



Sumit Chanda—Virologist gives update on H5N1, mpox, and preparing for an uncertain future

Lauren Fish ([00:08](#)):

This is *Science Changing Life*, and I'm your host Lauren Fish. Roughly two years ago, virology expert and Scripps Research professor Sumit Chanda joined us on our podcast where we talked all things pandemic, preparedness and COVID-19. But the world is in a very different place now with infectious disease threats like H5N1, mpox and Dengue virus on the rise. Sumit joins us once again to catch us up on the latest in the virology space, how scientists can be better communicators, and his advice for making sure we're as prepared for an uncertain future as we can be.

We had you on *Science Changing Life* two years ago to talk about pandemic preparedness. So, in those two years, how have you seen the landscape change?

Sumit Chanda ([00:48](#)):

Interesting. I think we're probably more sick of the pandemic than we were two years ago, so I think people are trying to put it in their rear view mirrors now. Unfortunately, I don't think we have implemented any of the lessons learned from that. So I think there's still time, right? There's still things that I think can be done, but interesting since two years ago, right? We've had two viruses now knocking on our door. So we have mpox, which is becoming concerning, and now you're starting to see in children, which means that it's not passed through direct sexual contact, but it's going to be a little bit more transmissible that could launch bird flu. H5N1. I mean, it's been with us since 95, but it has really spread through our farm community, our dairy community, and our poultry community at rates that are extraordinarily alarming. And what also has been alarming is the lack of response to these events happening, especially at the government level. We haven't seen the kind of coordinated response that I think should be put into place after what happened in 2019, 2020. And so we're hoping that we've gone from a place pre covid where people thought pandemics were just the hypothetical, right? That okay, it happened a hundred years ago, who knows? It's not going to happen now. It

Sumit Chanda ([02:15](#)):

Couldn't happen now for one reason or another, right? We're too sophisticated. We have all these things in place, but clearly we're not a pandemic proof society. So the hope is that people, given what we were just talking about, all the other things going on in the world, once some of that calms down, we're able to refocus on being prepared because again, an ounce of prevention is a pound of cure. And so if we can do a few things now that can save millions of lives later on.

Lauren Fish ([02:50](#)):

So what are some of those things,

Sumit Chanda (02:51):

Both bird flu and mpox? We have the tools at our disposal that are necessary to combat them. So both we know how to make a vaccine against flu matching. The exact pandemic vaccine will take some time, but RNA technology is much faster than the old technology. That's about a four to six month ramp up time.

Sumit Chanda (03:18):

But getting that up and going, getting it in place, and then stockpiling antivirals. We have good antivirals against flu. We have decent antivirals against mpox, but we don't have enough to go around. And so governments around the world should be asking pharmaceutical companies to make these and have them put aside. So that time it takes us to get a bespoke vaccine that's targeting the, whatever pandemic strain comes out, we can be protected in that kind of interim

Lauren Fish (03:51):

Period. And

Sumit Chanda (03:52):

We're ready and we're

Lauren Fish (03:52):

Ready. This is kind of going to proportions beyond what is safe and where we can deploy these very quickly.

Sumit Chanda (04:01):

But

Lauren Fish (04:01):

In the period before a vaccine

Sumit Chanda (04:02):

Would be available. Exactly. Right? Exactly. That you make this available not only just to the frontline healthcare workers, but make them available to the general public. And so it's not at all clear. I mean, covid hit the elderly the hardest. It's not clear that this virus will be the same, that the most vulnerable will be that population. So we need to have enough where we can deploy this to anyone and everyone that gets the virus. And the scary thing about this virus right now is that if you look at the historical data, the case fatality rate, which is the chances of dying if you get the virus is at 50%, somewhere around 50%. SARS-CoV-2 was less than 1%. And so people always ask me, well, you think people are going to quarantine again? I'm like, look at a 50% case fat, you're going

Lauren Fish (05:01):

To want to quarantine. It's a self quarantine. You're not going to want to be outside.

Sumit Chanda (05:04):

Yes, people are not going to wait for the government if they see people dropping dead at the rates of one and two, even if it's slightly lower than that,

Lauren Fish (05:14):

That's very intense.

Sumit Chanda (05:16):

It's going to be anywhere between 20 to 50 times worse than covid. And that's existential territory. I mean, this is things that can basically cause civil society worldwide to fall apart, right? So these are scary things, and even I only make an argument that even if there's a small chance of it happening, the impact of it coming to fruition is worth putting in the investment.

