Sawbones 332: Operation Warp Speed

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Intro (Clint McElroy): Sawbones is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have fun for an hour and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax and enjoy a moment of distraction from that weird growth. You're worth it.

[theme music plays]

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

Sydnee: And I'm Sydnee McElroy.

Justin: Before we get rolling, I just wanted to remind everybody that it is the Maximum Fun Drive 2020.

Sydnee: That's right. We put it off, but now here it is.

Justin: Now here it is. This is the time when we come to you and say hey, if you like the stuff we make and you can kick in a few bucks every month, a little bit of that goes to help keep the lights on at Maximum Fun, our podcast network, and the rest goes straight to the shows you listen to. You tell them what shows you listen to when you sign up, and those shows get your money. And it is how we are able to make shows every week, it's how Sydnee has time to do research, it's how we pay for audio equipment, it's how we—

Sydnee: We sound better now.

Justin: Yeah, we sound better now. It's honestly how we pay our bills and feed our kids and put, you know, clothes on their backs. And that support is—

Sydnee: And candy in their tummies.

Justin: [laughs] And candy in their tummies. And that support is so, so meaningful to our family. Especially as things like touring have gone away and advertising is shakier than ever, it really— we really do rely on you

for this. So, MaximumFun.org/Join is the web address. If you can go there and pledge five bucks a month, you're gonna get a wealth of bonus content. Over 200 hours, I think, including our bonus episode, whatever that was—

Sydnee: All the bonus episodes.

Justin: All the bonus episodes.

Sydnee: From all the years, all the shows.

Justin: And this year our special limited series, Fast and Furious and Justin and Sydnee, hopefully will be up now. And that's just at five bucks a month. At ten bucks a month there is a beautiful pin that you can check out, but you know, the important thing is that you're supporting stuff you love.

Sydnee: And thank you so much. If you are a member already, thank you. If you're considering joining, thank you, thank you. We so appreciate any support you can give.

Justin: Absolutely. So, vaccines. The final frontier.

Sydnee: Well, I don't think they're the final…

Justin: These are the voyages—

Sydnee: No.

Justin: Of the starship Sawbones.

Sydnee: [laughs]

Justin: Its continuing mission to seek out new life, new medications.

Sydnee: Or to protect life, with vaccines.

Justin: And to boldly cure what no one has cured before.

Sydnee: Okay. It's pretty good. On the— now, our podcast isn't—

Justin: Engage. Number One. Number One, engage.

Sydnee: Our podcast doesn't do any of that. But I should, hold on. You said cure, vaccines don't cure. Vaccines prevent.

Justin: Engage.

Sydnee: You know what's better than getting—

Justin: Engage.

Sydnee: Than curing an illness, is never getting the illness to start with.

Justin: I am trying to talk about Operation Warp Speed, the most stoked I've ever been about the name of a thing that we're talking about on Sawbones. I was offering people— I was bringing both a Captain Kirk and a Captain Jean Luc Picard. See if you can tell the difference, okay? Because this is at warp speed, right?

Sydnee: I've never watched Star Trek, so I—

Justin: Engage.

Sydnee: There's no way I'm gonna know.

Justin: "Engage. Number One, engage."

Sydnee: There's no way I'm gonna know.

Justin: "Take us out, Mr. La Forge." That kinda thing. And then Kirk's more like, "Engage."

Sydnee: That's William Shatner. Right?

Justin: It was actually me. [laughs] I can understand how you'd be fooled, but your ears have deceived you, my lady.

Sydnee: I have osmosed some of this stuff from our culture, like, cause I—

Justin: Oh, Osmosis Jones, is that what we're talking about this week?

Sydnee: No, that's not what we're doing. I live with you and I am, you know, there's a deluge of nerdiness that comes my way at all times, but I did not ever watch Star Trek, so I don't get these exact references.

Justin: Okay.

Sydnee: Justin, I have to disagree with you about the name of Operation Warp Speed. I think… it is rare for me to be in a position where I'm gonna criticize something that has to do with vaccines. Because as everyone listening knows, I love vaccines. I'm very, very in favor of vaccines. Because, you know, science. They work, they're great, they save lives. The name Operation Warp Speed is so embarrassing to me as like, a scientist. As a member of the medical community, to say, like, "Don't worry, we've got it covered, science is working on Operation Warp Speed". It's a name that a child comes up with, honey.

Justin: The only thing I don't like about it, and it is radical in every regard except this, is that we are going to move at warp speed and then at the end of it we'll inject it into you. [laughs] It's like, this is good, I like the idea, but like, maybe Operation… Just Taking A Little More Time To Make Sure Everything's Good And Then Injecting It Into People Speed.

Sydnee: I have no— I think this is— I wanna say this at the front of the episode, in case somebody, I don't know, decides to stop listening halfway through. I believe that at the end of this process, however ridiculously named it is, we will have a safe, effective, or maybe more than one safe and effective vaccines against coronavirus, COVID. And I will happily roll up my sleeve and be first in line to receive one. I wanna make that statement. And I will say it again throughout the show, but I wanna say that now. This is not a criticism of these individual vaccines or of the process by which we are expediting the vaccine manufacturing. I really don't have a scientific issue with those things.

