually, frog and toad? 100% the same thing. Ribbit? Got it. [chuckles] Got it, the ribbit ones, thank you.

Sydnee: Listen, just, when you write—when you write—

Justin: Keep it up! Keep it up, man, I'll—keep it up, frogs, I'll put you in with lizards.

Sydnee: When you inevitably write the emails complaining about this, and I know—I know some of you will, please just address them to Justin. Please make it clear—

Justin: Come on.

Sydnee: That I did not commit this crime.

Justin: Sydnee reads 'em. I won't—you can't get to me.

Sydnee: This is not on me. Okay, so, the initial report from the Jasper County Sheriff's Department, this is the initial report, from the sheriff. "The driver of the truck," this is a quote, "told local law enforcement that the monkeys were dangerous and posed a threat to humans. We took the appropriate actions after being given that information from the person

transporting the monkeys. He also stated that you had to wear PPE, personal protective equipment, to handle the monkeys."

Well, he actually said PPE equipment, but we'll forgive that. And then went on to say the monkeys were infected with herpes, hepatitis C and covid 19, and therefore were endangered humans. And then, even if they weren't infected with these diseases, they also are aggressive. So, stay away. So, this is—this was the information that was initially released, and it led to some great headlines! "Monkeys with covid and STIs escaped in Mississippi."

[both chuckle]

Sydnee: There were lots of those. You can—you can look them up. Now, that's not entirely accurate anymore, and hopefully all those sensationalized stories have been updated. What do you think? Have they all been? What do you think?

Justin: I can't imagine that people are going back and taking the time. And we can—we can hope, but yeah. Are you—are we still talking about the driver, or are you moving on from the driver?

Sydnee: I was gonna move on from the driver—

Justin: I would like to say—

Sydnee: Would you like to talk more about the driver?

Justin: Yes, I would like to say that... they're trying to hang this driver out to dry for this—for this misinformation—

Sydnee: That's what—yeah, they're like, "The driver told us!"

Justin: Okay, imagine I'm the driver though, okay? And my job, in science, is truck driver of the science, right? I'm driving the science from—

Sydnee: You're driving the monkeys.

Justin: And they're like, "You flipped the monkeys out of your truck." Which is, I would say, the number one thing you should not do.

Sydnee: Don't let the monkeys escape.

Justin: If they come to me and they're like, "Are these monkeys dangerous? Should we be careful?" I would look at them and say, "Absolutely! Number one, don't ask me. I drive the truck. Absolutely, you should take every single care you can. How many monkeys are back there? I don't know. I didn't count. I drive the same way if there's 20 monkeys or 50 monkeys. You should act like there's 50! I don't know how many are running around! They could be sick, and it's all gotten out! Just be really, really careful."

Sydnee: But it's weird—okay, I know what you're saying, and I do think that when it comes to escaped monkeys, we should kind of take like... When you're working with infectious materials—when you're working in healthcare, you're often taught the sort of—the idea is, anyone could be carrying a bloodborne pathogen. So, you should always be protecting yourself and your patient, as if that is the truth, right? You don't need to know, does this patient have something I could catch? You should be operating in a way that assumes they could.

Justin: Yes.

Sydnee: Right? And that's the safest way to always, you know, protect yourself. And so, I do, I agree with that. However, however, specifically, where did covid, hepatitis and herpes come from?

Justin: Covering his bases! He's just covering his bases! He didn't know!

Sydnee: Why those three? Of all—

Justin: He knew it was one of the bad ones, and those are the ones he could remember off the top of his head. Don't come to someone who's just made the biggest whoopsie of their entire life and ask them if caution should be the watch word. Obviously, they're going to say, "Yes, take every precaution. They could have, I don't know, covid, hepatitis, herpes. That's all the ones I can think about at the moment, but they could have any of it!"

Please be extremely careful." And then they're like, "He said he had three different things. Trust us. Trust us, guys. This guy—this guy is a straight shooter who knows what he's talking about."

Sydnee: I mean, the sheriff's department—

Justin: This guy just upended a truck full of monkeys, do not ask him questions!

