

Sawbones Ep 018: Reanimation

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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 song Medicines by The Taxpayers plays]

Justin:

Hello everybody and welcome to *Sawbones*, a marital tour of misguided medicine. I am your co-host Justin McElroy.

Sydnee:

And I'm Sydnee McElroy.

Justin:

Uh, Syd, we're coming up on November 8th. It's just around the corner.

Sydnee:

Ooh, big day.

Justin:

Big day. It's my-

Sydnee:

Are you excited?

Justin:

A big special day, turning the big 33.

Sydnee:

Ooh.

Justin:

Palindromic once again.

Sydnee:

What do you get when you turn 33? Like, what is-

Justin:

It's paper... or glass.

Sydnee:

Oh, it's the glass birthday?

Justin:

It's the glass birthday. Um, no, I actually decided what I want and I know, you know, uh, it took me a while and I've been revising a lot a lists, but I think I'm finally... I think I finally know what it is. I think I finally put my, put my finger on it.

Sydnee:

Well, that's good. 'Cause I buy you everything you tell me that you want and then you change your mind, so it's a great ploy.

Justin:

Yeah.

Sydnee:

What, what will we add to the list?

Justin:

We will... Well, here's what we'll add to the list. I wanna meet Andy Rooney.

Sydnee:

Andy Rooney?

Justin:

Yeah. Andy Rooney from uh, 60 minutes. He used to do these hysterical monologues, um, and I want to meet him. It seemed like towards the end, everything was really confusing for Andy Rooney, everything in the world today.

Sydnee:

Right. I, I remember that.

Justin:

And I, and I, um, I now... I mean, I am hip. I'm 33. I understand the world I'm plugged in, I guess you could say.

Sydnee:

Right. And he needed a lot of help. Do you remember how confused he was by all the produce?

Justin:

He was very confused in that one we saw where he, he, he was so confused by all the different kinds of produce that were now available.

Sydnee:

[laughs]

Justin:

I feel like I could help Andy Rooney get the swing of things. I could be his, his, his Sherpa, through this modern world.

Sydnee:

To be fair, he also seemed kind of angry about all the produce that was available. Like maybe, maybe we've overcomplicated things.

Justin:

In his day, he was lucky if he could get half a crab apple. Now we got everything, got rambutan, pomegranates, acai, everything.

Sydnee:

Oranges.

Justin:

Oranges. So I wanna meet... Wait, what?

Sydnee:

You know, oranges.

Justin:

Yeah, oranges. Uh, I wanna-

Sydnee:

Oranges are great fruits. They're underrated.

Justin:

Yeah. I think he was probably wicked into oranges.

Sydnee:

I really just got into oranges this year, so maybe Andy Rooney didn't know about them yet.

Justin:

Maybe he wasn't plugged into oranges. Um, I... What I'm saying is I wanna meet Andy Rooney and I want you a medical doctor to set that up for me.

Sydnee:

There's a problem-

Justin:

Go on.

Sydnee:

... with this.

Justin:

Go on.

Sydnee:

I can't believe I have to break this bad news to you.

Justin:

What? Just that he's dead?

Sydnee:

Yeah.

Justin:

Oh, well, I mean, yeah, but I figured you'd have a fix.

Sydnee:

Oh, oh you, you know, you know that he's already passed away.

Justin:

Yeah, yeah, yeah. I know he's passed away, I just wanna meet him. I wanna meet Andy Rooney.

Sydnee:

I mean like, do you want me to set up some kind of like, like video clips, like Home Alone style-

Justin:

No, no, no.

Sydnee:

... where it's kinda like Andy Rooney's talking to you, but really I'm just pausing it at specific moments in the conversation? Do you want me... Do you wanna pu- You want me to do one of those? 'Cause I could... I couldn't do that, but I bet I can pay somebody to.

Justin:

I'm gonna give you to the count of 10 to get your no good stinking carcass... I don't know.

Sydnee:

1-

Both:

.. 2, 10!

Justin:

Okay. Home alone, everybody. Um-

Sydnee:

Still relevant.

Justin:

Still relevant after all these years. Uh, no, I wanna meet Andy Rooney. I want you to bring him back to life for me so I can meet him.

Sydnee:

Now you understand that that's not a thing that doctors do.