I think though that when you have something like vaccines, the more you understand about the process, the more transparent you are, and the more openly you can discuss these things, the more you can onboard everyone else who isn't, like, who doesn't necessarily speak the language of science and might have fears or hesitancy. The more you can get people on board with the program. And you would think that in the midst of a pandemic, when you have the government, the world, not just the United States government, but the whole world saying we can come together and make a vaccine that can save our lives and return things to some sense of normalcy once again, you would think that it would do a lot to fight the anti-vax movement. And if the messaging is wrong, unfortunately it doesn't. And I feel like Operation Warp Speed is a bad name. That's all I'm saying.

Justin: Okay, agree to disagree.

Sydnee: Now, you probably, if you have been following the news about coronavirus, you've seen, especially very recently, a lot of stuff about vaccines making headway and moving forward with clinical trials. Do you have, Justin, like, kind of an understanding? Where would you say your understanding is at this point, from the media, the reports you've read, not from me, of where the vaccines are and what's happening?

Justin: Um, my, uh, you just asked me this so you could drink some coffee. But that's fine, I'm not even mad.

Sydnee: Mm hmm.

Justin: Uh, my understanding is that we are, we basically have the vaccine done and they just need to test it on humans and then make sure it's all good. But we think we have one that works.

Sydnee: More than one.

Justin: Wow. That's great news.

Sydnee: Yeah, and I know some of it gets filtered through my lens, which is relatively positive, I would say, on this end of things. I feel like I've been realistic about a lot of the projections of the spread of the, you know, illness and what reopening would do. I don't like to be right about that, but I feel like a lot of us in the scientific community said we're reopening too soon, this is gonna be bad, and then it was and…

Justin: Is.

Sydnee: Is. And I wish people listened to science. But anyway, with vaccines I do feel more positive about it and I think there's good reason to. So, as we go through this, one thing, if you live in the US you know this, if you live outside of the US and you listen to this show you probably know this now, but any time we have some sort of scientific innovation, process, occurring in this country, the idea that it would be purely for, you know, humanist reasons would be false.

Justin: Right.

Sydnee: Of course these companies are not making these vaccines just to save lives. It's great, I'm sure there are many scientists in labs who

went into this field specifically to save lives. Just like I feel like I went into medicine specifically to help people. I believe that there are a lot of scientists who have that motivation. But there are also people whose job it is to make money, and this race for a vaccine is also about making money for the people in charge. Probably not the scientists in the lab coats in the labs who are doing the actual work, but the people in charge are gonna make a lot of money. And nobody is, there is no Salk who is refusing to patent the sun in this story.

Justin: Everybody's gon' patent the sun.

Sydnee: Yes. And I think that this can undercut your concept of the vaccines. Like, well can we trust them if people are trying to make money and we're moving at warp speed? And I don't think it should. So, this whole process, in terms of where we are with these different vaccines, starts in January of this year. So, this history is relatively short. Because before you make a vaccine, you have to have the genome of whatever you're making the vaccine against, okay?

Justin: Okay.

Sydnee: Or at least that's the way we do it now. Back in the old days, we, you know, we've covered that on this show. Back when we had the smallpox vaccine, we just gave people cow pox. That's a whole other thing. We're not doing that. Now, we start with in January Chinese scientists isolated the genome from this coronavirus. When I say coronavirus in this show, I'm just talking about this. I know there are many coronaviruses, we've talked about that. But I don't wanna have to say the whole SARS-CoV-2 novel— this coronavirus. This one.

Justin: You know what we mean.

Sydnee: So, they isolated the genome. Why do we have to do that to make a vaccine?

Justin: I don't know.

Sydnee: Okay. What is a vaccine?

Justin: A vaccine is a dead version of… um… a bad… a pathogen. It's a dead version of a pathogen, that you inject in your body, that your body then fights and learns how to fight that pathogen from the dead thing.

Sydnee: That is one type of vaccine.

Justin: Okay.

Sydnee: So that's good, that's good. That is accurate. That is not wholly representative.

Justin: That was exhausting, hold on, I'm gonna put my head on the table.

Sydnee: [laughs] So, the different ways we can trigger— what we want is for your body to already know about the virus or bacteria before it gets exposed. We want your body to be prepared, much like we were not for the pandemic. We want you to, when the coronavirus comes knocking at your body door, to go, "Oh, I know who that guy is and we're not letting him in." That is the whole idea of a vaccine, is to prep you ahead of time. We can—

Justin: There's a good one, a good metaphor that I have now, that just came to me. In racing games, you can race the ghost of your friends and race their spectral form. You can race against them until you learn how to beat them.

Sydnee: Ah…

Justin: And then when you actually race them, you've already beaten their ghost, so you know how to beat them.

Sydnee: That is a good metaphor.

Justin: That's like a vaccine.

Sydnee: That's a very good, metaphor, yes.

Justin: Very good.

Sydnee: So you can put in, you said a dead, or attenuated we would say, version of a virus.

Justin: I like dead better.