Sydnee: The sheriff's department felt confident enough that they released this information. Now—

Justin: This guy felt confident enough that he released the monkeys!

Sydnee: Now—

Justin: We shouldn't be listening to him!

Sydnee: Now, Tulane officials reached out to the sheriff's department and said, "Whoa, whoa, whoa! Hold on, hold on." First, they wanted to make it very clear that these were not their monkeys. [chuckles]

Justin: "These are not our monkeys."

Sydnee: Yeah, they were not in charge of transporting them. They were not in charge of—

Justin: We're not—we're not—

Sydnee: The company that was transporting them. This is not—

Justin: "We're not sure where you got 'em, honestly—"

Sydnee: No, I mean, "They might have come from our facility, but these are not our—we are not—we will help you, but this is not us."

Justin: Not our—

Sydnee: Like, "Tulane did not do this."

Justin: You would say—

Sydnee: "Don't blame—"

Justin and Sydnee: "Not our monkeys, not our circus."

Justin: [chuckles] Okay!

Sydnee: They did. Then they said, "But we can assure you, they are not infectious." And so, later—

Justin: "Not our monkeys, but they're not infectious." Okay!

Sydnee: Later, Sheriff Randy Johnson came back out and said—

Justin: [claps] Yes!

Sydnee: The monkeys—

Justin: Yes!

Sydnee: Are not—they are not they are not harboring disease. They are not dangerous in that way. Nevertheless, Johnson said the monkeys still need to be "neutralized," this in quotes, because of their aggressive nature. And Tulane went on to say—

Justin: Honey, you've been talk—you've talked so much after you said Randy Johnson. [sighs] Hah... okay, go ahead.

Sydnee: Tulane did go on to say that the 21 monkeys had recently received checkups confirming that they were pathogen free. So, they just got checkups at Tulane. [chuckles] "They are—they are not carrying any illnesses, and it's not our problem," that's what Tulane said. And Randy Johnson said, "I don't know, I was just repeating the truck driver."

Justin: Randy Johnson also is best known for annihilating a bird with a fast pitch. So, I don't know if we want to be taking his word on anything—

Sydnee: I'm assuming it's a different Randy Johnson.

Justin: Have you ever seen that video, though?

Sydnee: I have seen that video.

Justin: It's terrible, obviously, I'm sure Randy's still beating himself up. And I doubt it's even the same Randy, really, if you think about it.

Sydnee: [titters] I mean, statistically, it probably isn't.

Justin: It's not even funny.

Sydnee: But let me say that obviously there was a lot of miscommunication, misunderstanding, something happening, in the early reports of this story.

Justin: It could be! Maybe that's where the—the root of it, was if Randy Johnson could—

Sydnee: [chuckles] They were already like, "The guy who threw the ball?" But like, no, but it is—I mean, it begs the question, one, why did they think these monkeys had these three diseases? And two, I mean, for me, it was a fun thought experiment, what is the danger to people? Like, what are we really talking here?

Justin: Yeah.

Sydnee: Is the threat of these—and also, by the way, all 21 monkeys did not escape, only six escaped. I will say, as of yesterday's reporting—

Justin: They didn't know—sorry...

Sydnee: Three are still at large. Three monkeys are still at large.

Justin: How did they get it wrong whether or not all the monkeys were gone? [chuckles]

Sydnee: Why did they think they had herpes? I don't—

Justin: I was trying to defend this guy, but in terms of whether or not there are still monkeys in there, that one should be easy.

Sydnee: I mean, if you—

Justin: Just pop it open.

Sydnee: And again, three monkeys are still at large at the time of this recording. They may have, I don't know, maybe they're caught now. But three monkeys are still at large. They still should be considered a threat, because they could attack a human. So like, don't approach them. If you're in this area, please don't—if you see one of these monkeys, call the authorities. [chuckles] Do not try to talk to the monkey or—

Justin: I would also build on that—

Sydnee: You know, capture the monkey or something.

Justin: I would also build on that say—Syd, and say, not just these monkeys. I would say if you see any monkeys in public, you should not try to apprehend them.

