

## **Sidedoor S6 Ep. 9 Bonus The 1957 Pandemic That Wasn't Final Transcription**

[MUSIC]

Lizzie Peabody: Hey everyone. We've got a special bonus episode for you this week. It's about the pandemic of 1957, where one doctor risked his reputation by first predicting it and then demanding the entire country get vaccinated, months before the pandemic even hit the United States. That man is now called the Father of Modern Vaccines. This is a story we originally produced back in 2018, and listening to it now feels like stepping into a time capsule back three whole years when the Spanish flu felt like kind of a deep cut relegated to the past and Dr. Anthony Fauci wasn't a household name. So, we wanted to share this story again. And after this episode, we have a follow-up interview with the head doctor at the Smithsonian, just to give us an update on what we've learned since this episode was originally published. Oh, and I want to add this was before my time as host of Sidedoor. So, the host you'll hear is the one and only, the original, Tony Cohn. Okay, here it goes.

[MUSIC]

Tony Cohn: This is Sidedoor, a podcast from the Smithsonian with support from PRX. I'm Tony Cohn.

[MUSIC]

Alexandra Lord: I always remember a quote, which was the bodies piled up something fierce.

Tony Cohn: In 1918, a super deadly virus spread across the world. Alexandra Lord, the Chair and a Curator of Medicine and Science at the Smithsonian's National Museum of American history has spent years studying what made 1918 so deadly.

Alexandra Lord: When we think about bodies accumulating and a city not able to keep up with burying the dead, we think that's something that happened in the middle ages. No, it happened in the 20th century, in an industrialized nation, our nation, but also nations across the world.

Tony Cohn: In October, just October, the disease killed 196,000 people in the US alone. A year later, 675,000 people were dead. And again, that was just in the United States. Worldwide, the body count was as high as a hundred million.

Alexandra Lord: It was one of the most intense pandemics that we've ever seen.

Tony Cohn: So, what caused the 1918 pandemic? Bubonic Plague, Scarlet Fever? Nope. It was influenza. Just the common flu. The thing that you try not to get every year and especially this year, in 2018, when the flu has been particularly aggressive. But fortunately, we're better off today than we were in 1918 thanks to science. In fact, science actually helped us avoid another pandemic. Or rather, a scientist helped us avoid it. You heard that right, a scientist, actually one

guy helped us avoid a pandemic just 40 years after those bodies piled up in the streets. And that wouldn't even be the only disaster he'd help us avoid. The scientist's name, Dr. Maurice Hilleman. If you're thinking hmm, I've never heard that name before, you're not alone. I didn't even know his name before we started doing this story, but it's a name that deserves to be known. So, this week on Sidedoor, you're going to hear that name, Maurice Hilleman, over and over again. A man who's been credited with saving more lives than any other scientist in the 20th century. All of that, right after a quick break.

[MUSIC]

Tony Cohn: So, how many lives do you think Superman saved? Millions? Probably, but, and I hate to break this to you, Superman is not real. You know who is real though? Dr. Maurice Hilleman. Dr. Maurice Hilleman was a microbiologist and a vaccine pioneer who actually did save millions of lives. Except the bad guys Dr. Hilleman was fighting could only be seen with a microscope. That's because he was going after microbes, things like bacteria and viruses that cause disease. And like all good heroes, Dr. Maurice Hilleman has a tidy origin story that, if this were fiction, would explain his uncommon drive. In Hilleman's case, he was born during one of the world's biggest pandemics ever.

Lorraine Hilleman: He was born in 1919 during an influenza pandemic. It was one of the worst in history.

Tony Cohn: That pandemic was the same one we learned about earlier. Bodies in the streets, you remember. And that voice you heard was actually Maurice's wife, Lorraine Hilleman. We asked both Lorraine and Jeryl Lynn Hilleman, Maurice's daughter, to help us tell this story.