Justin:

Well, it doesn't mean they have-

Sydnee:

Really.

Justin:

... it doesn't mean they haven't tried though. Right? I mean, this is something that, uh, we have wanted to do for, for ages. I mean, there's, it's one of our most popular myths, I think you could say, in, in a lot of cultures is that we bring someone back from the dead.

Sydnee:

Well, I think that's fair to say. Um, certainly, you know, because we are constantly faced with the idea of mortality, um, you know ways to overcome that and theories and myths and legends, and then actual, maybe even experimentation with bringing the dead back to life certainly has occurred.

Justin:

I'm assuming, judging by the fact that the world has not delivered Elvis back unto us, that this is not-

Sydnee:

That's cause he's not gone, but go on.

Justin:

Exactly. Right. I'm assuming that this hasn't been successful yet.

Sydnee:

No, not so much. Um-

Justin:

How'd we get started?

Sydnee:

The, the quest for reanimation as it were, you know, spiritually dates back thousands of years, but let's not get into that because that's not my realm.

Justin:

We should mention, by the way, this is our spooky Halloween episode about zombies. Much like the history channel we, uh, we like to take, we like to take the entire month of October off to stop telling the truth. This is

something we've remarked on several times. During every Halloween season, the history channel just takes a break.

Sydnee:

It's not history anymore, the weird stuff channel.

Justin:

The weird stuff channel. I mean, there's a history of vampires. No, there's not.

Sydnee:

No.

Justin:

This is our show, The history of werewolves. There's no history of werewolves.

Sydnee:

They're no werewolves so there's no history of them. That's not a thing.

Justin:

What are you talking about? Uh-

Sydnee:

They do a lot of aliens.

Justin:

A lot of aliens.

Sydnee:

And they have... There are a lot of ancient alien, like theorists, a lot of people who claim that that's their profession and I have to imagine that that's your hobby and that like your profession is working at Best Buy. I don't know. Something else?

Justin:

Well, your profession is selling bucks to [inaudible 00:06:35].

Sydnee:

Your profession is something else because who is making a living off of being an ancient alien-

Justin:

I have to imagine that-

Sydnee:

... historian.

Justin:

I heard, they had a show... that history was doing a show called *Ancient Aliens* and I thought, "Well, I gotta get me some of that." Yeah, me, I'm an expert.

Sydnee:

I've got this great hair and this mustache I'm gonna-

Justin:

I'm, I'm ready. Uh, Syd 1700s, take me back.

Sydnee:

Okay. So the 1700s, and as I said, we're gonna stick to scientific attempts at reanimation because darn it, Justin, I'm a doctor, not a spiritual leader.

Justin:

Not a history channel.

Sydnee:

[laughs] Uh, the first one to probably experiment with, um, reanimation was Lazzaro Spallanzani who was actually a priest.

Justin:

Mm-hmm [affirmative].

Sydnee:

Um, he was fascinated with the, I idea that we could bring the dead back to life perhaps, but he didn't really do much, um, in an effort to, to actually achieve that goal other than cut the heads off snails and wait to see if they would grow back.

Justin:

So he's basically a 13 year old boy.

Sydnee:

But with, with high aspirations.

Justin:

Yeah. And the ability to turn bread into the flesh of Jesus Christ.

Sydnee:

Right. Big dreams, big goals.

Justin:

Big superpowers.

Sydnee:

Pretty much. It just didn't didn't achieve much, but at least he was thinking about it-

Justin:

Yeah.

Sydnee:

... In a sciencey way,

Justin:

Had his head on... Eyes on the prize, as it were.

Sydnee:

In the 1700s, we also meet, um, Johann Dippel, which I'm sure you know who that is.

Justin:

Uh, no. Absolutely not.

Sydnee:

Well, most would claim that he is, you know, the, the real Dr. Frankenstein.

Justin:

Oh, the... You mean the one that inspired Mary Shelly to write her, her famous book.

Sydnee:

Exactly. And we'll cover this in great detail, 'cause you can't talk about bringing the dead back to life and not talk about *Frankenstein*. Uh, but...

And there were many inspirations, but the one that was known as the Dr. Frankenstein, well, not in his time, but later was Johann Dippel. Um, now to be fair, he was, if anything, that he was, that he was really good at, it was robbing graves.