Sydnee: We could put in a dead virus, we could put in a live virus that has been attenuated. It's still alive but it can't harm you.

Justin: Okay.

Sydnee: We could put in a dead done. We could put in pieces of the virus or bacteria, right, that will stimulate an immune response. We could maybe even put in just the instructions to make the virus into your body.

Justin: Weird.

Sydnee: Which I'm going to get into, that's the really cool stuff, I think. Once we have the code, what we can do is look through the genetic code and find, okay, this part of the code makes the pieces of the virus that your body recognizes. Because each part of your genetic code makes something different. So, we find this gene and this encodes for— and we're gonna talk about a lot with the coronavirus, the spike protein. Which is a protein that sits on the surface of the virus, that our body is very good at recognizing. When our body sees that, it goes "Immune response! Engage!"

Justin: Engage.

Sydnee: Right.

Justin: Engage.

Sydnee: And so, we attack it. So, if we can find the piece of the virus code that makes the spike protein, that's the piece that's important.

Justin: Okay.

Sydnee: So, once we can do all that, we can make a vaccine that triggers an immune response without making you sick. That's why having the code is important. Now, we, like you said, we could either do a killed virus like Flu, Hepatitis A, Polio, the one we use. There are two polio, one's live, one's killed. Rabies, these are killed viruses. The response from these is not quite as robust, your immune response, but it is effective. You do need boosters a lot. They're a little easier to give. As opposed to like a live virus vaccine, which is like Measles, Mumps, Rubella, Rotavirus, the Smallpox vaccine, Chickenpox, Yellow Fever. These have very good immune responses to these. They're a little trickier in terms of, like, storage and stuff, but very good.

There are also, like I said, where we use pieces of the illness to trigger the response. The Hib, Hepatitis B, Pertussis, HPV, there's more. But

these are good, again you need boosters. And then there are a couple that just are aimed at, like, inactivated toxins, like Diphtheria and Tetanus. Which we just take the toxin part of it and inactivate it and then inject that into you.

Justin: Okay.

Sydnee: Okay? Now, here is— these are the vaccines that are in use. I just kind of gave you the general landscape of what's out there that we get injected into us already. Here's what's really cool. We have been working on, in the scientific timeline for a very short period of time. Not really in the way humans measure time, but from a science standpoint, this is really more recent stuff. We've been working on cutting out the middleman.

If we start the process of vaccine development with isolating the DNA or the RNA from the germ, okay? It either has DNA or RNA. So, we isolate that code, and we figure out all the parts, we assemble from them some sort of, like, undercover soldier who looks like the germ but isn't really the germ, and is really there to be an informant and tell your immune system how to fight it, right? And that's how we've always done it. What if we skip that part and just sent the instruction manual itself straight into our bodies?

Justin: So now what we're getting to is The Matrix. Instead of him jacking in and all of a sudden, "I know Kung Fu," then it's him jacking in and being like, "I know how the beat coronavirus". Like, he learns how to fight it, just has the instructions pre-programmed into his head.

Sydnee: I guess that's true, cause he's not actually going in, it's the code for him going in.

Justin: Yes. Or, like, Chuck, who downloaded the entire internet into his brain and knows all fighting skills. But I feel like Matrix is a little more hip.

Sydnee: Think about it this way. Your body already knows how to take DNA and RNA and turn it into proteins and turn it into—

Siri: I didn't get that. Could you try again?

Sydnee: Let me start over for you. [laughs]

Justin: Okay. My watch—

Siri: Siri here. Let me know if I can help.

Justin: [laughs] My watch is confused by what you're saying, Sydnee. You need to slow it down. Make more watch metaphors or things about wrists that it'll get it.

Sydnee: [laughs] Okay. Your body already has the tools and the parts to take RNA and DNA instructions and turn them into things, okay?

Justin: Okay.

Sydnee: Does that make sense?

Justin: Yes.

Sydnee: So, all you need is the recipe.

Justin: Okay.

Sydnee: Think about it like Animal Crossing.

Justin: I will think about it like Animal Crossing.

Sydnee: You've got— you wanna make an ironwood chair. You've got the iron and the wood in your pockets. You've already made your workbench. So all you need is the recipe.

Justin: Okay. And this is the recipe.

Sydnee: That is the idea now. Let's just send the recipe in. Now—

Justin: This is why you didn't like my Matrix analogy very much, is cause you were more excited about your Animal Crossing analogy to come. Is that correct?

Sydnee: Yes, exactly.

Justin: Do I know you well enough to know that that—

Sydnee: Well, it's more exact.

Justin: Okay.

Sydnee: It's more precise.

Justin: Charming.

Sydnee: Mm hmm. Now, you don't wanna send the entire genetic code of a virus into your cells to make that, right?

Justin: That seems bad. [laughs]

Sydnee: Cause we have a name for that.

Justin: It's a whole virus.

Sydnee: It's an infection.

Justin: Yeah, right. It'd make you sick.

Sydnee: That's bad. You just wanna send the pieces—

Justin: That would be a very bad conclusion to Operation Warp Speed. [laughs] "There's already a vaccine and everyone has it." We did it!