Lauren Fish (05:47):

Absolutely.

Sumit Chanda (05:48):

To make sure that even a low probability event that can be devastating doesn't happen. We do this in the military all the time for terrorist attacks for nuclear war. We have a lot of weapons that are thankfully unused, but they're there because we plan for the worst case scenario, and we should be doing this for pandemics. We should be looking at this not just as a healthcare threat, but as a military threat and an economic threat and a threat to our way of life and society as we know it.

Lauren Fish (06:28):

It just seems so crazy that it's been so difficult to get this support to arm ourselves with a healthcare arsenal to kind of go along with the military metaphor, I guess. What are those specific barriers? Is it just that this is such a global scale problem that it's hard to gain collaborations amongst all of these different

Sumit Chanda (06:46):

Yes. I mean, I think there's a couple levels getting anyone to agree on anything

Lauren Fish (06:52):

Challenging.

Sumit Chanda (06:52):

It's challenging. Unfortunately, this has been politicized, right? I mean, this is again, anathema to me and other science, but they were political battle lines that were drawn. Yeah, I don't know how that happened. I don't know why that happened, but there's a legacy of that. And so there is one side for political reasons, we'll just downplay any threat that it's not a big deal. And the last one was overblown, and I don't know how you argue that 1.2 million dead Americans is overblown in any

Speaker 3 (07:23):

Way. Exactly. Absolutely.

Sumit Chanda (07:24):

But that being said, this is the reality of our political landscape. Again, as scientists, you want to be agnostic of that. We are just calling balls and strikes. And so what people choose to do with that is really up to them. And there needs to be, I think, more pressure from the general public impressing upon their politicians and their leaders that, Hey, look, this matters to us. This

matters to us. This matters to our kids. We want to be ready for this. And it's one of those things where you don't see it, so it's out of mind.

Lauren Fish (08:01):

It's not going to happen. Going back to the pre covid world, we couldn't picture what a 1918 Spanish flu look like.

Sumit Chanda (08:07):

Exactly. Right. And so we buried our heads in the sand. And the anecdote I like to use is that, look, no one who was paying attention was surprised that a coronavirus caused

Lauren Fish (08:19):

That

Sumit Chanda (08:19):

Pandemic. We had SARS CoV-1, right? SARS cov to two is called SARS Cov to two, because we had SARS CoV

Lauren Fish (08:24):

One,

Sumit Chanda (08:25):

We had Mers. So these things were coming at us.

Lauren Fish (08:28):

I think you called it, it was on your bingo card, I think last time we chatted.

Sumit Chanda (08:32):

Yeah. No, there is a short list. There's the wild card that could come out of nowhere, but there's a short list of viruses we all know could cause the next pandemic. Influenza and coronavirus have always been the top two. And then I had this list before Covid--Pox viruses were on there. We just had a case of dengue virus here in California. This is all nature giving us warnings, and we failed to heed those warnings before. If we do it again, the saying, fool me once, shame on you, fool me twice. Shame on me. This is where we are now. Right? No one can really say that. Yeah, no, the fears of a pandemic are overblown. I think people are getting into, okay, the last pandemic was a hundred years ago. We're not due for another one in a hundred years, but this is just like these hurricanes and floods and wildfires. The ground beneath us has shifted, right? The rules of the game have changed. So once in a hundred year floods are now happening once every 10, 20 years. Once in a hundred year wildfires, same thing.

Lauren Fish (09:50):

Exactly. And

Sumit Chanda (09:50):

Hurricanes, same with pandemics. If I were to put money down, I would say in the next 20 years, there's greater than a 50% chance

Lauren Fish (10:00):

That we're going to

Sumit Chanda (10:01):

See. So something, I mean, first of all, we're way better connected by traveling.

Lauren Fish (10:06):

I say, I would assume the virus is allowed to mutate so much more quickly just based on how much we travel.

Sumit Chanda (10:12):

Yeah. It's basically the playing field, right? We are encroaching into areas that these reservoir species generally inhabit. So there's more chance of that interaction. So that chance jump, which is called a kind of zoonotic event, and then with dengue, the vectors that carry this because of climate change, the footprint is changing.