Justin:

Mm-hmm [affirmative].

Sydnee:

Uh, he did a lot of that.

Justin:

Yeah.

Sydnee:

Um-

Justin:

Um, well that's step one, you gotta start somewhere.

Sydnee:

Right.

Justin:

From the ground up.

Sydnee:

Uh, so he would, he would rob graves, he would-

Justin:

From the ground up. Thanks.

Sydnee:

Ba-dum tss! That was a good one.

Justin:

Thanks. Well...

Sydnee:

Keep working on it. Keep workshopping it.

Justin:

I'll come up with something.

Sydnee:

You'll get there.

Justin:

I'll get there.

Sydnee:

It's a... You got a good start. Uh-

Justin:

We start at the ground up.

Sydnee:

Ha ha.

Justin:

There we go. That's better.

Sydnee:

Is that what you needed? You need a laugh track.

Justin:

Need, need being the operative for absolutely. I need that. I do need a laugh track. Sorry, I keep derailing you. What did he do besides rob graves? That's step one. I can do that. Easy.

Sydnee:

So he took, he took parts of the corpses and the belief is that he was taking them back to his lab and applying different elixirs to them and chopping them up and applying different, you know... I don't know, connecting them in different ways and trying to bring them back to life, like re-sewing people back together. In reality, what he was probably trying to do was make some sort of elixir out of corpses to extend his own life eternally.

Justin:

And that's how we got Pepsi.

Sydnee:

[laughs] That's the story of Pepsi.

Justin:

That's the story of Pepsi. Happy Halloween.

Sydnee:

[laughs]

Justin:

That's not true.

Sydnee:

That's the story of Crystal Pepsi.

Justin:

That's the story of Crystal Pepsi, it's made from corpses.

Sydnee:

That's not-

Justin:

Drink easy, late eighties.

Sydnee:

That's not true. Please, don't sue us Pepsi.

Justin:

Please don't sue us Pepsi.

Sydnee:

Yes. He definitely took, um, bodies back to his lair and-

Justin:

'Cause it is.

Sydnee:

I mean, it has to be if you're taking corpses back to it.

Justin:

Even if you start with like a cozy-

Sydnee:

Bungalow.

Justin:

... this is my sun room. No, it's not. It's a lair. There are corpses.

Sydnee:

Once you are robbing graves and taking bodies back to your house, it's a lair.

Justin:

You should start calling the morgue at the hospital, the lair.

Sydnee:

The lair?

Justin:

Take it down to the layer.

Sydnee:

Justin saw the, the morgue in the hospital for the first time, just walk past the door, today-

Justin:

They just leave the door out there, labeled morgue, for anybody to see-

Sydnee:

And was completely freaked out.

Justin:

... and get spooked.

Sydnee:

This is why I try to keep him out of my workplace.

Justin:

[laughs]

Sydnee:

Um, so he wasn't very successful other than an inspiring, I guess, a great, you know, literary genius, otherwise not so much in re- reanimating the

dead. Um, when we get into people who actually did something in this effort, Luigi Galvani is probably our first, our first, um, scientist.

Justin:

Not familiar. Tell me me about him.

Sydnee:

So he was an Italian doctor who's also a physicist. Um, and in 1771, he noticed, this is the kind of, again, a lot of these stories are probably apocryphal, we don't really know if this is really how this happened but it's a great story and so we're gonna tell it.

So, he noticed... Um, he was working with static electricity, and he, the way that he was, was, uh, working with it is he was skinning frogs and using their skin to... somehow there were electrical charges building up on the frog skin and I don't know why that's how he got to that but there you go. So he was skinning frogs in his kitchen or lab or... let's hope lab. And he, uh, accidentally picked up, well, he picked up his scalpel, unbeknownst to him that it was electrically charged from all of the ions from the static electricity that he was, you know, studying. And as he placed it on the, uh, the exposed frog muscle, uh, he touched the sciatic nerve of the frog. And when he did that, it made the leg jump out.

Justin:

Can you imagine back before we understood like nerves and the electrical signals that our body sends, how scared, just the worst thing that could happen to you right then.

Sydnee:

You have to think the frogs coming back for vengeance.