Jeryl Lynn Hilleman: He has a really interesting background growing up in a very poor, subsistence farm area in Eastern Montana.

Lorraine Hilleman: And as young children, they work from sun up to sun down. In the winter time, when they couldn't work outside, they made horseradish and they made brooms to sell and things like that.

Tony Cohn: But just like Superman, Hilleman didn't stay on the farm for long.

Speaker 6: The world needs a man of such extraordinary capabilities. That is why you must leave this farm. You must go where they can be best put to use.

Speaker 7: Very well. And when I leave, I'll get a job that'll keep me close to world events. Then when anything happens, I'll know about it at once.

Tony Cohn: Hilleman didn't end up in metropolis. Instead, he made his way to Washington, DC, possibly by plane since the 1950s were in full swing. In fact, by 1957 more people traveled

across the Atlantic by air than by sea. But these travelers were bringing some deadly baggage with them. Here's Alexandra Lord again.

Alexandra Lord: We tend to think when we look at the history of medicine, we tend to think, oh, things improve over time. Actually, diseases spread faster in the fifties and sixties than they did in 1910, simply because we travel much more quickly.

Tony Cohn: April 17th, 1957 was one of those perfect mild spring days in Washington, DC. The cherry blossoms were in bloom and the hero of our story, vaccine researcher Dr. Maurice Hilleman, grabbed a coffee, maybe a donut and a copy of The New York Times. Then, he sat down at his desk at the Walter Reed Army Medical Center to read it. Here's what Hilleman read about the flu outbreak in Hong Kong.

Speaker 8: Thousands of cases of influenza have been reported here during the last few days in the worst epidemic outbreak in years, according to health authorities.

Tony Cohn: And skipping ahead...

Speaker 8: The press estimated there were about 250,000 residents receiving treatment.

Tony Cohn: Here's Maurice Hilleman himself from the documentary "Hilleman: A Perilous Quest to Save the World's Children."

Dr. Maurice Hilleman: 20,000 people lined up. And I looked at that. They said babies had glassy-eyed stares. Oh my God, this is the pandemic. It's here.

Tony Cohn: In order to stop this potentially disastrous pandemic, Hilleman needed a vaccine, except there really wasn't one, at least not for this particular version of influenza. Hilleman would have to create one of his own. To really understand the challenge that Dr. Maurice Hilleman faced, we turned to one of the leading virus researchers in United States, if not the world.

Dr. Anthony Fauci: Okay, my name is Dr. Anthony Fauci, and I'm the director of the National Institute of Allergy and Infectious Diseases here at the National Institutes of Health.

Tony Cohn: Dr. Fauci is so good at his job that he's the guy who presidents turn to when we have a national viral health crisis.

Dr. Anthony Fauci: Usually outbreaks of disease in which they've called upon me to talk to them about what the best approach is. Be it a pandemic flu or HIV aids or Ebola or Zika, or what have you.

Tony Cohn: Dr. Fauci knows a lot about infectious diseases and the vaccines that prevent them. So, I knew I could ask him my toughest questions. What is a vaccination?

Dr. Anthony Fauci: A vaccination is injecting, or orally giving to someone, something that resembles or is related to a particular microbe that you want to protect that person against.

Tony Cohn: Okay, so it's a little complex, but let's look at it like this. And really this wouldn't be Sidedoor without a cheesy metaphor. So, there's a bouncer at a hot new club in town. They're big and muscular, dressed all in black. And they've also got this list with pictures of people who aren't allowed into the club. Think of the immune system as the bouncer. That night, a guy named measles walks up to the club. The bouncer checks the list and lets the guy in. But, once inside, the guy dances so wildly that he ends up wrecking the place. The bouncer calls the club's security, these are antibodies and cell-mediated immunity, and they chase him around for a long time. Eventually, they catch him and manage to kick them out. Then, they add his name to the bouncer's do not enter list. That way, anytime measles tries to get in, the bouncer knows to stop him and call security. Access denied forever. But if the owner of this club, AKA the person whose immune system this is, if they were to have gotten their measles vaccine, measles wouldn't be able to get into the club in the first place. His name would already be on the bouncer's list, and the club's security would be on the lookout because a vaccine works by introducing a dummy version of a virus into the body, which our immune system is able to practice fighting off. Then, anytime we come across the real deal virus, our immune system can recognize it and call upon our antibodies and cells to take care of the threat. The other cool thing about the immune system is that once it fights off a virus or a related virus, they can recognize it and fight it off forever, at least in a lot of cases.