Sydnee: Yeah, don't try to apprehend one.

Justin: They are so strong. I don't know if you saw Chimp Crazy on HBO Max, but they're extremely strong.

Sydnee: So yeah, don't approach them. Now, I will say, that was another thing, the reports of how big rhesus monkeys are varied wildly. Like the initial—one of the headlines I think like from the New York Post was like, "40 pound monkey with STDs on the loose," or something like that. [chuckles]

Justin: It's like those headlines about King Kong like, "Murderous monkey rampages through city!"

Sydnee: There were later like accounts where they were like, "Well, average rhesus monkeys are about 21 pounds, so, *eh*, you know.

Justin: That's what—that's what makes these scientifically juiced rhesus monkeys all the scarier, right? [chuckles] How they double their size.

Sydnee: So, I want to talk about like this thought experiment—

Justin: Okay.

Sydnee: Of what happens when monkeys escape, if they are infected with some sort of agent. But before we do that, we do have to go to the Billing Department.

Justin: Let's go.

[theme music plays]

[ad read]

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[break]

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[break]

Justin: It seems wild that we get paid to do that, what we're doing, Sydnee, hypothesize about a monkey disaster. But let's hypothesize about a monkey disaster for a second, because, if you could just speak on this real quick real quickly, monkey disaster, this is not a—it is so close to—it is the—at the core of why you became a physician. Monkey disaster is sort of your heart and—

Sydnee: Eh...

Justin: Is your heart and soul.

Sydnee: I guess—I guess, kind of, yes, in the sense that I—and I've said this, I think—I'm on the record saying this.

Justin: [titters] She can't walk it back.

Sydnee: I can't walk—I mean, it's the truth. And I, I don't know, as I get older, it seems sillier, but it is still the truth. I was inspired to go into medicine when I read the book *The Hot Zone* when I was 12 years old.

Justin: Mm-hm.

Sydnee: And I learned about hemorrhagic fevers, and the idea of trying to find where did these... where did these viruses cross from animals into humans? When did that happen? How did that happen? And then using those sorts of... that sort of research to then find effective treatments, vaccines, cures, whatever, for viruses. That was—and yes, a lot of that story involves monkeys. So, there you go.

Justin: There you go.

Sydnee: That's very true. Justin, I will say, this is not the first time that research monkeys have escaped. This—[chuckles] I mean, this happens more than you'd want to think about, maybe.

Justin: They're so smart! They're so smart. They've seen the inside of the lab. Of course, it happens a lot.

Sydnee: They're smart, and I think that if you, you know, you get used to working with them, and I don't know—

Justin: You forget, you forget—

Sydnee: Like all it takes is like you don't close one cage, really.

Justin: This is—

Sydnee: You don't latch one door.

Justin: This is—I'm glad we're taking a moment to talk about how easy it is to let monkeys escape, because it is a problem.

Sydnee: Well, last year, just last year, in November, 43 rhesus monkeys, so all 43, not six, 43 rhesus monkeys, escape from a biomedical facility called Alpha Genesis, in Umass, South Carolina, because somebody like forgot to latch a gate. I mean, it was—it was that simple, somebody didn't lock something.

Justin: Are we serious with this?!

Sydnee: 43 monkeys escaped into the surrounding area.

Justin: Alpha Genesis, have you not seen an episode of Black Mirror? For God's sake! Alpha Genesis?! In the desert?! And you let monkeys escape from it?

Sydnee: No, no, no, no, no, we're in South Carolina, honey. We're not—we're not in the desert.

Justin: South Carolina—the deserts of South Carolina?

Sydnee: No, no, no. [chuckles]

Justin: How did you turn South Carolina into a desert, you maniacs? What are you doing?!

Sydnee: It does feel—it felt to be like the beginning of a video game. Alpha Genesis released—

Justin: Alpha Genesis, yeah.

Sydnee: 43 rhesus monkeys. They were young and they were healthy. And it took them, I will say, it took them a total of two months to round up all of the monkeys. It was not until January of this year that they found the last of the monkeys and got them back to the facility. And they have a cute picture in like the news stories where they followed it, of one of the monkeys that they captured, like back in the lab, eating a peanut butter and jelly sandwich. Like, "Hm, I'm home." [chuckles]

Justin: What a wild day.