(10:37):

The reason now we have *Aedes aegypti*, which carries Dengue and West Nile and other mosquito-borne viruses, is that because those are now, our climate is becoming more habitable to those before they were restricted to the tropics. And it's bad there. It's not great there, but it was out of sight, out of mind for us. But the climate is changing. The climate changing causes these species to adapt new areas of habitation, and that means that we're going to have more interactions with them. That means the risk is going to get worse, not better. So that a hundred year paradigm, you throw in a couple of airplanes that

Lauren Fish (11:18):

Shifting climate,

Sumit Chanda (11:19):

Shifting climate, and we are primed. And so that's the bad news. The good news is we know what to do. It is just getting together. I think the political will both domestically and internationally. This is, again, viruses don't know nation states. That's just not a thing. And so this is a world issue. And so the first line of defense is surveillance, knowing what's out there, knowing what's popping up, getting a global early warning system in place, and that's the first thing that we need to do. And that hasn't happened. That absolutely should have happened after

Lauren Fish (12:05):

Covid,

Sumit Chanda (12:06):

But the WHO tried and it just fell apart. Okay? The second thing is there needs to be a more concerted effort to develop tools that can save us

(12:19):

From this. I think I may mentioned this to you before SARS-CoV-1 came out, people were developing drugs and vaccines, but by 2008, they just stopped. They said, oh, problem solved. Don't have to worry about it. The drugs that we have now didn't come from nowhere. They didn't start from scratch. The Pfizer drug was originally, paxlovid was originally being developed for

sars Co one, they stopped it, and then they kind of brushed it off and used that. They were developing a vaccine for SARS-Cov-1 that they stopped funding in 2008. Now, would that being a perfect vaccine? No. But would it have saved hundreds of thousands of lives? Yes.

Lauren Fish (13:01):

It would've been a start at a time when we needed something, and we really

Sumit Chanda (13:03):

Had nothing. The reason why pandemics become pandemics is two things. One, they can be spread and so on. But I mean, other viruses can be spread measles, but none of us had any preexisting immunity. And so basically it was burning through, it's like a wildfire, right?

Speaker 3 (13:25):

Exactly. Immune system is

Sumit Chanda (13:26):

Just going to, your immune system has no way to thwart it. And so it would pass and pass and pass, and you would have what's called an R, not or a transmission event. So the number of times when someone gets a virus, the number of times it transmits to somebody, so highly successful virus can affect one person and transmit to 10 to 20 people. Right?

Lauren Fish (13:47):

Yeah. There's that exponential growth.

Sumit Chanda (13:48):

Yeah, there's that exponential growth. Exactly. And when you don't have any defenses, it can spread like wildfire,

Speaker 3 (13:56):

Right?

Sumit Chanda (13:56):

But if you have some preexisting immunity, even from an imperfect vaccine, especially if you're amongst the most vulnerable, that would've saved lives. So we know how to do this. We know how to do this, we can do it. It's just that there's not a, I think the political motivation anymore,

Lauren Fish (14:16):

Or a push to invest, a push to

Sumit Chanda (14:18):

In these areas. And again, I mean people have this fallacy that, oh, Moderna and Pfizer came to the rescue and they're going to keep doing this. But that's not the case. There's no profit motive to prepare for a pandemic. The profit motive is to respond to a pandemic. But by that time, you're already a year to two years in with millions of lives lost. Exactly.

Lauren Fish (14:47):

You

Sumit Chanda (14:47):

Paid the price. You paid the price already. And so this is something that the public sector really needs to focus on,

Lauren Fish (14:55):

Get more involved in.

Sumit Chanda (14:56):

Yes. Governments, NGOs, I mean, we work with the Gates Foundation. They have really forward visionary thinking in this space. Unfortunately, while there is support from the NIH, we have a pandemic preparedness center, which was going to be funded for five years, has now been cut back to three

Lauren Fish (15:18):

In

Sumit Chanda (15:18):

This landscape, in this landscape. Hopefully there are some people in Congress that think this is important enough to keep this going, but this is not just our center. These are centers around the country, and I've seen what they've done and what we're doing. And there are really important programs that are coming out of here. And it is very hard to do anything in three years and five years, I think is the bare minimum to be able to bring together things that could be impactful,

Lauren Fish (15:49):

Especially in the drug discovery and development space, space. These things, we can do it way faster than beforehand, but these things still take

Sumit Chanda (15:55):

Time. They take time. They take time. And so it is really, I think, an incredible missed opportunity for us. And really, it's one of the few programs in the world in the US when they respond on it, one of the few places that was able to do it at this scale, right?