Justin:

You have... No, have to. It's like skittering around on the ground, looking for the rest of its body to reattach, to like T2.

Sydnee:

[laughs] Don't talk about T2 before bed, that scares me.

Justin:

Yeah. Okay.

Sydnee:

I'm terrified of the second Terminator, the liquid one.

Justin:

I'll protect you.

Sydnee:

That's even more frightening. So he, he noticed this frog leg jump and he thought, "Okay, there's some kind of inherent, like animal electricity, uh, that causes, you know, our muscles to work and, um, obviously we can stimulate it with some... with other electricity, with external electricity, you know, we can kind of create a circuit." So he came up with the idea of using external electrical currents, you know, electrodes, um, sticking them on dead things and making them move. This was another inspiration for Mary Shelly.

Justin:

Oh, okay.

Sydnee:

Yeah. All this was going on, um, as you'll see, as we move forward, his nephew kind of picks up his work, and all this was going on in the time of Mary Shelley so she was... You know. There, there is no one person who probably inspired Frankenstein, uh, but all of this scientific research was being done and publicized and everybody was talking about it right before she wrote, you know, Frankenstein.

Justin:

Mm-hmm [affirmative].

Sydnee:

Um, so, well, like I said, he starts this work, um, and it became known as galvanism. You may have heard that term.

Justin:

I've heard galvanize, is it the same-

Sydnee:

That same... All these, all these different terms for different things and, you know, electric, electricity. I don't know, we're going into physics, that's not my area.

Justin:

All right.

Sydnee:

But they all come from Luigi Galvani. Uh, he also has a crater of the moon named after him.

Justin:

Uh what's it called?

Sydnee:

Like the Crater of Galvani, what do you think?

Justin:

Well, you left a lull in there, I thought it might be something interesting.

Sydnee:

[laughing] No. What you, what do you think... It was... It's called Joe.

Justin:

Joe, the crater.

Sydnee:

Joe, the crater name for Luigi Galvani.

Justin:

Joe, the crater, a Luigi Galvani joint.

Sydnee:

It's called frog leg.

Justin:

Oh, frog leg-

Both:

The crater.

Sydnee:

Uh, so kind of, like I said, this work was picked up because, uh, Luigi Galvani fell on hard times. A lot of his work was criticized, um, because other people kind of picked up what he was doing, investigated it further and said, "I don't think these animals have electricity in them, I think you're... I think

these, these kind of tubes that run through their bodies," nerves, they didn't know what they were at the time, "maybe transmit some kind of, you know, can transmit like an electrical impulse, but there's not inherent electric activity in the muscles," and kind of took the theory to the... more in the correct direction.

Justin:

Mm-hmm [affirmative].

Sydnee:

But his... An- anyway, then he, he went through some bad times and ended up dying depressed and in poverty, which is too bad. But he got a crater of the moon named after him.

Justin:

It's better than I'm probably gonna do.

Sydnee:

Why would you say something like that?

Justin:

[laughs] I don't know, I just really want a crater. I'm hoping somebody will feel bad for me.

Sydnee:

I'll name the moon crater. I'll, I'll buy you a star.

Justin:

There, that'll do.

Sydnee:

Okay. So his nephew picked up his work. Um, his nephew Giovanni Aldini was the one who really went on to kind of, um, I don't wanna say fame, maybe notoriety, for his experiments with electricity and dead things. He started off with, um, stimulating dead animals-

Justin:

Mm-hmm [affirmative].

Sydnee:

... same way, you know, that his uncle did. Um, but that wasn't enough for Giovanni.

Justin:

He craved more.

Sydnee:

He craved more. I mean, if these techniques could be applied to animals, um, um, one in particular, a baboon, he would make its, uh, eyes open and its mouth grimace in front of crowds and that terrified people. After it was dead, obviously.

Justin:

Yeah. Right.

Sydnee:

Uh, so he decided to start experimenting on humans.

Justin:

Aw, yeah.

Sydnee:

Now it's, you know.

Justin:

Now it's getting spooky.

Sydnee:

It's the late 1700s, early 1800s, you want to do human experimentation, there's a group of people you're allowed to experiment on at this time.

Justin:

Criminals.

Sydnee:

Exactly.

Justin:

Yes.