Sydnee: Yes, no one's doing that. [laughs] That's just called you get infected and then you get an immune response, and we don't wanna do it that way. So, what we just wanna send in is the recipe for the pieces that will trigger the immune response. You just make that spike protein and your body goes, "Ahh! Coronavirus!" and stimulates a big immune response, even though you haven't actually gotten infected. That's a vaccine. So, that is what we've been trying to do. Just send in the recipe for the spike protein, let your cells make the protein on their own, and then you will stimulate an immune response to it. Pretty cool, right?

Justin: It is cool.

Sydnee: I know, it sounds very cool. Now, there are other ways that people are trying to do this, like, to get the spike protein in there. You could send in the recipe for it, like I just described. You could just inject the protein itself, right? Now, you still have to make it. It can be a little more cumbersome that you've gotta make it, but you could send the protein in there. Except, proteins kinda bend and fold and do their own thing in the body, so like there's one vaccine where they've created a molecular clamp, which is a way of, like, holding the protein in a certain form that makes it very vulnerable to immune response. Which is very cool to think about, but—

Justin: I mean, I'm, yeah, I'm freaking out over here.

Sydnee: [laughs] So, there are all kinds of DNA and RNA vaccines that are basically trying to either send some DNA into your cells in a little circle called a plasmid. It's a little piece of DNA in a circle. You can send the DNA in, which has to, like, then be turned into RNA and then you can make the protein from it. Or even skip that, just send the RNA in, make the protein. Right?

Justin: Right.

Sydnee: And these specifically, when we talked about the Moderna vaccine, we are talking about an RNA vaccine. The reason that it's made a lot of headlines is, one, because it's pretty far along in the process.

When you have a vaccine, you have like an exploratory phase where you're just kinda looking around, trying to figure out what the heck could we do to fight this. You have pre-clinical stages where you're kind of making the vaccine and coming up with the way it would work, and then animal trials and things like that. You have the clinical phase, which is where these vaccines that are farthest along are, well that's what we're talking about, the clinical phase. And that's the Phase I, Phase II, Phase III.

You've seen that in the news a lot. And that basically means, one, how many humans are getting the vaccine. How many subjects you have in each trial. And two, what exactly are you looking for? At first we're looking for, like, safety. You know, we want it to be effective, but we need to make sure it's safe. So like, you focus more on safety at first. And then as you see that it's safe, you can move through the phases, give it to more people, and start measuring a response to make sure that it's actually triggering an immune response. The other thing that you do through those phases is dosing. You start with, like, we think this— we want the smallest effective dose, right? We don't wanna put any more in you than we have to.

Justin: Yeah.

Sydnee: So, we start with, like, a couple different levels of dosing and we see, like, okay, this is the lowest one that still worked, so this is the one we'll go with.

Justin: Got it.

Sydnee: So, the Moderna vaccine is moving into Phase III trials, which is great. That's the last of the clinical phase. And that's very exciting, and it is an RNA vaccine, which would be our first one that we would regularly use, which is pretty cool. There's also one from Pfizer that is an RNA vaccine. There is a DNA vaccine from Inovio, that is pretty far along as well. Not quite as far as these other ones. But right now, they're trying to figure out— it's harder to get DNA into the cell than it is RNA. So that's one of the things that you have to use, like, an electric pulse with it to get it into your cells.

Justin: Woah.

Sydnee: Yeah. And there are other things. There are other— you probably heard a lot about the Oxford vaccine. AstraZeneca slash Oxford vaccine.

Justin: Uh, I haven't been paying, like, super duper close attention, but I probably have heard of them.

Sydnee: So this one, it does not use this method we just described. It actually uses another virus, a form of adenovirus, which is a cold virus basically. It uses that to deliver the code for the spike protein to the cells. And this is a whole other way of making vaccines that we haven't, you know, used widely in the public yet, but has been, you know, the science of it is more recent. But you take a harmless virus, or one that can't replicate, so it can't cause an infection, and you use it to deliver, like, it's like a spy. It comes in and delivers the payload of, you know, RNA, and then goes away.

Justin: Wow.

Sydnee: And then you make spike protein. So that one's pretty far along, too. The only other one is a Novavax vaccine, which I think just recently got some money because it was further along, and it's got a protein subunit, so it's just— it's more similar to what we've talked about before, a piece of a virus that you wanna send in and trigger an immune response with. So, not as exciting, but a tried and true method. We know that vaccines work that way, because we have some that already work that way.

Justin: Can I ask you a question?

Sydnee: Mm hmm.

Justin: Why is it— if this is that… this is a very dire situation, right? And we need stuff to happen now. Why are we getting creative with this vaccine? Why now? Why not do something that we, like, know works?

Sydnee: That is exactly the question I was hoping you would ask.

Justin: Wow, hey.

Sydnee: That's perfect. That is perfect. Because there are, there are many, many vaccines in various pre-clinical and clinical phases that are using the old, sort of, quote-unquote "tried and true" methods, right? The reason that RNA would be used for something this serious is, and we've known this for a while, an RNA vaccine, one, we can make the vaccine a lot faster. The Moderna vaccine was, like, created really quickly in the grand scheme of vaccine making. The time from isolating the genome to Moderna saying, "We have something, we wanna start testing," was incredibly fast. Matter of weeks. That is not the way vaccines usually work. But because you're just using pieces of the code itself, you can make it a lot faster.