Speaker 11: But then I think about things like the flu, which I've gotten the flu vaccine every year for the last 10 years, but I still have to get it every year.

Dr. Anthony Fauci: Okay, so now you're entering into one of the single exceptions to this rule.

Speaker 11: Of course, I am.

Dr. Anthony Fauci: And the exception is that unlike measles, which just doesn't change from year to year. So, the measles that I got infected with decades ago when I was a child before we had the vaccine is the same measles now that circulates in countries that still have measles. Influenza is an RNA virus that happens to have the capability of changing very, very consistently. It's called drifting from year to year.

Tony Cohn: Because influenza has the ability to change, when scientists make the flu vaccine, they have to predict what next year's flu will be. Often, they're right, but when they're not, the vaccine doesn't prepare our immune system the way it's supposed to. Like this year for instance. Most years, the flu vaccine is between 40 and 60% effective. But in 2018, it's only 10% effective against the worst version of the flu going around. Even at 10% effective though, the flu vaccine can still save lives and help ease flu symptoms.

Dr. Anthony Fauci: Rarely, when it changes so much that it's entirely different than previous influenzas, that's when you have a pandemic, which is one of the reasons why we are working

so hard to develop a vaccine that induces a response against that part of the influenza virus that doesn't change from year to year. And we refer to that as a universal influenza vaccine, and there's a lot of activity going on right now to try and develop that. In fact, I've made that the top priority for my institute over the next several years.

Speaker 11: That makes me so happy. I would love a world where there wasn't the flu.

Tony Cohn: But how exactly do the scientists create these vaccines?

Dr. Anthony Fauci: The vaccines are made by a couple of ways. It's the time-honored way of growing the actual virus. Take influenza. So, you isolate the influenza that looks like it's going to be circulating next year. You grow it up, and then you either kill it or inactivate it, purify it, put it in a form that you can inject, and zing. You get an injection. So, the body now thinks that you've been exposed to influenza.

Speaker 11: But it's really a dead version of influenza.

Tony Cohn: And just in case, you're wondering, no, a flu shot cannot give you the flu. Until we have a universal flu vaccine, we're stuck getting them every year. But that's okay because without them, we'd face more flu pandemics that kill millions of people, which we almost learned the hard way back in 1957. And we'll get to that right after a quick break.

[MUSIC]

Tony Cohn: Welcome back. So, here's what you really need to know right now. In 1918, there was a huge global flu pandemic that was said to have killed up to 5% of the world population. The next year, Maurice Hilleman was born. As an adult, he became a promising vaccine researcher. In 1957, he read an article in The New York Times about a particular strain of influenza that was sending hundreds of thousands of people to the hospital in Hong Kong. And Hilleman sensed a disaster heading for the United States. He arranged to get a sample of the virus sent to his lab. He tested it, and it was a totally new version of the flu. Nobody to his knowledge had even seen this virus. And that meant neither had their immune systems. They needed a vaccine and they needed it fast. Here's how Dr. Hilleman himself remembers that time. As told in the documentary "Hilleman: A Perilous Quest to Save the World's Children."

Dr. Maurice Hilleman: By George, I was able to announce to the world and I had guts at that time. I said that there would be a pandemic which would start when school began in the fall.