Sydnee: Yeah. [chuckles] I mean, they—well, I mean, I don't know, they—two months! Two months they survived. Anyway... So, this is a thing that happens. I don't want to just blame this one truck driver, and certainly Tulane wants you to know, it was not them.

Justin: I will say, if it could get out of Alpha Genesis, I'm not gonna blame this truck driver at all. That's got to be the most vulnerable point for an escape, right? That's what they're planning on?

Sydnee: Well, if you think about like in heist movies, or in even movies like... like superhero movies, where the villain's being transported to Arkham, or whatever?

Justin: 100%, 100%.

Sydnee: Like, that's when you break out—

Justin: Yeah, that's when you get 'em.

Sydnee: That's when you get loose.

Justin: Yeah, absolutely.

Sydnee: That makes total sense.

Justin: Yeah.

Sydnee: So, I want to talk about this thought experiment; what if they had been infected? First of all, the fact that I heard this and I didn't immediately think, well, obviously you wouldn't infect them with all three, like why would they be infected with all three?

Justin: Mm-hm.

Sydnee: I don't know why that didn't give me more pause, and I, as a scientist, feel bad about that. Because I don't know what science you're doing if you're infecting this one monkey with herpes, hepatitis C and covid 19, just to see what happens. That's not...

Justin: It's like TikTok science.

Sydnee: Yeah, that's not a—

Justin: Modern TikTok science.

Sydnee: So already, there—I cannot imagine a research scenario where you were just giving a bunch of monkeys all three of these things, and then like, "Now, let's put 'em in a truck and see what happens." That's not... why would you be doing that? So, already this doesn't make sense. But let's talk about it one thing at a time. First of all, the question has to be, if they're going to spread disease, can you catch that disease from the monkey? Right?

Justin: Yeah, that's first. Question one, can you get covid from a monkey?

Sydnee: Can you get covid from a monkey? Now, it is true that many, if not all, non-human primates can carry covid 19. We have seen this. Rhesus monkeys were used in some of the early, as we were trying to understand, in those early days of covid, can you get it more than once? There were early studies on rhesus monkeys, giving them covid, and then trying to reinfect them with covid, to see if they could—

Justin: Ah, man, wasn't that a bummer?

Sydnee: If they had immunity.

Justin: Wasn't—you remember what a bummer that was, everybody? [chuckles] Remember when we figured out you could get covid more than once? Man, we were really hoping that wasn't the case. Hachi machi. Ooh, boy, that was a bummer.

Sydnee: Now, I will say what's interesting is that, when it comes to is this a zoonotic disease, meaning is this something we catch from animals, the research on covid has not indicated that—absolutely, while there are many animals that can catch covid, we know that that's true, that in terms of a huge reservoir of disease that is spreading to humans on a regular basis? Animals don't really play a big role in that. I found a study that conclusively proved that a hamster gave somebody covid.

[both chuckle]

Sydnee: Or at least it looked like it did, that they felt pretty confident that the person got covid from a hamster.

Justin: Mm-hm.

Sydnee: I could not find, even though people kept referencing that there had been cases of primate to human covid transmission, I couldn't actually find that study.

Justin: Hm?

Sydnee: It is theoretically possible. But it is thought that the risk of you catching covid from a monkey with covid, even if the rhesus monkey does indeed have covid, the risk of you catching covid from that monkey is pretty low.

Justin: Yeah.

Sydnee: It's pretty unlikely. Now, reverse zoonosis, meaning can we humans infect animals with covid? That is a much bigger threat. We are much more likely to give a monkey covid than a monkey is to give us covid.

Justin: And you're—and you're brave to say it?

Sydnee: No, it's true?

Justin: I know.

Sydnee: We're a—we—

Justin: I know, and that's why it's so brave, Sydnee.

Sydnee: We are much more of a risk to monkeys.

Justin: You hear that, monkeys? We see it.

Sydnee: I didn't mean it as a threat. That sounded—I don't mean it like a threat!

