Sawbones 231: DNA Testing

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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 you mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from that weird growth. You're worth it.

[theme music plays]

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

Sydnee: I'm Sydnee McElroy.

Justin: Syd, I'm excited today, because this time… we're not dealing with the—the medical past.

Sydnee: No, that's true. We're dealing kind of with the future.

Justin: The medical future. Come with us!

Sydnee: Yeah, that's true.

Justin: Get on our… hover board and travel with us to the distant future of now.

Sydnee: I think, though—I was trying to—you proposed this topic for the show.

Justin: Yes.

Sydnee: And I was a little concerned that it doesn't fit into what we do. And then I started thinking… people ask us a lot, what kind of things do you think we'll look back on in, like, a hundred years and say, "Oh my gosh. What were we thinking?"

And I think that this particular branch of medical science is so new that some of the things, as we'll talk about, some of the things, the applications that are being

sold to the general public… are maybe a little bit of snake oil. A little bit of modern day snake oil.

Justin: Interesting. You—

Sydnee: So I actually this is, like, a—a Sawbones episode… of the future we're gonna go ahead and do now.

Justin: We've done this—the idea before. Uh, this idea that, like, we might, uh… the things that we might look back on and think, and sort of "Eugh..." You're thinkin' this might be one of 'em?

Sydnee: Oh, I don't think—I mean, I—let's just get into it, and I'll explain what I mean. There are aspects of it, yes. Yes.

Justin: Perfect. Alright, I'm ready.

Sydnee: So, we're gonna talk about genetic testing, like DNA testing. Specifically of the commercial variety.

Justin: Right.

Sydnee: And I think this was mainly your idea, honey, because you wanted to do it, right?

Justin: It's not that I wanted to do it. I mean, I—I—I feel pretty confident, just gonna be some different kinds of white people. It's just gonna be a blend of different...

Sydnee: Sure.

Justin: That's what I assume. [laughs] It's just going to be various shades of white people.

Sydnee: That's why I've never—I had never been particularly interested in doing one of these home DNA things, because I figured that's what it was. And I—I know that, for some people, tracing their family tree and their ancestry is very interesting. It just has never been a particular interest of mi—I mean, I'm here now, and I'm good with that. And that's—I don't know. That's me.

Justin: Mm-hmm.

Sydnee: Um, but you wanted to do it, and so I was willing to go along for the ride.

Justin: Mm-hmm.

Sydnee: Uh, so we will get to our results, which we have not looked at.

Justin: Mm-hmm. Uh, yeah. I ha—yeah. Uh, and—and I—like I said, I do not expect any surprises. I think if you look at some of the places where there are traditionally a lot of white people, it's probably gonna be—

Sydnee: That's probably where we come from.

Justin: —a blend of those, just different kinds of—of them. In different percentages, for sure. But, um, I'm not expecting any big surprises. Uh, should we make—I can make predictions?

Sydnee: Sure.

Justin: My last name is McElroy, so I'm thinking probably some Scotch and Irish in there, is what I would assume.

Sydnee: I would assume that too. I—I'm assuming that just from where we live in Appalachia, there's a lot of—of Scotch and Irish migration to this area. Not now, but in the past. So I'm assuming I've got some of that. Uh, probably some of the UK in general. And then—but then the other part, I don't know… my maiden name, Smirl, I have no idea where that comes from.

Justin: Yeah.

Sydnee: No clue.

Justin: You can Google it and not find a lot of information about the Smirl surname in history.

Sydnee: No, so I—I really don't—again, I'm not expecting anything particularly shocking, but I don't—I don't know that part of my heritage at all, and my dad doesn't either, so.

Justin: Well, there you go.

Sydnee: That's no help. [laughs] Now, you can use a lot of different kits if you want to do this, and after this episode, you may actually not want to, after some of the things I'm gonna tell you.

Justin: Okay? Sounds sinister.

Sydnee: We'll be your sacrificial lambs. Uh, but you wouldn't be alone. It's over—something like over 12 million people have used these kinds of products. Things like… the one we used was Ancestry... dot com? Is that what it's called?

Justin: Yeah, I think Ancestry DNA might be the name of the—

Sydnee: Ancestry DNA.

Justin: —of the prod—product.

Sydnee: It's related to the website where you can trace your family tree. Like, you can put it all together somehow. Um, there's also ones like 23andMe. A lot of people—that's very popular. Uh, Helix is actually one in conjuncture with National Geographic that you can use. And then there are a lot of other smaller ones that we'll get into that are—that are kind of niche products, if you will.

Justin: Okay, okay.

Sydnee: Now, how do these work? That's the first question. If you wanted to do a home DNA test, what are—what are they doing? Well, practically, on your end, it's not very complicated.

Justin: It is a little gross, though.

Sydnee: It's—it is very gross. They send you a kit, and they will—it either works one of two ways. They'll either give you a swab in, like, a test tube and have you swab the inside of your cheek, put it back in and send it back to the company. Or, in our case, disgustingly, you have to spit into a little test tube... And fill it with a certain amount of spit.