The other thing is, because you're just using pieces of the code itself, you can actually manufacture these in mass quantities a lot faster. So, it's been known for a while that in the case of a theoretical pandemic in which we would need to deploy a vaccine to the entire world as safely and quickly as possible, RNA vaccines, some would argue DNA, but one of the two are probably our best bet. We've known this for a while. So, this is not like a wild idea that we use this. Scientists have thought this is— now, in a perfect world, we would be further along with that research, right? We would have already made RNA vaccines before, we would already have some in use.

Justin: Sure.

Sydnee: But coronavirus didn't ask us if we were ready, it just showed up. But using these types of vaccines actually makes perfect sense in this situation.

Justin: Alright.

Sydnee: Now, I wanna get into a little bit of who's getting money and why one over the others, because that's the other part of this story.

Justin: Oh.

Sydnee: But before we do that.

Justin: Yeah.

Sydnee: Let's go to the billing department.

Justin: Well this is ironic, isn't it?

Sydnee: [laughs]

Justin: Who's getting money? Well, right now, hopefully, it's us. Unless you hear silence after this, in which case we got no money and you're stealing this episode. Let's go!

[ad break]

Justin: Okay Syd, I'm ready. I got my money shoes on, I got a money-colored magnifying glass and I'm ready to follow the money. Let me get those green breadcrumbs all up in my maw. Ready.

Sydnee: Now, I think this is why people start to get anxious. And you know, it's weird. If we could all, no matter what side of this, of our current strange political spectrum you're on, all of us start to get nervous when large amounts of money start getting thrown around in these things, right?

Justin: Yeah.

Sydnee: Like, cause you start wondering, "Why did they get the money over that person?"

Justin: Yeah.

Sydnee: No matter what you believe. And if we could all just take a breath and look at what's happening and really try to understand it, this could unite us. [laughs] We don't like when rich people start throwing money around and we don't understand why.

Justin: Yes. I would say it also is a— when you start talking about the scope of this thing, that is also nerve-wracking. The idea that we're going to do something and everybody in the world is going to get injected with it is— I'm not trying to fear-monger, I know that this is not reality, but there are a lot of zombie movies that start that exact way, right? Like, the

idea that we're all gonna do this one thing is just a little bit like, "Oh boy, that's so many people. All people is, like, so many. So many people." It just makes me nervous, the possibility of, you know, something being off is very nerve-wracking.

Sydnee: Well, we've talked about this in general with the response to a pandemic, is that how well humans can respond really depends on how much we trust our leaders. And I think, unfortunately, we're in a moment where a lot of us don't. And so, even as someone like myself who fully embraces the science behind this and the process and will get the vaccine, I understand being nervous about it, because I don't trust Trump or Pence or any of those guys.

Justin: Yeah, I don't trust that Trump's not gonna come in and the end and be like, "Let's put some flecks of 24-carat gold in there, make it really luxurious," and then inject everybody with it.

Sydnee: But he's not. And that's— this is why—

Justin: I know! [laughs]

Sydnee: That's not what's gonna happen. And what you have to remember, and we get emails from these people sometimes, there are real, beating-heart scientists working on this stuff. Okay? There are people— I work in a hospital. I work in a system that is inherently greedy and manipulative. Not my specific hospital, but like—

Justin: All hospitals— well, yes, also your hospital because every hospital.

Sydnee: Every hospital. Well, like, the whole American healthcare system is corrupt.

Justin: Except for whatever Patch Adams is doing. I haven't checked in on him.

Sydnee: There are scientists, and I hope you hear me, I know you're out there, who work in these big pharmaceutical giants who believe in what they're doing to help humanity. They're doing it, and they're not gonna let Trump come in and put 14-carat gold in their vaccines.

Justin: Well it's 24-carat gold, Sydnee, come on.

Sydnee: Oh whatever. Sorry.

Justin: We're injecting this into our bodies, let's have a little taste, okay? [laughs]

Sydnee: [laughs] I'm low-rent over here.

Justin: [laughs]

Sydnee: Anyway, why one vaccine over another? Who gets the money? You know, a lot of it has to do with just who's the furthest along, right? Like, we're trying to make this happen, obviously, at warp speed, so who's furthest along?

Notably though, a lot of these places got money first from something called the Coalition for Epidemic Preparedness Innovations. CEPI has been along, and I'm gonna call it CEPI from here on out, has been along since before, been around since before this. They date back to like, the idea was like 2015, and then I think 2016 it was realized. And the thought was, you know what, and I think 2016 with Ebola. This really brought this idea to the forefront.

We should have a coalition, a worldwide coalition of government entities and private sector and donations from wealthy people, like, we should all come together and form an organization that can start working on the vaccine science against the World Health Organizations, like, most wanted list of pathogens that we don't have vaccine for, plus what they considered, like, Disease X. The unknown pandemic that lays in wait.