Justin: No, it's—we're owning it. We're owning it.

Sydnee: I'm owning that like—

Justin: We're owning it, monkeys.

Sydnee: Yeah, we are the most dangerous primate. [titters]

Justin: We're the most dangerous game.

Sydnee: So, it—okay, it's hypothetically possible that if you release dozens of monkeys with covid into a community, could somebody get covid? I mean, scientifically, it is possible. It's very low-risk. Very low-risk that you're going to catch covid from a monkey. Hepatitis C, that's our next one. So, very specifically, and I don't know if initially it came from the truck driver, or if the truck driver heard it from somebody else, somebody loading the monkeys in, I don't know, but hepatitis C virus was also indicated as one of the things that the monkeys have. No, you can't catch hepatitis C from a rhesus monkey. But there is a caveat to this.

Justin: Okay?

Sydnee: I think this is very interesting. So, I was reading about what can get hepatitis C? So, humans, of course, which there is a treatment that is a cure now, for hepatitis C. So, I always feel like, as a public service, I should always mention that.

Justin: Yeah.

Sydnee: We didn't used to.

Justin: Spread the word.

Sydnee: And now we have 'em. And it can be an eight- or 12-week treatment course, and we can cure it, and that is a breakthrough, and talk to your healthcare providers. Anyway, this is tricky, because the only natural

reservoirs for hepatitis C virus are humans and chimpanzees. Not rhesus monkeys.

Justin: Right.

Sydnee: Okay? However, it's not—like, for a variety of reasons, we don't tend to do research on chimpanzees. It's not as easy. Okay? But we do a lot of research on rhesus monkeys, so there has been an effort to try and give hepatitis C to rhesus monkeys. [titters]

Justin: Sorry. Sorry, monkeys. Sorry.

Sydnee: So that we could study it better. And specifically, in 2015, there was a study called, "Hepatitis C virus infects rhesus macaque hepatocytes," liver cells, "in simionized mice." And basically, what researchers were trying to do is put monkey liver cells into mice.

Justin: Come on... come on!

Sydnee: And infect those liver cells with hepatitis C virus. And they were able to—what they found is that rhesus monkeys have specific—like their immune system specifically defends them against Hepatitis C virus, that's why they don't get it. And they were finding ways to skirt it. Like, they were finding ways around it—[titters] so that they could in fact—

Justin: No, that's a bad idea, science! Why?! They can't get it, and so you... mix monkeys and mice to see if you can give them hepatitis?!

Sydnee: It's for a research model. It's a research model to—this is—

Justin: It's maniacal!

Sydnee: Listen—

Justin: Stop doing science!

Sydnee: Listen.

Justin: That's enough science!

Sydnee: I just told you that we have an effective cure for hepatitis C virus now in humans. How do you think we got there, Justin?

Justin: I don't know, man.

Sydnee: I know!

Justin: I don't know.

Sydnee: I know. What I'm saying is—

Justin: But I'm not—

Sydnee: You shouldn't be able to catch hepatitis C from a rhesus monkey that escaped from a lab, but scientists are trying to fix that. [chuckles]

Justin: Fantastic! Well, we're—any day now, we should be getting hepatitis from monkeys. Thank you, science!

Sydnee: You can from a chimpanzee.

Justin: They're the same thing.

Sydnee: Oh, Justin...

Justin: [chuckles]

Sydnee: So, I mean, generally, I would say no, like you would not expect a rhesus monkey is infected with hepatitis C, because at this point, that is only something they are attempting to do in labs. And—

Justin: Hang in there. Keep it—keep up the good fight, y'all! And hey, when it all goes terribly sideways and they all turn into zombies, don't say we didn't tell you so. Okay?

Sydnee: Well, it's not like they're gonna escape from the truck we transport them in, Justin.

Justin: [spoofs a sad trombone sound effect] *Wa-waa*. They did.

Sydnee: Okay.

Justin: 28 Years Later. [titters] That's the movie about the zombie monkeys, that have mice powers now. Good, they can transfer 'em into mice with thought? Neat!