Lauren Fish (16:13):

We have the resources here. We have some of the infrastructure.

Sumit Chanda (16:17):

Absolutely. And so, again, knock on wood, I hope this is not a story that we look back 15 years from now going, boy, if we just gave a couple of more years of funding to these centers, we could have saved, we would've

Lauren Fish (16:32):

Been an

Sumit Chanda (16:33):

Entirely different place, entirely different situation. Again, it's a lot of money, but if you look at what the potential impact of a pandemic is,

Lauren Fish ([16:45](#)):

Even, I mean, of course the life lost is the number one importance. But if you do want to look at it from an economic perspective, exactly how much should we have to pay for covid specifically if those are the only parameters that we're

Sumit Chanda ([16:57](#)):

Looking at. I mean, the economic downturn, I mean, economies around the world came to a halt. We had to basically pump money into the economy at unprecedented levels. Then we had to deal with the inflation. I was going to say that came from that. And so we're still feeling the after effects of covid. And I don't want to get into the blame game of who did what. I think economically, we recovered pretty well from a catastrophic situation. But there are still implications to what we did. And again, if we had things in our arsenal that wouldn't cause us to shut down, cause the disruption in supply chains like we saw, maybe we wouldn't have needed to do that. And so it was reasonably predictable that this was going to happen, and we could have for it. We didn't. But at this point, I think that the people who will deny that the chances of another pandemic happening is not a high enough risk to do anything about. I think you'd have to do a lot of creative and wishful thinking to arrive at that conclusion. The politicians will respond if their constituents tell them, Hey, this matters to me.

Lauren Fish ([18:14](#)):

This is a big issue.

Sumit Chanda ([18:15](#)):

This is a big issue. I mean, there are other big issues on the plate. People are concerned about immigration. People are concerned about inflation mean this should be the things are talking about of the things. Exactly. Right. And I hope that things like this, the outreach on the part of the scientists really start to help. And I think, again, this is one of the lessons I think I learned personally in the scientific community learned at large was that we just did not do a good enough job of communicating our science to the public. And then when things happened, there was a vacuum. And I think disinformation loves a vacuum because they can fill it with

Lauren Fish ([19:01](#)):

Just fill it, right? You just fill it

Sumit Chanda ([19:01](#)):

With whatever you want. And we were caught flatfooted, and we were then on the defensive trying to respond to the situation. Whereas I think going forward, I think it's very important for the scientific community to get out front, right? Incredibly important role in science that I think in general as a community, we have neglected, most of us actually don't know how to talk science to the lay public.

Lauren Fish ([19:31](#)):

It's hard. So used to talking about it with potential partners or potential collaborators where everyone knows the lingo. And it's such a complicated topic.

Sumit Chanda ([19:40](#)):

And look, most scientists, there's not a patch of weed that they see that they don't want to just dive into. That's what we do. And pulling back and saying, Hey, how do I explain this to my mom or my child in eighth grade? How do we do that? That's just not something that we're trained to

Speaker 3 ([19:58](#)):

Do,

Sumit Chanda ([19:59](#)):

Even from graduate school. We're not trained to do it. And I really think that as a community communication, public communication is as important as written communication and scientific communication to a scientific audience. And I hope that one of the course corrections we do starting in graduate school, there are courses now that we offer that we can then allow the next generation of students to really be able to better communicate to the public, and frankly, much better than I think my generation and the generations before it have done.

Lauren Fish ([20:36](#)):

Right. Absolutely. Well, and I think too, since Covid, everyone thinks that they're somewhat of a scientific expert. I think it really brought science back into the limelight in a way that maybe had retreated for a while.

Sumit Chanda ([20:47](#)):

It's fantastic because now when I say PCR or antigen tests, people's eyes are, yeah, antibodies. They're

Lauren Fish ([20:55](#)):

Like mRNA.

Sumit Chanda ([20:55](#)):

Yeah. They're like, what are you talking about? But I mean, also, there's a situation where knowing a little bit can be actually more dangerous.

Lauren Fish ([21:04](#)):

Just enough to be

Sumit Chanda ([21:05](#)):

Dangerous. Just enough to be dangerous. And this is not just science. You've seen this kind of sweeping across the political landscape in the US and Europe. This is a mistrust of expertise. Right?

Lauren Fish ([21:18](#)):

Exactly.