Justin: Okay.

Sydnee: Here we are.

Justin: Yes, it happened. You're right.

Sydnee: It happened. So, CEPI was created—

Justin: Alright, Smart Alecs.

Sydnee: CEPI was created just for this. It was created to respond to this, okay? So, as soon as we realized what was happening in January, CEPI started giving money to anybody who seemed to be on the right track. Whose science was sound. I mean, and they have, yes, there are a

lot of rich people involved, but there are also a lot of scientists running this organization who said, yes, Moderna has something that could work, give them some cash. And this is what CEPI's being doing through the entire process.

When we have a vaccine, CEPI will be a large reason that we have a vaccine that works. And I think when you start getting into the weird conspiracy theories around all this, this is where it comes in. One of the large donors to CEPI is the Gates Foundation. And so, I think a lot of people who, for whatever reason don't trust anything the Gates Foundation is involved in—

Justin: They still don't know how to work a computer. I mean, I think it comes down to that, right?

Sydnee: [laughs]

Justin: If they could make the dang computer work, then they would have more faith in Bill Gates. But Bill Gates is the one that made the dang computer not work, Bill Gates deleted all their pictures of their grandkids, and so Bill Gates is trying to kill them.

Sydnee: Exactly. I know there is a, for whatever reasons, I don't know Bill Gates personally, you know, I know there is a lot of hatred thrown towards the Gates, but like, making vaccines is a good thing and putting your money towards making vaccines is, in my book, a good thing. And that is what CEPI was trying to do. And their original goals were very much in line with what I would say, like, my ideals were. Are. Still are. Theirs have changed.

But the original goals of CEPI were like, "We just need to make these vaccines and we will work with private companies to help fund them, but then once they're available, once they've been made and we know they work and they're safe, then we will make them too. You can't keep the IP from us. We will also make them so that everybody on Earth can get them. So that these if these vaccines are made, it doesn't matter how remote or how impoverished an area is, it will get the vaccines if they need them." That was their original goal. So, very humanist, very progressive. You can imagine the way that pharmaceutical companies reacted to that.

Justin: "No, no, no."

Sydnee: "Oh no, we will have nothing to do with you if that is what you want. We want to make money." And so, the current, I think the sentiment is still there and the science is still solid, but I think all those arrangements, the idea that as soon as the vaccine comes out it's gonna be available for pennies to everyone on Earth… I think that still remains to be seen. But like, those kind of lofty ideals were definitely behind the formation of CEPI. And that is, a lot of the vaccines that we just named are getting funding from CEPI to push them forward. There are other ways the vaccines are getting funding. Operation Warp Speed is—

Justin: There it is.

Sydnee: Is our United States government's effort. We got into this on May 15th.

Justin: Mm hmm. We were actually shooting wads of $100 bills out of t-shirt cannons.

Sydnee: [laughs] At vaccine companies.

Justin: At vaccine companies, right through their dang windows.

Sydnee: No, we made them gather very close together in an arena with no masks on.

Justin: [laughs]

Sydnee: To shoot the $100 bills at them. No, but they are also funding vaccine development, the same way that, you know, we've decided that we wanted to do it too, once the World Health Organization and CEPI and the Global Research Collaboration for Infectious Disease Preparedness, and basically every other government on Earth had been doing it. We decided we should too. So we set aside a bunch of money that we're gonna also give to companies that are close to a vaccine, and it's like, it's made up of a bunch of different— the Health and Human Services Department is in here, CDC, the NIH, the FDA, BARDA, which is the Biomedical Advanced Research and Development Authority, the DoD. All these different entities came together under this horrible title, Operation Warp Speed. And the idea is we're gonna give a bunch of money to these companies so that we can get a vaccine made as quickly as possible.

Justin: Got it.

Sydnee: And they have given money to seven different companies so far. Many of these same ones that CEPI had funded. Pfizer, Novavax, AstraZeneca, Moderna. They've also given money to Sanofi, Merck, and Johnson & Johnson, which also is Janssen. Janssen is also Johnson & Johnson. Same.

Justin: Cool, okay.

Sydnee: You'll see them used interchangeably, I had to figure that out. They're all in pre-clinical, so they have not made it as far along as these other ones have. And they're all different types of vaccine represented by these that I just named. Like different— we've talked about RNA and all this, but these are all different styles of vaccine.

I think what's making it tricky is like, once you start having that much money being given in big chunks to these different companies, you start asking, like, well who's making money? Whose pockets are getting lined? And this has all gotten really sticky because the guy who was kind of in charge of this whole process at Operation Warp Speed is a guy named Moncef Slaoui, who has a ton of experience in the vaccine industry, so like, he's a good choice in that sense, right? He has spent his whole career—

Justin: I mean, for the Trump administration, that is a blue ribbon, grade-A pull. I mean, you said the word experience and already, top 10 percentile.