Sydnee:

So it was totally okay for you to experiment on the bodies of criminals who died either through execution or natural causes. That was completely acceptable at the time.

Justin:

Why not?

Sydnee:

And you could actually pay, uh, kind of sponsor criminals who were dying. Say like you would pay one of the beetles, you know, one of them, whatever they were, the officials.

Justin:

Oh, okay. Yes. I was super confused for a second.

Sydnee:

No, not like the bug.

Justin:

Well, I was thinking like Ringo.

Sydnee:

Yeah. Not like, Ringo.

Justin:

Why would I hate called Paul McCartney for a body?

Sydnee:

[laughs] Little known fact, John Lennon dealt with bodies and Pepsi's made out of corpses.

Justin:

Yeah.

Sydnee:

This is what you're learning today. Uh, so you could pay one of the beetles, one of the judicial officials, whatever to, um, get, get the body after it was dead.

Justin:

No, I'm sure it was reasonably priced.

Sydnee:

And you could pay them to kind of rush things along. So one of the most famous cases was George Forster. Have you ever heard of him?

Justin:

No. I'm sorry.

Sydnee:

You always disappoint me.

Justin:

[laughs]

Sydnee:

So he was, uh, put to death by hanging, uh, for the murder of his wife and child. It's actually interesting. The history channel in one of their fake histories does a whole special on this, where they question whether or not he really was a murderer.

Justin:

Oh, great. Good job humanity.

Sydnee:

And that maybe it was all a set up. And then they talk about how it was a real life Frankenstein because he was brought back to life. Except he wasn't. He, he may or may not have been a murderer, he died by hanging and then he was handed over to Giovanni who, um, stuck a bunch of electrodes in him and made him do all kind... made his body do all kinds of things.

He made his face contort in terrible ways, he made his legs move up and down, his arm raised up at one point and clenched its fist. And he did this in front of people and wrote big reports around about it and everybody freaked out and thought, "Oh my gosh, Giovanni found a way to bring the dead back to life."

Justin:

Because they're close. I mean, to, to, uh, someone in that time period, it had to seem like we were, you know... had almost nailed it.

Sydnee:

Right. I mean, you know, it, it seemed like that made sense. Like here's somebody who clearly is dead, we watched him die, I mean, his, his, you know... we watched his neck snap and now his eyes are open and his arm just moved. Um, he also did a lot of experiments on the heads of criminals, just using human heads. Um, which again, I just think it all sounds very

gruesome. At some point he had to have realized he wasn't bringing these people back to life and then I don't know what he was doing, but I'm sure it was a great side show.

Justin:

Yeah.

Sydnee:

And like I said-

Justin:

He has to pay for the research somehow.

Sydnee:

All of those was going on in the time of Mary Shelly. Uh, and I think this is really interesting. So she was hearing all of this stuff and she ended up writing *Frankenstein* in the year 1816. A series of events probably led to this, uh, book being written that I think are really cool. So in 1815 Mount Tambora, which was a volcano in Indonesia erupted and it caused these like worldwide temperature shifts. So all over the world got colder for a solid year following this eruption. And 1816 is known as the year without a summer.

Justin:

That is so strange that you mentioned the year without a summer because that is, uh, a small plot point in the, the new book by Elizabeth Gilbert that I'm reading, *The Signature Of All Things*. Um-

Sydnee:

I didn't know that.

Justin:

Yeah. That she, she, she talks about that so I've recently thought about, uh, the year out of summer. By the way, great book, if you haven't, uh, read it. She's a great fun to max fun network and, and an overall cool lady so read her book.

Sydnee:

So check out her book.

Justin:

Anyway, 1816, year without a summer, Mary Shelly.

Sydnee:

So Mary Shelly and you know, her, her lover, Percy Bysshe, later husband, before her husband, he was her lover. And they went to their-

Justin:

Scandalous.

Sydnee:

Oh my. They went to their lake house to spend the summer, but it was very cold and wet and it wasn't a lot of fun to be outside so instead they decided to hang out inside all the time and have a story writing contest. I'd say she won.

Justin:

She probably won.

Sydnee:

Because she wrote *Frankenstein*.

Justin:

Yeah. [laughs] "Well, I wrote something good too. [laughing] It's sort of a adventure of a king, there's dragon. It's a cool book."