Sumit Chanda ([21:18](#)):

And look, you can blame anyone and everyone you want in that, but I think the experts are tasked with gaining that trust back. That is our job. We lost it. Now you can say, okay, well, people propelled it, but it was ours to lose, and we lost it. We did not do a good enough job. I think protecting the public to an informed the public to keep their trust and gain their trust. And I think that's again, a key part of pandemic preparedness. You go to a heart surgeon that has experienced in 20, 30 years to get a bypass. You don't want to get a bypass from some guy who saw a YouTube video

Lauren Fish ([22:01](#)):

And Oh, I can do this.

Sumit Chanda (22:02):

Yeah, I can do it. Right. But this is kind of a similar thing. I've been doing this for 25 years. I don't know everything. It's impossible to predict the future, but probably have a better idea of

Lauren Fish (22:17):

Than

Sumit Chanda (22:17):

The average person

Lauren Fish (22:18):

Then the average person find on the street.

Sumit Chanda (22:19):

Exactly. And then I think that we were derelict in our responsibility to communicate to people, why are we doing this? There were a lot of edicts given on high six feet, and people didn't realize that, Hey, listen, this was an organism that we didn't know existed on the face of the earth. All of our directions were coming from previous viruses that we looked at to predict the, and the thing about science is, okay, when new data comes in, you reassess what your conclusions are, and you make a new decision on new guidance. And so it's as important in science to admit you're wrong as it is to be Right. Exactly. Because it's a process. It's a a scientific

Lauren Fish (23:08):

Method. Everyone hopefully knows about it. But we're constantly learning, constantly having to shift our perspective as we're

Sumit Chanda (23:14):

Getting data. And I think that people who don't change their mind when they're confronted with new information, those are the ones that you should be worry of the people who will dig in and say, well, this is what I said, and I'm just going to die on. I'm just going to die on this hill. And those are the people that you shouldn't trust. The people who you should trust are the ones that can admit that, yeah, we're wrong.

Lauren Fish (23:41):

We were working with faulty information beforehand, and

Sumit Chanda (23:43):

Now we have, yes, we didn't have enough information, the new information coming in saying, oh, well, the surgical masks are not helping with this virus. The N95 masks are the ones you're going to want. But people, I think didn't understand that it was a process exactly. That

Lauren Fish (24:00):

Were constantly, we're all learning together.

Sumit Chanda (24:02):

And I mean, we knew that there's certain vaccines that can be protective, and we knew there's certain vaccines that can just minimize the risk of a negative outcome. And so I think that it was when the vaccines first came out, it was like, oh, that's it. Now here's, here's your cape. You're never going to have

Lauren Fish (24:23):

To worry about it again.

Sumit Chanda (24:24):

And I think that wasn't, these kinds of nuances weren't adequately communicated to people who want kind of black and white answers. And so I think that was, we were talking about the challenges of scientific communication. It is a lot about nuance, but you area and you want to communicate the gray area to people who want yes or no answers. And I mean, I don't blame them, right? There's only so many hours in a day. And I think it's important that you tell people, well, this is what we know to the best of our knowledge and why. Let's explain it. And then when that guidance shifts or changes, it doesn't come as a surprise that, oh, you guys have no idea what you're talking about.

Lauren Fish (25:09):

Exactly. It's like, okay, this was caveated to me initially. Exactly. And therefore, yeah, I'm not shocked about it.

Sumit Chanda (25:15):

Yes, yes.

Lauren Fish (25:16):

So hopefully, in lighter terms, what are some of the exciting things that you're working on here in terms of pandemic preparedness as well as some of the other scientists?

Sumit Chanda (25:25):

Yeah. I mean, the great thing about covid, at least for virologists, is that we got to work with a lot of people in a lot of areas that previously they weren't interested in virus. And so that legacy is continuing. And so we're bringing people into the fold and working with people in a lot of different areas. And especially here at Scripps, the chemistry is unbelievable working with people in that department, in the neuro department. So the things that are exciting to me, the drugs that we're building now, we're pivoting from what's traditionally been called a one bug, one drug approach to viruses. With bacteria, you can get broad spectrum antibiotics. You don't need to know exactly what bacteria with viruses, you typically need to know exactly what you're infected

Speaker 3 (26:18):

With.