Justin: Yeah. Yeah, it was grody.

Sydnee: It was very disgusting. And they also—they specifically note, it has to be spit up to this line, and you do not count the bubbles. Ugh.

Justin: Don't count the bubbles, folks. Just that pure, good spit.

Sydnee: Ugh. I—I think I've—

Justin: That's a thing for you, isn't it? That's, like—

Sydnee: It's the only thing. That is the only thing for me. The only thing that grosses me out is spit, and I had to fill this tube of spit and then hand it to you—gosh, it was so gross. Anyway. So, as far as how it—

Justin: It took us a long time to do it, because you have wait—speaking for myself, and this is very sad, it took us a long time to do it because you have to wait 30 minutes after eating or drinking, and I upsettingly found that I was very rarely in that window. [laughs]

Sydnee: [laughs]

Justin: "Hey, it's been 30 minutes since I've eaten or drunk anything!"

Sydnee: You just drink a lot of water.

Justin: What?

Sydnee: You drink a lot of water.

Justin: That's true.

Sydnee: We're very well hydrated people.

Justin: Try to stay hydrated.

Sydnee: Uh, so that's all you do on your end. You order the kit, you spit in a tube or swab your cheek, you put it in the box, and you mail it back. And then you wait, and you get results in your email, at least in our case, that tell you whatever you were seeking to find out.

Now, what are they doing on their end? Well, each of these companies – and this is generally speaking, because their exact methods are proprietary so you're not gonna find, like, a complete description of every little, um, y'know, kind of lab thing that they're doing. Now, I can talk in general terms about how you sequence DNA. I don't know that everybody wants to know that.

But suffice to say that they have databases. They already own databases of genetic code. Um, each of these different companies, and each company owns a different database.

Justin: Okay.

Sydnee: 'Cause they had to buy it, right?

Justin: Right.

Sydnee: And they're forming it, because they're using yours. You're helping them build their database, and that's important for them, 'cause as I'll discuss, the more people who are using the product, the better their product becomes.

Justin: Yeah! That makes sense.

Sydnee: So—

Justin: That's capitalism at its best!

Sydnee: Well... Yeah, sort of. [laughs quietly] It makes the results more robust though, from a scientific perspective.

Justin: I'm not just getting information, I'm helping. I'm a—I'm a helper.

Sydnee: Well, you're helping them... make... I mean, if you—

Justin: Helping them help other people? That's right, Sydnee. Yes.

Sydnee: Okay. Well, maybe. So the way that—

Justin: Hooray, corporations!

Sydnee: —these companies have the ability, certainly, to sequence DNA, which would mean actually, you know—we've been sequencing—we—we've already sequenced the entire human genome. You know that, right?

Justin: Right.

Sydnee: The Human Genome Project. Do you know that, uh, it finished in 2000. You know that. And they published the entire human genome. Well, pretty much. Like, 90% back in 2000. I thought it was really interesting. I was trying to figure out, like, why were we interested in doing that? Do you know why we decided to sequence the human genome?

Justin: No.

Sydnee: You know why this started? This was all the way back in 1986. It was actually the 1980s, people started talking about how to do it, and in 1986, people got really excited about it, to try to figure out how we could protect the genome from the effects of radiation.

Justin: Hmm.

Sydnee: So let's sequence it. And then, like, the Department of Energy got involved, and Congress ended up funding it.

Justin: And then we sequenced it.

Sydnee: And it took a while.

Justin: If you were to tell me in a sentence what that thing you're talking about means, how would you—

Sydnee: Sequencing DNA?

Justin: I know, of course, but for the listener.

Sydnee: So you know that DNA, it's the—do you know what DNA is made up of?

Justin: Yes. Adenine, guanine, cytosine, thymine.

Sydnee: That was very good!

Justin: I know I messed up some of the words—

Sydnee: The bases.

Justin: —but the letters were right.

Sydnee: That—that was good, yes.

Justin: GCAT, GCATs.

Sydnee: I'm gonna give it to you, that was good. The bases, the four bases. Sequencing DNA means actually giving you a big long string of those letters. In the right order.

Justin: But what's the human genome?

Sydnee: It's what our chromosomes—the DNA all listed out. What our chromosomes are made up of.

Justin: Okay.

Sydnee: Does that make sense? And there are obviously differences for every single person. That makes us different.

Justin: Right.

Sydnee: Those are our genes. So there's tones of DNA—

Justin: So you swap in—swap in a G…

Sydnee: —some of the DNA is just junk, it's just in there. And then some of the DNA codes for specific genes, and those genes make us who we are and how we are and what we are, and… defines a lot of stuff. Not everything. But a lot of stuff about us.

Justin: Okay.

Sydnee: Okay? So they could all sequence your genome, but that's not what they're gonna do. Because that's very expensive, first of all, to sequence your entire genome, and you don't really need that information.

Justin: The Justin Genome Project, they could call it.