Sydnee:

"Hey, check this out, *Frankenstein*."

Justin:

"Hmm. *Frankenstein*. That's good. Lots of people have heard of that book. Um, but mine--"

Sydnee:

Well, no, nobody had heard of it. [laughing] Then they time traveled into the future, realized how popular it would be, time traveled back to 1816.

Justin:

She, uh... To be fair, you would go to those links to win an argument with me. So it, it does... That, that makes sense.

Sydnee:

Yeah. That's totally fair. Um, so, uh, a lot of these, it should be noted that these, um, experiments continued. Uh, professor Ahoche [?] continued

them, um, on criminals. And this, this really... If there was any science of reanimation throughout the 17, 1800s, um, this is all that was being done, just shock people. We thought electricity had something to do with life and so maybe if we just keep applying it to dead people they'll come back to life.

Justin:

Eventually.

Sydnee:

It wasn't until the 1950s, um, that we actually had like any other ideas on how to reanimate people, um, when James Lovelock started dropping rats in freezing cold water, which sounds like something you'd like to do.

Justin:

Yeah. As long as I didn't have to touch them or see them, perfect.

Sydnee:

But you'd just like the idea that somebody is doing it for you.

Justin:

Somewhere, somebody, someone is drowning rats. This pleases me.

Sydnee:

Somebody is eliminating rats for you.

Justin:

Yeah.

Sydnee:

Um, and then he would try to bring 'em back to life. Uh, he knew that for some reason, if somebody was not just dead, but really cold and dead, that maybe you could like preserve their cells and then bring them back to life. And what's the obvious way? If somebody's cold, how would you wanna of warm 'em up?

Justin:

Blanket.

Sydnee:

Nope.

Justin:

Hug.

Sydnee:

Try again.

Justin:

Hugs.

Sydnee:

These are rats.

Justin:

Hug the rat.

Sydnee:

Hug the rat?

Justin:

Breathe on it.

Sydnee:

How about a warm spoon?

Justin:

Perfect. Good job.

Sydnee:

So he would warm up a spoon and hold it to their little rat chest.

Justin:

[laughs] That is... Man, it is always hard to explain in depth scientific research, but if your kid walks in on that, that's gotta be a tough one to sort of walk 'em through. "No, well, I thought if I heated up the spoon... You know, saying it out loud now, I, I feel a little silly. You're right. This is kind of a goofy idea."

Sydnee:

It inspired a lot of research and, and to be fair, the idea that, uh, frozen tissues are better preserved, is true. I don't know about the whole warm spoon concept.

Justin:

No, me neither. But neither did James Lovelock, that didn't stop him.

Sydnee:

No. Um, it should be noted, we kind of jumped ahead to the fifties, but in the forties, the Soviet union, they did not make any progress in reanimation, but they definitely wanted us to think they did.

Justin:

Oh yeah?

Sydnee:

So they came up with a great video, it's on YouTube you can check it out, called experiments in the revival of organisms. And, uh, as, as... When Justin and I watched this, he, he pointed out that it is entirely in English that is easy to understand, which tells you exactly who they wanted to hear this video.

Justin:

Yeah. Us.

Sydnee:

Us. Um, so in this video, Soviet scientists, uh, have like a heart, a dog's heart that's hooked up to tubes and they show it beating. Then they have some lungs that are hooked up to some other tubes and they show them, you know, insufflating and, and closing and, you know, they're working basically is the idea. And then the culmination of the video is, uh, a dog's head that again, hooked up to some tubes, uh, for blood flow, um, that then responds to various stimuli, uh, kind of moves its head and looks around and they put some citric acid on its face and it licks it off and, um, it gets startled by a hammer falling near it. Um, they also, at the end, I think they're attempting to reanimate the dog completely, but, uh, Justin has a weak stomach so we had to stop it at this point.

Justin:

Well, I, I was also eating, I was having a nice Baja salad from Wendy's, I couldn't handle that, it's got chili on it. Which I know, yes, no longer makes it a salad. It's-

Sydnee:

[laughs] Justin's idea of a salad is very loose.

Justin:

... chilly and a tiny green bed. I get it.

Sydnee:

Uh, so, uh, the dog's head is pretty-

Justin:

Keep your stupid comments in your pocket.