Sydnee: Now, when I—when I read this—

Justin: And they can get hepatitis!

Sydnee: What's interesting is, as I was sitting here debating this with my colleagues, when we first heard about this story, and I thought, what could you actually catch from a monkey? I would have thought, covid, yes. I was kind of surprised that it's not a bigger threat. I would have thought like, well, hep C, I don't know if monkeys can catch hep C. But if they can, I figure if they bite you, like that seemed reasonable to me.

Justin: Mm-hm.

Sydnee: In my mind, before I did any research, herpes seemed like the least likely candidate. [titters] Because when you think about herpes—and all they said was herpes, and this is—this is difficult to begin with, because there's lots of herpes viruses.

Justin: Lot of herpes.

Sydnee: There's a lot of herpes viruses. So, when they say the monkeys have herpes, what do you mean by that? So, probably when you think of herpes, Justin—

Justin: And I do.

Sydnee: You think of two things.

Justin: Yeah.

Sydnee: What two things do herpes cause?

Justin: Hm... genital sores and mouth sores?

Sydnee: There you go. That's—I mean, right? That's what most people think of, right?

Justin: Yeah.

Sydnee: And what you're—what you're referencing is herpes simplex virus one and herpes simplex virus two. HSV one and two, it's easy. So, those two specific herpes viruses are the ones that most of us think about. Herpes virus one, generally speaking, causes the mouth sores. Herpes virus two can cause the genital sores. There can be some crossover. But generally speaking, this is what you're thinking.

Justin: Okay.

Sydnee: Okay. That is not really what monkeys tend to get, though. And so, if you're going to say like the monkeys have herpes, I'm going to wonder, what is the most common herpes that a monkey can have? I'm not going to be thinking about herpes virus one and two in a monkey. And there is a very common—

Justin: And if you're not thinking about it, then nobody is!

Sydnee: Nobody's thinking about it. So, I would suspect, if we're—if we're playing with this—if we're playing in this space, herpes virus B, herpes B, or just B virus, is what it's often called, is a herpes virus in monkeys that is similar to HSV one, the one that causes cold sores, it's similar to what humans get.

Justin: Mm-hm.

Sydnee: And so that's the most likely thing that these rhesus monkeys would have. If they had a herpes virus, that is the most likely thing. And while it does also cause mouth sores, it can cause little ulcers, just like HSV one, it also can cause more serious infections. Which is also true for HSV one, it can cause things like encephalitis, which is inflammation of the brain. It can do that in monkeys. And herpes B virus can and has done that in humans.

Justin: Mm-hm.

Sydnee: There have been multiple cases, specifically in research settings, so like scientists in a lab, people who work with rhesus monkeys on a regular basis, veterinary settings, zoo setting, places where you would come in contact with a lot of rhesus monkeys, there have been cases where people have either been bitten by one of these monkeys, or in one case, I think some like fluid was splashed into a scientist's eye.

Justin: [titters]

Sydnee: And they caught hepatitis B virus from the monkey. And I mean, this—don't laugh, because it is a—

Justin: I'm not laughing.

Sydnee: It can be a fatal infection. So, it's a very serious infection, so—

Justin: The idea that I would laugh to that privately, to myself, and you would dox me like that, is truly untenable. I thought we had a partnership. Truly, truly unfathomable.

Sydnee: We're on camera?

Justin: I know, but there's edits. There's edits. I don't even know if we're gonna use this video. We will use this audio where you just absolutely annihilated me, though.

Sydnee: I'm sorry, I was just—well, I was trying to—

Justin: It's just, imagine—

Sydnee: I was trying to stop you before you went down a joke path.

Justin: [in a high-pitched voice] Ah, you should wear your glasses. I mean... [titters] In the lab, you should wear goggles.

Sydnee: Anyway, the point is, I had initially thought herpes—

Justin: I got goggles in the shop, and I don't have any monkeys.

Sydnee: Herpes was the least likely. But if we're talking herpes B virus, that is probably the biggest threat of everything we've discussed in terms of monkey to human transmission, because it has indeed happened... I don't want to say frequently, it's not frequently, but it is definitely a danger when you were doing laboratory science with these animals, you could catch herpes from them.