Tony Cohn: This was a big call. Keep in mind, it was spring 1957. Imagine suggesting that major pharmaceutical companies spend millions of dollars to create a flu vaccine in just months. Hilleman knew this prediction would follow him for the rest of his career, whether he was right, and especially if he was wrong. After convincing the other researchers at Walter Reed that a pandemic was literally months away, the team went to work. By June, the first batch of the

vaccine was ready. Then, one month later, they began vaccinating millions of school-aged kids. So, they'd be protected by the time school started in the fall. So did the vaccine work?

Dr. Maurice Hilleman: The pandemic of 57 of Asian influenza began on time. But now having had early detection, that alert from The New York Times then allowed us, I could go to the manufacturers and get them going on an immediate basis without having to go through the bureaucratic red tape. And we had 40 million doses of vaccine by the time that the end of the year came and it was used. And that's the only time we've ever averted a pandemic with a vaccine.

Tony Cohn: Between 1957 and 1958, about 70,000 people died from the flu in the US. Some predicted that the death toll would have reached one million without Hilleman's vaccine. So now Hilleman had two major vaccines under his belt and had saved hundreds of thousands of lives. His career was on fire.

Jeryl Lynn Hilleman: At which point, there was a big change in his life in that I came into the picture.

Tony Cohn: That's Maurice's daughter, Jeryl. Hilleman wanted to give Jeryl the best life he could. So, the family packed up and moved to Philadelphia, where Hilleman accepted a job with the firm Merck. And like Pac-Man chomping on some blue ghosts, he attacked all the worst infectious diseases affecting children and adults alike. Hilleman developed vaccines for measles, mumps, rubella, meningitis, hepatitis, pneumococcal pneumonia, and chickenpox, and many, many more. The actual number of vaccines Hilleman either created, helped to create, or improved...40. 40 vaccines. In fact, Dr. Hilleman developed nine of the 14 vaccines routinely recommended for children by the American Academy of Pediatrics. Maurice Hilleman was super prolific. Again, here's Dr. Anthony Fauci.

Speaker 11: What do you think made Dr. Hilleman so successful?

Dr. Anthony Fauci: Well, first of all, you have to start off with he was a brilliant guy. The second thing, he had an incredible amount of energy. He was a very, very hardworking person. So, you take somebody who is intellectually brilliant, hardworking, great ideas, has a great team behind him, has a major company behind him, and is laser-focused. That's it, that's the ingredients.

Tony Cohn: Calling Hilleman hardworking does not cut it. He was well-known for working seven-day weeks. Here are his daughter Jeryl and his wife Lorraine again.

Jeryl Lynn Hilleman: And then after dinner, he would go into his office and continue to work. In fact, he had a sofa bed in his office because I spent so much time in there and I would often fall asleep.

Tony Cohn: Were there any domestic tasks that he was really good or enthusiastic about? Like barbecuing, maybe even doing the dishes?

Lorraine Hilleman: No, we didn't buy barbecue. He said it was carcinogenic.

Tony Cohn: Of course, he did. After a long career, Dr. Maurice Hilleman passed away in 2005 at the age of 85.

Lorraine Hilleman: He did not want to see anybody suffer. He had a lot of empathy, especially for children, but for adults as well. And he just thought he wanted to help rid the world of all these horrible diseases.

Tony Cohn: Maurice Hilleman isn't a household name, but his legacy is everywhere. It's in the millions of people who are alive today, when just a few decades ago, they might not have lived past childhood. Hilleman actually made it possible for us not to worry so much about a thing that probably worried him the most. Here's Alexandra Lord one last time.

Alexandra Lord: Hilleman actually eradicated diseases, so we don't talk about them. So, it's easy for us to forget the person who led to their eradication.

Tony Cohn: In fact, Dr. Hilleman did so much, it's actually difficult to keep all of his accomplishments straight. 40 vaccines, eradicating diseases, avoiding pandemics, saving lives. And it goes on and on and on.

Dr. Anthony Fauci: It's stunning that a person, a single person has developed those kinds of vaccines that have saved so many lives.