Sydnee: [laughs] They could, and they could do that, and you can pay—

Justin: Come on, humanity!

Sydnee: —to have that done. You can pay to have your whole genome sequenced. But for the most part, you don't really need that. What you're interested in, most of the time is, in our case, we were looking at, like, where did we probably come from in terms of our ancestors? Or maybe you're looking for health information, like disease risk.

Justin: Don't care.

Sydnee: So in these cases, what they're really doing is more like genotyping.

Justin: Okay.

Sydnee: So what that means is that they're looking for alleles. And these are pairs of genes at certain places on chromosomes. And they're looking for which one—which type you have. Okay? Um, this is called a single nucleotide polymorphism, or an SNP.

Justin: Okay.

Sydnee: And so, what they look at are, for these certain SNPs, and the ones you have, they link to certain regions of the world that have corresponding SNPs. Does that kind of make sense?

Justin: Yes. I mean—

Sydnee: More or less?

Justin: Yeahhh, Syd. Sure!

Sydnee: They're just—I mean, they're looking for DNA that's similar.

Justin: Okay.

Sydnee: They're just looking for similar…

Justin: Like fingerprints.

Sydnee: You have the same differences in your DNA that this population of people tend to have in their DNA.

Justin: Okay, got it.

Sydnee: Okay? Which is why the more people who use it makes the data more robust, because if you only have one person from this specific region of a country whose DNA you've sequenced…

Justin: You're guessing.

Sydnee: You're guessing. Once you have several thousand people, that's better. Um, but what this also means is, your results and how—how accurate they are really depend on who else has taken the test, and what they look like, and what their DNA is like. So that—that will change, and we'll talk about that. That could change how accurate your results are.

So, that's generally speaking, that's how it works. They're looking for these alleles. They're not looking for all of your DNA. This is, like, between which company you use. It's like 100 to 300 different positions on your genetic code that they're comparing genes.

Justin: So is it real, then? Is it, like, actually marking, like—I mean, is it reliable?

Sydnee: I—in a sense. So, it's not hard to look at… I mean, we know how to sequence the entire human genome. So, putting something into—if we've got a test tube of your DNA, putting a matching marker—that's what you kind of do. You put these little markers that are complementary down into the test tube and see if it binds, and then you—and then, you know you have that one. If you—if it doesn't bind to anything, you don't have that. If it binds to something, that's the allele you've got.

It's pretty easy to do now. We have the technology to do that. Um, so for them to say, "Yes, you have these alleles, yes, these are your genes," well, yeah. That's probably accurate. Yes, the tests can be wrong, but generally speaking, they're right.

But what does that really tell you about yourself? That's a much more complex question. So, first of all, in terms of the ancestry, like I've already said several times, the more users, the more accurate. So there's a lot of variability. For instance, white people of European heritage have the highest numbers of samples of DNA in these databases that they're pulling from. So you are probably, if you are a white person of European heritage, more likely to get more accuracy in your results. Everybody else has a lot less accuracy, because the pool of people from those areas of the world is smaller, so you're not gonna get as precise data.

Justin: Okay.

Sydnee: So—so that's one downfall is that, if you are not a white European descent, you—it may not be quite as accurate for you.

Justin: That makes perfect sense.

Sydnee: Um, the other problem with that is that the data is all recent. It's all from humans now.

Justin: So if those populations sort of shifted in the past, we would have less—

Sydnee: Exactly.

Justin: —which is really what we're talking about, right? I mean, we're talking about multiple generations ago.

Sydnee: Which is why—I found one example as I was reading different articles about this that, if you are of African heritage, you may actually find that you would have really high percentages matching you with European DNA, because the variability between European and some African DNA is actually less than the variability between different, um, areas of Africa.

Justin: Oh, wow.

Sydnee: Different—yeah, different genetic, um, like, markers from those areas. And because they have less data there, you might find all these higher percentages in European, when it's just—it's a—there's not enough data from Africa to tell you where you're from. So, one example that they use. But that's—and it's not just specific for people of African heritage. They said, a lot of people from, um, Central America or South America are not gonna get as robust results either. Um, so again… and all the data is very recent.

In terms of health. So, we didn't do that part. Ours does not define any kind of health risks or disease risks or anything for us.

Justin: I don't need that, honestly. I don't.

Sydnee: I don't want that either, and it's, um… that is a whole other reason that you might not wanna do this. Which, again, I'm gonna get into all the risks, but they will—they're only able to tell you based on certain genes you have that may put you at higher risk for some conditions. That's all they can tell you. They don't tell you that you have them. They actually can't diagnose. They don't wanna diagnose. They don't want that responsibility.

Justin: Sure, yeah. They don't want to be in that game.

Sydnee: No. That—that would put them at such liability. They don't want that. So they actually specifically—there are some things like, for instance, Huntington's Disease. It's a genetic test that we can test people for. These tests could do that.

Justin: So they could say pretty concretely, yeah.