Sydnee:

[laughs] The dog's head is fairly adorable, I should note.

Justin:

Yeah, it is a really cute dead dog's head.

Sydnee:

But it's probably not dead. This is why it's okay for me to say that this was all fake. Um, clearly the Soviets were not reanimating dead dogs in the 1940s, um, but they definitely wanted us to think they were. And I imagine that would've been pretty intimidating if you watch that video and thought, "Holy crap-

Justin:

"Oh crap."

Sydnee:

... the Soviets gonna make armies of dead dogs to come get us. Forget it.

Justin:

"No way, I'm out.

Sydnee:

We surrender.

Justin:

We give up."

Sydnee:

"That's it we're out." Um, and, you know-

Justin:

Although if all dogs go to heaven, that's gotta be sort of disconcerting for the dog, right? Up there in, in, in the embrace of the Lord, then sucked back down in a Soviet Russia.

Sydnee:

All dogs go to heaven when Soviet Russia says they go to heaven. [laughing] Uh, so, you know, we've kind of outlined the, the different ideas people had for reanimation and, and today we don't have a lot of new ones, but the, the freezing idea is still going on.

Justin:

Oh, really?

Sydnee:

Yeah. Um, as recently as 2007, we were bringing, we were bringing dogs back to life in labs. Um, we were basically, uh, uh, and you can question the ethics of this, but killing them by replacing their blood with this, um, hypothermic oxygenated saline.

Justin:

Mm-hmm [affirmative].

Sydnee:

So it's cold and it's got oxygen in it. And then, uh, three hours later or so, put the blood back in and shock 'em and they come back to life.

Justin:

That is unpleasant.

Sydnee:

Yes, that is unpleasant. I wouldn't recommend it. Um, the... This... And this has been tried before, there was a Japanese researcher before who had frozen cat brains and then warmed them two and a half years later and they still showed electrical activity.

Justin:

Hmm.

Sydnee:

And that... This is a lot basis for now. Um, it's really cool. You can do research on Dr. Sam Parnia, who is, um... who wrote a book called *Erasing*

Death. And that's... He's currently trying to perfect the idea of resuscitation. So we're talking about people who have died very recently-

Justin:

Mm-hmm [affirmative].

Sydnee:

... so several hours ago, um, that aren't all the way dead, maybe we could say they're mostly dead. Did you get my reference?

Justin:

Yeah, I did. [laughs]

Sydnee:

It's from the *Princess Bride*.

Justin:

Yeah. Right. Yeah, yeah. Yeah.

Sydnee:

Mostly dead.

Justin:

Mostly dead.

Sydnee:

Only mostly dead.

Justin:

Yeah. I remember, I remember.

Sydnee:

So, um, is his hospitals, uh, rates of, um, revival after CPR, um, and resuscitation are actually really high. They're like 33%.

Justin:

Wow. That's pretty amazing.

Sydnee:

It's really good when you consider that overall statistically, it's like less than... it's like 15% or so.

Justin:

Mm-hmm [affirmative].

Sydnee:

Um, and he's, he's doing much better than that. Uh, and a lot of it has to do with him, cooling people down, you know, lowering the body temperature to, to stop any damage that's done immediately after death and then being able to bring them back later. Um, and this was supported by, uh, there was an Australian woman who fell in the ice while she was skiing in 1999.

Um, she was... She found an air pocket that allowed her to breathe longer than you would expect, but she went into cardiovascular death. I mean, she died for like 80 solid minutes under the ice. They brought her back to the hospital, warmed her up and shocked her and her heart restarted and she recovered, which is pretty amazing.

Justin:

Yeah. Um, I'm, I'm preoccupied with a question.

Sydnee:

Okay.

Justin:

And I'm hoping you can help me. And I know that I'm gonna sound a little silly when I ask this, but it's our Halloween episode so I hope you'll forgive a little a de- a detour into the macabre.

Sydnee:

I'll forgive it this once.

Justin:

Why doesn't it work? Like, why doesn't it work? I mean, why wouldn't it work? What's the difference between a person who is alive and then what? I don't know what you wanna say, they die for some reason, whatever. Nothing like brutal, not like decapitation or whatever, but like why, why doesn't it work?