Sydnee: Yes. It makes sense that he would be involved in trying to figure out which vaccine is closest and what should we fund, which should we accelerate, that kind of thing. Because he has a career of doing that. Now, the flipside of that is because he does have that experience, he also has tons of connections. He has sat on a lot of boards. He has owned a lot of stocks in various companies. Specifically, he was on the board of Moderna, he still has ties to Johnson & Johnson. So like, all of this starts to bring up questions of cronyism, right? Like, is he part of this because— or if he is part of this, are the companies getting money companies that will also benefit him? Or other people who are friends, not just him personally, but you know what I mean? It's a bad look.

Justin: Right. I, um, don't care. [laughs] I don't care. That's where I'm at. I don't. I should care, I don't care. [laughs] Just make the syringe full

of the goop that makes the COVID go away, please. I don't care whether my cronies get their beeswax at this point.

Sydnee: Well, I think, Justin, that you are saying the thing that everybody needs to start looking at themselves in the mirror and repeating as we move forward. I have seen no evidence that, I mean, from the papers that have been published and the pre-papers that are out there, which we have talked about, pre-papers are, there are pluses and minuses, pre-publication stuff. But when you start looking at it, the vaccines that are furthest along and that have received money— and again, these same places have gotten money from CEPI, which is working with the World Health Organization, which is working with, like, other countries—

Justin: Real countries.

Sydnee: [laughs] That are trying to do the right thing, working with organizations that are trying to do the right thing, you know, and actually help people.

Justin: Yeah.

Sydnee: So, if these same companies are getting money from them too, I think that's somewhat of an endorsement. But the stuff that's been published, the vaccines are eliciting immune responses, especially the most recent I saw was the Moderna one, which it does take two doses to get the full immune response. Two doses a month apart. But afterwards, you had a more of an immune response than you would have if you had actually gotten coronavirus, it appeared. So, so far the vaccine seemed to be effective. They have published results that show that. Also, the side-effects seem pretty typical of a lot of vaccines. You might get some pain or a rash at the injection site. You might get some mild fevers, chills, body aches, that kinda thing, for a day or so. No major reactions so far.

There was one guy who actually published an account of his reaction, and I think it's important to address it because it made it out into, like, mainstream media and a lot of people were like, "Look at that! See, this is what they're—" So, one gentleman was in the Moderna vaccine trial, and when he got his second injection, he developed a high fever and he vomited and he passed out. This was within 24 hours of getting the vaccine. After that he felt better. He was not hospitalized. And he was fine.

Justin: Fine! Chill.

Sydnee: It is important to note though that he received one of the higher doses that they were still trialing, that they actually aren't going with because the lower dose was effective. So, the vaccine he got is not the vaccine anyone will get, because we showed we could do it at a lower dose. And also, when the guy was interviewed he said he would still get the vaccine anyway. He still believed in this, he still endorsed the process, it was still worth it. Because now he's not gonna get coronavirus!

Justin: Right.

Sydnee: So, I think when you start hearing about these reactions or side-effects or whatever, remember these are the same things we tell you with every vaccine. It's the reason we always, when we take our kids to get their vaccines, we always say they might be a little fussy tonight. They might have a higher temperature. But at the end of the day it's no big deal, because then they don't get these terrible diseases that can kill you, or cause a stroke, or mean you spend the rest of your life on dialysis, or whatever, right?

Justin: Mm hmm.

Sydnee: So they're still worth it.

Justin: We are so bad as a species with recognizing when we have choice and when we don't have choice. I've realized that a lot with the schools thing. I see people in a lot of different forums, like, making these judgement— like weighing pluses and minuses, when there's really not any pluses and minuses to weigh. Like, on one side of it, you get a deadly virus and give it to a bunch of people and maybe die.

Sydnee: And some people will die.

Justin: And some people will die. And on the other side of it, who cares? [laughs] Like question mark, question mark, like, socialization? Like, come on. This is the same thing, right? Like, "What if I pass out?" Okay, great. Like, make sure you have a bed nearby. Like, who cares?

Sydnee: Well—

Justin: We don't have an option. It's not a choice.

Sydnee: And people need to understand, vaccines don't make it to widespread distribution if they kill people. That doesn't happen. They don't make it to clinical trials if they kill people. There's not gonna be a vaccine where it's like, "Well, take the vaccine, you got a 50/50 shot." That won't be out there, that's not how this process works. The process is designed specifically to only allow vaccines that work and are safe. And getting some body aches and a temperature is okay. You will be okay. If you get coronavirus, you may well not. So, there are no vaccines that are gonna go through this process that will kill you.

Justin: Right.

Sydnee: So, I think that it is important to know that the whole world is working together right now on vaccines. Not really us with them. [laughs] We are very specifically not trying to work with anybody, we seem to be as a country very concerned with just ourselves. And not really with ourselves, completely.

Justin: Yeah.

Sydnee: I don't know who we're worried about.

Justin: White… people? Probably?

Sydnee: Well, not even that. Because if you're a school teacher we're not worried about you right now.

Justin: Okay, non-teacher white people.

Sydnee: If you're an essential worker we're not worried about you.

Justin: Okay non-teacher, non-essential white people.