Sydnee: They—they're not going to. They're gonna tell you your risk based on certain genes that they look for, for things like Parkinson's or Alzheimer's. There are also some other genetic cancers that they look for. But again, they're not always right, and they're just telling you risks. So, just because you have those genes doesn't necessarily mean you will get those things. And if you don't have those genes, it doesn't necessarily mean you won't.

Justin: You could—oh, wow. So it doesn't really—I mean, it's... equivocal.

Sydnee: It—yeah. I mean, it…

Justin: I mean, maybe enough where you were like, "Well, I—"

Sydnee: It may tell you some higher risk.

Justin: Yeah, right. "I should go in to see a doc—" I mean, it may prompt you to go get an actual check or something.

Sydnee: Yeah, there's—every next step for any of the health related things are gonna be to go talk to an expert in this arena. Um, you're not gonna be able to take the next steps on your own, generally speaking. Um, when we get into the claims to—and we'll talk about this—*preferences*, there are some genetic tests that claim that they can tell you your preferences for certain products? Based on your... DNA?

Justin: Like what kind of whipped cream you would prefer, or...?

Sydnee: That's not the example, but—

Justin: Cr—Country Crock, or Shedd's Spread?

Sydnee: —I'm withholding it 'cause it's so good. The name of it is so good. But the—but yes, that's the—that—like, food products.

Justin: Okay?

Sydnee: There—

Justin: Like, genetical—you're telling me that I could swab my cheek and they could tell me if I was, like... a Folgers man or a Sanka man?

Sydnee: That is... that—it's not coffee, but that's what they're claiming. I'm gonna get—I don't wanna ruin it yet. It's so good.

Justin: Okay.

Sydnee: Okay. They can also claim, uh—or, there are also people who claim that they can predict your abilities, like sports abilities.

Justin: [snorts]

Sydnee: Based on your DNA.

Justin: I would love to know that, actually.

Sydnee: Um, there are companies—

Justin: Did I have a light that I've hidden under a bush all these years?

Sydnee: [laughs quietly]

Justin: Do I have un-unearthed potential? Non-unearthed potential?

Sydnee: In—there—there are also companies that will try to give you lifestyle advice. Like, "Based on your DNA, you should eat like this. Based on your DNA, you should exercise like this."

Justin: [blows raspberry]

Sydnee: Or whatever. And I think this would, um… this would fall into the range of what we used to call in—in any of my science classes, we'd call 'em SWAGs.

Justin: What's that?

Sydnee: Scientific wild—I can't say the word 'cause this is a family show—guess.

Justin: Um...

Sydnee: It's an A-word, honey.

Justin: That doesn't make—scien—scientific—say it one more time?

Sydnee: Scientific wild butt guess.

Justin: Oh, okay. I—I get—I getcha.

Sydnee: What that means is it's sort of based in science, but then we're just kinda...

Justin: Throwin' darts, yeah.

Sydnee: Throwin' it out there. And I think a lot of these things would probably fall into that realm. Um, what is the utility of this? Why would you do it? I mean, a lot of people, it's just curiosity.

Justin: Sure, right.

Sydnee: You just wanna know stuff. Um, people like to know things about themselves. And a lot of people like to know where they came from. A lot of people like to know what their ancestry is, what their history is. It makes them feel more connected to their family, their heritage, their past. I—I don't—and I don't think there's anything wrong with that idea.

Justin: Well, with Ancestry, like, you know, I think the idea that, like, you could have a cousin living down the street, that kind of thing is very... the drama of that is very appealing.

Sydnee: That's exactly—a lot of people are hoping to find family members. Um, obviously, this is similar to what we use for paternity testing, right? So there are some really practical applications. Although, these tests could unintentionally do paternity testing for you that you weren't prepared for. So, that's something to keep in mind.

Um, the health information... what is the utility of it? I would say it's equal parts harmful and helpful. Yes, there is benefit sometimes to knowing your risks for certain genetic diseases, but if I'm telling you that you're at higher risk of Alzheimer's right now, I have no advice to give you after that. So how helpful—

Justin: So anyways, sleep tight! [laughs]

Sydnee: Right. How helpful is that information? So the—you know, that's—that's why it's—

Justin: Donate a lot to Alzheimer's research now, I guess?

Sydnee: Yeah, sure. Um... what are the risks that we've—we've already kind of started to talk about it, but some of the risks… so, first of all, who has your data? And this is—Justin and I are the canaries in the coal mine. We've already—

Justin: We knew it was—

Sydnee: —we dove in.

Justin: —we knew it was dumb, but for the show. For y'all, and for the show.

Sydnee: We did it anyway. Um—

Justin: And also, I like the idea that it's there somewhere. I'm not saying that they're gonna clone me now. I'm saying that one of these days, they may need me. [through laughter] Down there, a long way down the road. I don't know why I'm talking like Chuck Tingle.

Uh, but it—one of these days, they might need me, and it's—[holding back laughter] it gives me some peace of mind that somewhere, on a computer... They have the ability!

Sydnee: Is your DNA.