Sumit Chanda (26:18):

But working with RNA, I know you had 'em on here, and the folks at Caliber and within our pandemic preparedness program, it's called camp. We're building tools now that can work across different viruses. And so we're hoping to, I know everyone heard about test to treat that

you stick something up your nose, covid, call it in, but then nowadays it can be covid, it can be RSV, it can be flu, it can be met pneumo. It can be adeno. So what happens is then not everyone has kits for all of those, and some they don't even exist. And typically you want to onboard antivirals within the first couple of days, and they become less and less efficacious

Lauren Fish ([27:05](#)):

The longer that you go without it.

Sumit Chanda ([27:08](#)):

And so if you have what's called a broad spectrum antiviral, if you call up your doc and you tell him or her that, Hey, I got these symptoms, and they can rule out a bacterial infection. They don't need to know what the viral infection is, right? It's a respiratory virus. We're going to give you this pill and

Lauren Fish ([27:29](#)):

It's going to work.

Sumit Chanda ([27:29](#)):

It's going to

Lauren Fish ([27:30](#)):

Work. Yeah.

Sumit Chanda ([27:31](#)):

Because it covers all of them. It doesn't just cover one. It covers all of them. And so we're moving towards there, and we have a number of exciting programs that we think can cover multiple viral families. I think that this is going to change the paradigm of how we deal with respiratory infections. Most of us are like, oh, it's viral. I'm going to sit around, just feel sorry for myself for

Lauren Fish ([27:55](#)):

A couple of days. Exactly. That antibiotics are going to be ineffective.

Sumit Chanda ([27:58](#)):

So I think from a day-to-day treatment, that's great, but from pandemic preparedness, that's where you want to be because chances are viruses don't come from nowhere. They come from evolving from other viruses. So chances are, if we can treat all the viruses that we have now, we should be able to treat the viruses that have come out in the future.

Lauren Fish ([28:21](#)):

Exactly. Especially if you're targeting very similar mechanisms.

Sumit Chanda ([28:25](#)):

And there are things that all viruses share, right? There are engines within the virus that are common. And if you can hit at the heart of that engine and that mechanism is shared by a lot of different viruses, you can really build this type of treatment that not only can help with your day-to-day winter respiratory viruses, but when the next virus comes, right? We can very quickly test, see if it works, and then move it to, this was a story with rde, right? Essi was not built for

sars COV to two, right before that was considered Ebola drug. They were testing it for Ebola, and then they hit kind of similar processes. And so they quickly pivoted to SARS-CoV-2. Now we want to build something that can cover basically all of the respiratory viruses that we have currently. And then as soon as the new one comes out, we can test it in a dish. We know that it'll be safe. We know that it'll work, and we can just pivot and say,

Lauren Fish ([29:32](#)):

Right, you can maybe tweak it a little bit if it's necessary.

Sumit Chanda ([29:35](#)):

Yes. If we need to change the dosing or what have you, we can do that, but we will have something the ready, right,

Lauren Fish ([29:42](#)):

Right. The

Sumit Chanda ([29:43](#)):

Arsenal

Lauren Fish ([29:43](#)):

To go back. Yes,

Sumit Chanda ([29:44](#)):

Exactly. Exactly right. The stockpile. And so that's really exciting. That to me, this is game changing stuff, right? This changes the landscape for both in the antiviral space, but to future proof us for the next pandemic.

Lauren Fish ([30:02](#)):

Yeah, absolutely. Anything else? I feel like that was such a good note to end on.

Sumit Chanda ([30:07](#)):

Yes. Let's stay optimistic. I think I would encourage people to

([30:14](#)):

Care about this, care about this, be more educated, learn more, and encourage my colleagues to reach out more. And I think the thing, if you want to do something is to really reach out to your elected leaders and say, Hey, this matters to me. This matters to me. This matters to future generations. I know that you're not going to get reelected based on pandemic preparedness, but this is something that we need to invest in long-term as a country and as a planet. And so if we can push our leaders to have kind of a longer term vision, I think we will all benefit and our kids will benefit in their kids. What will reap the rewards for the forward thinking that we had at this time and not the reactive situation that we were placed in because our predecessors did not do what should have been done to get us ready for that

Lauren Fish ([31:13](#)):

Event. And with that sound advice, we come to a close for today's episode. Many thanks to Sumit for joining us back on science, changing life, and sharing ways we can all get involved in making sure pandemic preparedness is a top priority. We hope you enjoyed today's episode,

and we'll catch you next time on science Changing Life, where listeners come curious and leave informed. Don't forget to leave us a comment, like and subscribe. We always love to hear your feedback.