Justin: Okay.

Sydnee: So, would that's the one that I think is the most realistic. All of this being said, what is the risk from a population of infected monkeys that spill out of a truck to the surrounding humans?

Justin: Unbelievably high.

Sydnee: Nah, pretty low, it—

Justin: Off the charts. [chuckles]

Sydnee: Like the chances that they have hepatitis C are pretty much zero, unless some weird new science has been done in a lab.

Justin: And who would be doing that, Alpha Genesis?

Sydnee: [titters] Then they're not going to give you hep C, because they almost certainly don't have it. If they did, if we did find a way to give rhesus monkeys hep C, then I guess they could pass it to you if they bit you, or if

they shared bodily fluids with you. It would be highly unlikely for you to catch covid from one, I guess. If we imagine a scenario where a ton of rhesus monkeys, I mean like dozens of rhesus monkeys, at the peak of covid infection, at their most infectious moment, are surrounding you, right in your face, and just expelling respiratory droplets at you, for, I mean, we're gonna say at least 45 minutes to an hour, right?

Justin: Yeah.

Sydnee: Right at close range, perhaps. But generally speaking, you're probably not going to catch covid from a monkey. And then when it comes to the B virus, it's possible, but you still would need direct contact. Because you're gonna have to get pretty close to these monkeys. So, I was trying to come up with a number, like how many monkeys could have spilled out of that truck infected with hepatitis C, covid and herpes, that I would actually be concerned? And I feel like there is no evidence-based, I mean, it could be infinite. Like, there's no—

Justin: So, you're saying if you had infinite monkeys...

Sydnee: [titters]

Justin: And you infected some of them with it, and if they had infinite amount of time, eventually everybody would have herpes.

Sydnee: I mean, if they're biting people, yeah. I guess the—if we surmise what that truck driver, or what Randy Johnson, or what whoever gave these gentlemen information meant was B virus, I would be concerned about enough density of monkeys that they would start attacking people. And then, yeah, that would be my only concern.

Justin: Thank you so much for listening to Sawbones, a miracle tour of misguided medicine. [laughs]

Sydnee: I was trying to give you one less thing to worry about! Right?

Justin: And you just made a *whole* long list of things to add in their place.

Sydnee: I cannot emphasize enough, three monkeys are still at large. Do not approach them. Do not approach—

Justin: Do not approach them, do not attempt to apprehend the monkeys, you fool. Or chimps, if you can tell the difference, good on you. Thanks so much to The Taxpayers for use their song, Medicines, as the intro and outro of our program. And hey, we do lots of different kinds of episodes of Sawbones and... we're curious sort of what you guys think, the folks out there in the listening world. If you'd like to weigh in, we'd love to hear from you.

There's a link in the description of this episode. So, if you would go check that link, there's a survey there, if you would click it and take that survey, gosh, I'd sure appreciate it! Thank you so much. And oh, Candelights, it's coming up on December 6th. And if you would like to come see the show, you can do that. And I think that you should do that, because it's going to be really, really good. We're going to have skits, we're going to have excitement.

Sydnee: We're gonna have music.

Justin: We're gonna have music. We're gonna have a lot more fun. You can get tickets in-person, if you go to bit.ly/mcelroytours, is the address. You can get in-person tickets, but there's also a streaming option that's gonna be out on December 19th, at 9PM. We will be watching that live in the chat, if you wanna do that. Or you can get tickets to live version, 7PM, six of December, at the Keith Albee Performing Arts Center. It's gonna be huge.

Sydnee: It's a beautiful theater, too. The Keith Albee is an old theater here in Huntington.

Justin: Yeah, and they just refurbished it.

Sydnee: It's gorgeous, so—and come visit Huntington! There's so much great stuff to do here.

Justin: All the proceeds from this event are going to go to benefit Harmony House, which seeks to end homelessness in our area, and support people

experiencing homelessness. And it's a wonderful organization, and we're very happy to be supportive.

Sydnee: Absolutely, thank you.

Justin: That's going to do it for us for 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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