Justin: To bring me back!

Sydnee: They have—

Justin: For one more mish!

Sydnee: —between 100 and 300 of your SNPs. Um—

Justin: That could be enough for—

Sydnee: —but they have your DNA. They have all your DNA.

Justin: That's enough for a clone, right? They could squeeze a clone outta that.

Sydnee: No. They need your—all your DNA. But the—I mean, they have it. They have all the DNA, and there's no—

Justin: Then they have it all! They have enough to clone me or not?!

Sydnee: Honey, they can save the spit if they want to. They have no obligation to destroy it.

Justin: They've got me. So they can get me.

Sydnee: So they—I mean, yes. I mean, that's—and that's what makes people nervous. So, this company now has our DNA.

Justin: Sawbones 2.

Sydnee: The—[laughs]

Justin: Starring Justin... [through laughter] McElroy Jr. [high pitched wheeze]

Sydnee: The—

Justin: [holding back laughter] Coming soon.

Sydnee: —the lab that they use to sequence it, they have our DNA. Uh, anonymous third parties are often also receiving your DNA. If you read into these—and the disclaimers, the privacy policies, everything you sign off on, it's like everything else. It's huge, it's difficult to understand, and most people don't read it.

Um, I would advise you – I'm gonna say this several times – I would advise you to read all of it before you decide to do this.

Justin: We definitely did. [snorts]

Sydnee: [laughs] I've looked through it now, and... I have some regrets, maybe. They can sell your data to things like pharmaceutical companies.

Justin: That's—I'm glad to help.

Sydnee: Now, they—

Justin: Anything I can do to help, pitch in.

Sydnee: Well, and when they do that, the idea is that the pharmaceutical companies can look for, um, certain… like, how—how common is it to have this certain genetic difference that might make people not respond to a certain drug, or have a bad reaction to a certain drug, or something like that.

Justin: Sort of like analytics and user data on your computer where it's like—

Sydnee: Yes.

Justin: —anon—anonymized.

Sydnee: And so it's all supposed to be anonymous. Now, that being said, it is your genetic code. It's impossible to make it entirely anonymous.

Justin: Right, 'cause it's you.

Sydnee: There have been—uh, people have done papers where they have used DNA from these databases to find people, and they can do it. It's—it can be done. So yes, it's anonymous, but they can find you. And this is not HIPAA protected, so all your personal health information is HIPAA protected. Your DNA sequence, once you sell it to 23andMe or whatever, is not. So it's out of your hands.

Now, they will all say that if you ask them to destroy the sample, they will. If you ask them to destroy the DNA, they will.

Justin: Mm-hmm.

Sydnee: But...

Justin: But what if they need a clone of me?

Sydnee: Well, what if it's already gone?

Justin: I can't take that risk.

Sydnee: And also, their privacy policies change constantly, and they can. That's actually in the privacy policy. It can constantly change, and they don't have to notify you of a change. So it may change that they don't have to destroy your DNA, and they're not gonna tell you that.

Um, can this affect your health insurance? So far, no. They can't, like, hand this data over to a health—a health insurance company can't access this data to discriminate against you when offering you health insurance. However, if you are applying for health insurance and they say, "Have you taken a 23andMe… genetic profile?"

Justin: And you lie.

Sydnee: You can't lie.

Justin: I *can* lie.

Sydnee: Well, they can sue you if you lie.

Justin: Oh, okay. Well, that's fine.

Sydnee: So you are—you—there is mandatory disclosure of this information once you have it. So once you know you have these increased genetic risks, if a health insurance company asks you, you have to tell them the truth. Or suffer the legal consequences.

Justin: Okay.

Sydnee: Um, same with life insurance. Uh, and what rights do they have after they have your DNA? Well… if you sue them and they win, you have to pay all the legal costs.

Justin: And also they can have a clone of you appear in court to fight you, with bat'leths.

Sydnee: [laughs quietly] There—there's a mandatory arbitration clause that's very scary and would probably deter most people from ever suing them.

And then the last thing just to mention is, do you wanna know? What—what are you gonna do with the information? Do you wanna know about disease that you cannot do anything about to prevent... now? Is that gonna change your life? Is that gonna terrify you?

You know, a lot of people know that Huntington's runs in their family. It's a good example of a genetic disease that you can test for, and they don't wanna know if they're gonna get it or when. Um, some people do. So are you prepared for this information? Are you prepared for unexpected paternity results, perhaps?

Justin: No?

Sydnee: Uh, are—what counseling are you gonna get afterwards, once you know this? Who's gonna help you deal with this information? You're gonna get on your computer, maybe by yourself. Who are you gonna talk to about it? Do you have access to a doctor or somebody who can help you deal with whatever it shows you?

Justin: Mm-hmm. What are we gonna do when we find out we're related? We don't have an exit strategy for that.

Sydnee: I... it—it cannot tell you with that much specificity.

Justin: Okay.