Sydnee: Anyway. The whole world is working together on this, through the World Health Organization. This kind of thing takes a global effort, and thankfully, whatever you wanna say about the Gates, they were thinking about how to save our butts before we knew that our butts needed saving. Along with CEPI and the governments of many, many countries, other than ours, were working on this and planning for this. And these same vaccines are getting funding and have the scientists and the know-how and the real humanistic qualities to bring something to us that can save our lives and protect us. We don't seem to know how to play with others right now. Hopefully that will change.

But, in the meantime, whatever you think about the people involved in this process, the science is solid, the evidence so far is good, and when this vaccine comes out, because what they're talking about with Operation Warp Speed is that they would fast-track a subset of vaccines for healthcare workers, to get them vaccinated maybe, I mean, I've seen reports as early as October now.

Justin: You said— you coughed in the middle, did you say healthcare workers and their precious, precious husbands?

Sydnee: [laughs] It will be very hard, if that is the case, for me to get a vaccine that I know you and the girls can't get. That would be very hard for me. But I also recognize that if I get it, I am protecting you and the girls in a way that I can't right now.

Justin: But then you start to think about the J-man and maybe put another syringe in your pocket.

Sydnee: [laughs]

Justin: Bring it home to him.

Sydnee: Trust me, I have had these— I have already been through this nightmare on my own, in my own head.

Justin: Okay, well we won't relitigate for the podcast then. [laughs]

Sydnee: No, I have already gone through these moral gymnastics. But my point is, if that does happen I will be there in line and I will roll up my sleeve and I will get that vaccine. And when it is available for everybody, Justin I will take you and I will take our children and I will take my parents and everybody I can think of I will drag in there and get this vaccine.

Justin: Folks, when there is a vaccine, I will warn you now, this show will be insufferable for a few weeks with us banging the drum. [laughs] Forcing people to go get vaccines. It will be an insufferable period of Sawbones where we just talk about how much everybody needs to go get the vaccine right now.

Sydnee: The science is solid. Fauci said it looks promising. And has he sugarcoated anything for us?

Justin: Not that I know of.

Sydnee: No, he hasn't. So if he believes in it, I believe in it. And, you know, again, I would urge you to remember that if you are part of the American healthcare system there are people making money off of things that help you, and they're sometimes bad people or people with, like, nefarious goals. But that doesn't mean that the medicine that you're taking, or the surgery you got, or the vaccine you got is bad. Because a scientist somewhere, many scientists, made that. And I believe that for a lot of those people, they went into this for the reasons that I went into medicine. Which is cause I truly believe that if you use science along with humanism you can create things that can make people's lives better and save lives. And those are the people who are making these things for you. Don't worry about Trump. They wouldn't let him anywhere near the lab.

Justin: Thank you so much for listening. One last reminder, slash plea, if you like what we do here on this show, if it means something to you, we would urge you to go to MaximumFun.org/Join. We're only able to make the shows that we make because of your support. It is an uncertain time, which we fully recognize makes it uncertain for you in terms of your financial situation. Advertising is a lot more uncertain than it used to be, and we rely on y'all more than ever to help keep us going. So, if this show means something to you, if it's important to you, please go to MaximumFun.org/Join. If you can pledge five bucks a month you're going to get a wealth of bonus content, including but not limited to, I remember what our bonus was. We did a Sawbones for kids, with Charlie.

Sydnee: Yeah. It's fun.

Justin: It's a Sawbones episode for kids, and of course—

Sydnee: Charlie asked me questions about medicine.

Justin: Fast and Furious and Justin and Sydnee, our Fast and Furious review podcast will begin to be published today, if you are listening to this. So, hopefully we'll get that on the bonus content page today, Friday. You know, at higher levels, ten bucks a month there's a beautiful pin, twenty bucks a month there's a game pack with a Max Fun deck of cards and dice and stuff. But the important thing that you're doing is you're supporting the shows that you care about and helping us to continue to make them.

Sydnee: And if you are already a member, thank you so much for supporting us, we really appreciate it. If you're not in a position to join right now and you just wanna tell a friend or share our show, share a link, that always helps us out too. And don't forgot the boost function, as well.

Justin: Yes, yes, this is functional now.

Sydnee: If you're donating at one level and you're not in a position to jump to the next level, but you do wanna increase your donation a little bit to help out the shows you love, you can do that with the boost function.

Justin: MaximumFun.org/Join, please, please, please don't wait. I'm talking to you. If you can, you listen to the show, you enjoy it, just— it takes five minutes. Go join the Max Fun network and we would so appreciate it. MaximumFun.org/Join.

Also, thank you to The Taxpayers for the use of their song "Medicines" as the intro and outro of our program. You know, that's a good use of— that's a good Max Fun Drive point. We got that song "Medicines" from a free music library that was posted with Creative Commons, you could make the show and, you know, you can use the song however you like. But as the show became more popular and we started to make money from the show, we were able to pay The Taxpayers. I mean they didn't ask for anything, but we were able to pay The Taxpayers and just say, like, "Hey, this show is making money now thanks to support from our donors, like, we would like to pass some of that onto you," and that's all thanks to, you know, the people—

Sydnee: Thanks to you!

Justin: Thanks to you, specifically. That is gonna do it for us for this week, so 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.

[theme music plays]

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