Sydnee:

Well, there are a couple things that were up against and there are things that actually, if you read this book, cause I've been reading a lot about this doctor, um, online, that he is addressing, there are a couple, uh, hurdles.

One, um, damage to the brain. So, you know, there's cer- After a certain amount of time hypoxic or lack of oxygen damage to the brain, isn't reversible. Um, he argues the point that right now we kind of put that cut off at like 20 minutes. And he says that, no, no, no, it's probably much longer. Um, and so, you know, that's one hurdle that we're trying to overcome is that after a while, if the brain's dead, the brain's dead and it doesn't matter what you do to the heart.

Justin:

The brain gets damaged-

Sydnee:

Yes.

Justin:

... when it's not getting like oxygen?

Sydnee:

When it's deprived of oxygen. And, and a lot of this just has to do with... So your cells have walls and it's important for them that, that they have these membranes around them that protect them from all the stuff that's kind of floating out around them.

Justin:

They're like baptists, basically.

Sydnee:

They need protected from the world around them.

Justin:

Got it.

Sydnee:

I'm not, I'm not saying that. You can say that.

Justin:

I'm saying it. I was raised Baptist, I can say it.

Sydnee:

Yeah. I was raised Catholic. I know better than to insult anybody else. Uh, but so that's one thing is that once these walls kind of get permeated, once these membranes get permeated, um, by external enzymes, that can be

very dangerous to the cell and that kind of damage isn't, isn't reversible. Um, especially if the nucleus, you know, the nucleus of the cell, little center part, the control center, where the DNA are, where the DNA is, you don't want enzymes that can break down that DNA to get in there and mess it up. And once that happens, it's pretty much irreversible. So if that happens on a large scale in the brain, no go, it doesn't matter what you do. So that's one big wall that we're up against.

And the other one is reperfusion injury, which is still, only... is not completely understood, but the idea that even after blood flow has been stopped. So you're know not getting blood to your brain or to whatever organ at this point, damage is being done, you start blood flow back, so you get the heart pumping again and you get blood flow back there, we see a lot of damage to those cells. They get, you know, hit by a lot of toxins and they can't deal with them well, and we think it's because the cells probably went into some kind of like emergency hibernation mode.

And then when they're flooded with a new oxygen blood supply again, they can't cope. And, and so that reperfusion injury is a big problem because you gotta get blood flow going again. So how do you do it in a way that doesn't damage the cells. And the hypothermic po- um, po- like, uh, idea the, the possibility of cooling people down is the best bet we've got right now.

Justin:

Hmm. Okay. Well, that actually makes a lot of sense. Thank you, Sydney. I feel like I learned something.

Sydnee:

Oh, no problem, Justin.

Justin:

That's what we aim to do every Friday here on *Sawbones*. Uh, and we hope you've learned something and we hope you've had some, uh, fun today. If you get a second, why don't you, uh, follow us on Twitter. @Sawbones is our username so you can follow us there. Uh, you can find our new episode, its always on the Maximum Fun Network. Uh, if you wanna a shortcut, you can just go to sawbonesshow.com. Our email address is sawbones@maximumfun.org. Um-

Sydnee:

We have Twitter, Twitter names.

Justin:

Oh, I'm @JustinMcElroy.

Sydnee:

I'm @SidneyMcElroy.

Justin:

S-Y-D-N-E-E.

Sydnee:

You can review us on iTunes.

Justin:

Oh, that's good. True.

Sydnee:

I read all of your review.

Justin:

Yes, absolutely.

Sydnee:

And they make me happy. I mean, when they're nice.

Justin:

You can head over to maximumfun.org and check out some of the other programs in the network. Like, uh, *Stop Podcasting Yourself*, *Judge John Hodgeman*, *Jordan*, *Jesse*, *Go* so many others. And, um-

Sydnee:

Oh *My brother*, *My brother And Me*.

Justin:

Ah, thank you.

Sydnee:

Sorry. I almost missed my cue. Oh, not my cue.

Justin:

Not your cue.

Sydnee:

He doesn't pay me to say that.

Justin:

And, and, uh, we'll be back with you again next Friday on *Sawbones*. Until then, I'm Justin McElroy.

Sydnee:

I'm Sydnee McElroy.

Justin:

As always don't drill a hole in your head.

[theme song plays out]

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