Sydnee: But—but still. There are a lot of risks to this, and a lot of reason why it—it probably shouldn't be just something you—you walk into [through laughter] as lightly as I think we did.

Justin: No, we—we thought about it. It was well considered. Um...

Sydnee: So I'm gonna get to our results next. But before we do that, why don't we head to the billing department?

Justin: Let's go!

[theme music plays]

[ad break 26:12 to 29:55]

Justin: So, Syd, it's time. Let's get into our results. Again.

Sydnee: Let's do it.

Justin: Let's do it. I'm clicking here on 'Discover my DNA story.' [clears throat] Boy, my allergies. While I'm waiting for this to load...

Sydnee: I've got my DNA all ready to go.

Justin: I hope it tells me why my allergies are so bad.

Sydnee: It's not gonna tell you anything like that.

Justin: N—[laughs] no? Okay. So, my number one hot spot, the place where a lot of people—where they're thinking I, uh, a lot of my ethnicity came from, we got 30% from West Europe. Europe, West, they label it here. That's Belgium, France, Germany, Netherlands, Switzerland, Luxembourg, and Lichtenstein.

Sydnee: Not what you expected, huh?

Justin: Not what I expected. That's 30% from those countries. Um, I'm guessing maybe that's my Mom's side of the family? I feel like—

Sydnee: That makes sense, yeah.

Justin: —her—yeah. I'm feeling like maybe that was from them. I got 20% from Great Britain. England, Scotland, and Wales. 26% from Ireland, Scotland, and Wales. So maybe—if they're breaking those up, you know, if they're including Scotland and Wales in there, there's kind of an overlap in those two areas, so... You know, probably more of that, that sort of vibe.

Sydnee: Sure, sure.

Justin: And then we got, uh—we got a little rogue six percent in Scandinavia!

Sydnee: Hmm!

Justin: Um, and then they, uh… they've got a little bit—a little bit of, uh, three percent in Finland, Northwest Russia. Who knows.

Sydnee: Well, there you go.

Justin: Little bit of that. So, go figure. I don't know. What do you—my—it also lists here migrations? Um, they—they think I probably came in a group of Central Appalachian settlers that came from those top three areas. Um, and, uh, they're also some in Eastern Kentucky and Southwest. So, Europe. Um, so that's kind of my vibe. And not—like I said, not hugely surprising. Um, the preponderance of West Europe is kind of interesting, but, uh… what do you got?

Sydnee: So, I have the same regions you do, which again, is not surprising, but just different percentages. So, my top is actually 30% Scandinavia.

Justin: Really? Interesting.

Sydnee: Yeah. Maybe that's where my... Smirl comes from. I don't know.

Justin: Maybe.

Sydnee: I have no idea. Um, I need to get my parents to do this. Or maybe not. Uh, my—I have got 24% from Ireland, Scotland and Wales; 22% from Great Britain; and then, 17% from Western Europe. Did you see the low confidence regions?

Justin: Yeah, that was my Finland. Finland was a low confidence region for me.

Sydnee: They give me 5% in the Iberian Peninsula, but that's low confidence. So, there you go. That's—again, none of this is particularly shocking, and I'm also part of the—the migration patterns, I think, also have a lot to do with where you live now, because mine shows the Central Appalachia settlers, too.

Justin: Hmm.

Sydnee: Which makes sense. I mean, obviously our families ended up here, 'cause, well… here we are! So—and it kind of maps—in case you're curious how this is set up, it gives you those percentages and it kind of maps, like, your family's history through time. Like, you can start with the 1700s and where people, like—I can see where people crossed over the Atlantic to the US, and in the 1750s to the 1800s where they settled. And then, I don't know. Life on the frontier? Not quite... clear what that is referencing. [laughs quietly] The Industrial Revolution comes to Appalachia. Not sure how that's relevant to me personally.

Justin: [laughs]

Sydnee: [laughs] But anyway, there you go. And it's got all these dots clustered around me, where I am and in West Virginia, so…

Justin: So you're gonna click on over to, uh—how about let's look at those family connections. What's it got for you? I'm gonna tell you mine. Uh, it says, "Clint McElroy is your father." So Dad's up on the in—Ancestry DNA, uh, mix, 'cause it says that Clint McElroy is my dad. [laughs] It is confirmed! Folks, you heard it here first – Clint McElroy is my dad.

Sydnee: Wow.

Justin: It's official. You're surprised?

Sydnee: I know!

Justin: Yeah, it's—it's radio legend, Clint McElroy—

Sydnee: [laughs] I'm so shocked!

Justin: —is my dad.

Sydnee: Uh, my cousin's on here. Confidence is extremely high. I would say it is as high as it goes, 'cause this is, in fact, my cousin who is listed here.

Justin: There you go.

Sydnee: Yeah. I mean, I know him personally, so…

Justin: So definitely. That's legit.

Sydnee: And—yeah, no. And then actually it goes on past here to second and third and fourth cousins that… I don't know any of these names.

Justin: Well, you gotta start reaching out to all of 'em, you know? That's huge.

Sydnee: So, I don't know—

Justin: This is your—this is your blood—do you see any other Smirls on there, out of curiosity?

Sydnee: Uh, no. But, like, everybody's got... there are only some actual names on here. There are a ton of, like, you know, usernames that aren't real human names. They're just, like, numbers and letters.

Justin: We—weedboy420, that kinda thing?

Sydnee: Yeah. [laughs quietly] I don't see that specifically, but... wouldn't it be weird if I just started emailing all these people?

Justin: "Hey, it's me, Syd."

Sydnee: "Hi, are you—are you possibly my fourth through sixth cousin?"

Justin: Theoretically now, you could log in to Ancestry and see if maybe, uh, Sydnee is related—[wheezes] Sydnee or I are related to you, 'cause there's a lot of strangers on here! Some of 'em might be listening to Sawbones. Who knew.

Um, and—[laughs] That's wild.

Sydnee: And I—that is wild. All I can say is honey, I don't see you listed on here.

Justin: Well, that was what the fear was, folks. And listen, tragedy averted. Bullet dodged. No concerns, uh, on that front. What a relief.

Sydnee: You can—you know—did you see it breaks it down into your traits, too?

Justin: Uh, no. I didn't see my traits. Where are tho—where would I find that? In—in my DNA story? Or in my DNA matches?

Sydnee: Yeah. No, they have, like, a preview for your traits. Where it breaks it down to—

Justin: Whe—where? I'm sayin', what—

Sydnee: Oh. It just says "dark eyes are part of your DNA." Well, yeah, I know, Ancestry.

Justin: Well, yeah. I mean, yeah, Ancestry!

Sydnee: I mean, I can look in the mirror! Um... anyway, so there's—there's what we've learned so far. And you know it updates constantly. I've—I've seen that it does that 'cause, um, it'll tell you, like, your percentages could change by one or two as more people—

Justin: Yeah. Well, they could get more information.

Sydnee: —yeah, as more people join.

Justin: You never know.

Sydnee: So they can give you more information. So, anyway, that's how Ancestry works. Um, but if you want health information, obviously, there are places that do that.

Justin: Sure.

Sydnee: We were not interested in that.

Justin: No thank you.

Sydnee: Um, I personally don't wanna know.

Justin: No.

Sydnee: Any—anything that one of these tests could tell me. If I was concerned about something in particular, I'd go talk to my doctor.

Justin: I am relieved that my dad is my dad, though. That's a treat. It's good to know. Um—

Sydnee: I—that's scary. [through laughter] Now I gotta get my dad on here and make sure we match.

Justin: Just double check. Do the dad double check with Ancestry.com.

Sydnee: I'm not worried about that. So—so what—what has all this wrought? All of this DNA testing that people are doing?

Justin: I don't know. I feel marginally, um, more educated about my… identity, I guess?

Sydnee: Yeah. And, I mean, I guess if you want to build a family tree and find, like, you know, brothers and—not brothers and sisters probably. Maybe! I don't know. Cousins, whatever. I guess that's a neat thing to be able to do. But there are websites that claim that they can do a lot more.

For instance, as I alluded to already, there is Vinome. Can you guess what Vinome will do for you?

Justin: Uh, it'll find other people that you're related to you and show you all their Vines? [holding back laughter] Their funniest Vines.

Sydnee: Honey, Vine is gone.

Justin: I know, I know. It's just hard to let go.

Sydnee: It'll con—it'll tell you what wine is—is best for you, based on your genes.

Justin: [cackles]

Sydnee: It will genetically—

Justin: [continues laughing loudly]

Sydnee: —your scientific sommelier—

Justin: [claps]

Sydnee: ... [laughs quietly] that can tell you based on alleles—

Justin: [through laughter] The worst possible thing it could've been!

Sydnee: —and then it will sell you that wine, because they also sell wine.

Justin: [snooty voice] "This is my wine, though. Cer—certainly, you can give this to me at a discount. I'm genetically predisposed to love this wine." [strained] Oh my God.

Sydnee: Yes, thank you. And, I mean, Vinome, now that I've done this, I can guarantee it's like, "Well, here you go. Here's another European white person. Here's your wine." [laughs quietly]

Justin: Ugh, God. That's terrible.

Sydnee: Yeah. So, there's Vinome that will sell you wine that is genetically, uh, perfect for you. There's something called Vitagene, which will give you diet and exercise and lifestyle advice, based on your genetics.

Um, Helix has actually taken your entire genetic sequence, and they will—they—there's a—they are selling a series of apps. So, like, you send in all your DNA. They sequence the entire thing. And then they'll break it into different things you might want to know about yourself that are all different apps you can buy.

Justin: Ugh.

Sydnee: And then, what they want is for you to—they talk about, like, having a lifetime relationship with your DNA. That you can—you'll be constantly buying new apps to learn more things about yourself because there's so much DNA there.

Justin: Perfect. Perfect! Or read a book!

Sydnee: This might be my favorite, though. Soccer Genomics.

Justin: Yeah, now—now I'm listening.

Sydnee: What do they do? Well, they will help you, um—one, find out if you're good at soccer, [holding back laughter] and two—

Justin: I don't need a test for that, thank you. I'm great.

Sydnee: —uh, it's—they'll help you strengthen your game through various exercise and diet regimens, things to focus on like speed or agility or flexibility or whatever, that are specifically, y'know, designed for you and your genes. Every time I was trying to click through different pages, there was something that kept popping up called a hydration calculator that would be specifically for me if I just gave them my email a—my email address. I did not do that.

Justin: That's a bargain. Are you kidding me? What a steal.

Sydnee: [laughs] But, uh—

Justin: Put it in a burner, Syd! You put it in a burner and then you get the hydration calculator. That's Web 101!

Sydnee: [laughs] This is aimed at parents who want their kid to be the best at soccer. That's what this—this is for.

Justin: That's disgusting.

Sydnee: And you can genetically make them the best at soccer. And that—that led me into this discovery of the whole world of genetic code for sports... ability. Like, to use your genes to decide if you're gonna be good at sports or not. There are some teams that have had their players sequence all their DNA so that they can develop personalized training programs for each of them. Like, more professional teams, not... you know.. Not—not your kid's, like, club soccer team or whatever.

Justin: Yeah.

Sydnee: There is a company that will test your kid—

Cooper: [babbling]

Sydnee: —[laughs quietly] as long as they are under the age of eight. No, Cooper. You don't get tested. They will test you under the age of eight for a sports gene. There's a specific gene.

Justin: [stage whispers] Yesss.

Sydnee: That a 2003 study – I think it was out of Australia – had linked to athletic ability. And what they were trying to show is that if you had these certain kind of muscle fibers you had more speed, and these other kinds, you have more endurance, and all of this was linked to this one gene, and they kind of—

Justin: The sports gene.

Sydnee: Anyway, this has been totally blown out of proportion to believe that you have to have this gene to be good at sports, and that if you don't have a certain kind, like, you shouldn't go into track and field, but if you have this other kind—

Justin: You should—yeah.

Sydnee: —you should go into—but anyway.

Justin: [groans]

Sydnee: So they will—they will test your kid. They will tell you what they're good at, like, give you a certificate telling you what sports you'd be good at, [holding back laughter] and then they will also refer them to their agency to train them, and then sell—you know, try to get them—

Justin: And they'll get—make sure your—

Sydnee: —on teams.

Justin: —they—they're gonna make sure your kids have the best wine.

Sydnee: [laughs]

Justin: For them. That's the best fit.

Sydnee: Um... and, uh—and so—

Justin: What a nightmare.

Sydnee: I—you know, all of our—all of the DNA that all these companies are collecting are ending up in these large databases. And I—and, I mean, this is an oversimplification. Obviously, there's a lot more to you than your DNA. It can tell us a ton about you, but then, there are great athletes—they make note, for all these athletic genes, there are great athletes who don't have these genes.

Justin: [fake surprise] What?! No, it's impossible. I've known about the sports gene for a long time, Sydnee, and as far as I know, it's the number one determining factor.

Sydnee: Nah. There's—there's—first of all, the genetic code is way more complex than one gene being responsible for your entire athletic ability. And two, you kinda gotta practice and train and work really hard, and that plays a huge factor, so… there is no test that will tell you if your kid can be star quarterback. Please don't believe a company that tells you they can.

Justin: Uh, I have a test. Is their last name McElroy? Then they *can* be the star quarterback.

Sydnee: I thought they were good at basketball.

Justin: McElroys? They're good at everything.

Sydnee: McElroys. [laughs]

Justin: We have one golfer, and he spells it with an I.

Sydnee: [laughs] So he's not good at spelling, but...

Justin: Not good at spell—Chuck—and I guess Chuck McElroy played on the Reds, I think? He was a baseball player. Anyway.

Uh, well folks, that's gonna do it for us. I don't know if—I—maybe it wasn't the smartest idea, but hey… that Justin clone is out there somewhere, folks.

Sydnee: [laughs quietly]

Justin: He's just waiting to be activated. Um, thank you so much for listening to our show. Thanks to The Taxpayers for letting us use their song Medicines as the intro and outro of our program.

New Max Fun show alert – it's called Bubble. It's a sci-fi, uh, comedy, action sort of series. Uh, written by Jordan Morris and a bunch of other talented people. And uh, it's about a life in a hipster dystopia under a bubble, and me and my brothers are in a couple episodes, and it's gonna be really neat!

I think it's starting in the middle of June. They're doing eight episodes, one a week. So, check it out wherever fine podcasts are distributed. It's called Bubble, and that's from Maximum Fun. A lot more great shows on there. Judge John Hodgman, Stop Podcasting Yourself, uh, Switchblade Sisters, tons of great shows. Go check 'em all out.

And, uh, that is gonna do it for us folks, so until next week, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

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

[theme music plays]

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