Lorraine Hilleman: He was a man of science. He was a man of history. He was a man of destiny.

Tony Cohn: What do you think he would want the public to know about himself and his work?

Lorraine Hilleman: That it's important to maintain your vaccination schedule.

Tony Cohn: Maurice Hilleman didn't have superpowers, but what he did have in common with Superman was the drive to make the world a safer place.

Lizzie Peabody: So, listening to this segment in 2021, my first reaction is can you imagine a time when Dr. Fauci needed an introduction? That blows my mind. It feels so far away.

Dr. Anne McDonough: It is fantastic and amazing. And unfortunately, Dr. Hilleman missed the time when epidemiology and epidemiologists were the new heroes of the United States. So, I'm sure that he's looking down from somewhere and hopefully is smiling on that piece.

Lizzie Peabody: This is Dr. Anne McDonough.

Dr. Anne McDonough: And I am the medical officer for the Smithsonian Institution in Washington, DC.

Lizzie Peabody: So, Anne is a doctor, but she also has her Master's in Public Health. And she was also in the Navy for 12 years.

Dr. Anne McDonough: I was stationed in Italy for two years. Those two years happened to be the two years that we had the Ebola crisis, as well as the Zika outbreak. So, I screened the hundred and first airborne when they returned from Liberia back to their home station in Italy.

Lizzie Peabody: Holy moly.

Dr. Anne McDonough: Yeah, it was exciting.

Lizzie Peabody: Safe to say Anne has been training for this pandemic for her whole career. And over the past year, she's helped create a roadmap to guide the Smithsonian through COVID-19. So, I had a few questions for her about how the story we just heard relates to the vaccines many of us are so focused on today.

Dr. Anne McDonough: Well, Hilleman's work is foundational for the type of science that allowed the development of vaccine today. So, if you have a new pathogen, like COVID, the first thing to look for is what your body reacts to on that virus or that bacteria first. When you see what the body develops antibodies to, then you are able to look for ways to teach the immune system how to recognize that virus and get rid of it before it actually makes you sick. And that was the technique that Hilleman used to develop the flu vaccine, so that our bodies would all recognize this new flu strain before it swept around the world as a pandemic.

Lizzie Peabody: So, you'll remember from the episode that Hilleman's vaccines used dead or weakened virus to train your immune system. But for COVID-19, the vaccine companies Pfizer and Moderna are using a fairly new kind of vaccine called an mRNA vaccine that gives your body instructions to model the virus. So, your body mounts an immune response to COVID-19, no virus required. It's a model of the virus.

Dr. Anne McDonough: Yes, it's a model of a piece of the virus.

Lizzie Peabody: For COVID, that piece of the virus is this spike-shaped protein. You've probably seen illustrations of it on magazines or in the news.

Dr. Anne McDonough: So, you don't even have the whole virus. All you have is a very purified spike protein, which is what your body is going to recognize anyway. And then the immune system takes a look at it, develops its response, and then it is set to protect you if you get exposed to COVID in the future.



Lizzie Peabody: Johnson and Johnson, AstraZeneca, and other COVID vaccines, use a different type of virus to deliver instructions to recognize the same spike protein as the mRNA vaccines. And Dr. McDonough says that the reason we're able to create these vaccines so quickly is the fact that so many countries threw tons of money at the problem. But it's up to science as a field to ensure that the vaccines actually work.

Dr. Anne McDonough: One of the reasons that science is trustworthy is because the scientific method is there to disprove your theory, which means all scientists are out to disprove one another. So, if you publish a positive study, you have said, "I can't disprove this." All of your competition, also known as your colleagues, are then going to turn around and peer review, or try to shoot holes in it because if you get a major breakthrough, they don't have one. So, science is, by its own nature, it's both collaborative and highly competitive.

Lizzie Peabody: The collaborative part was key in this case. The COVID-19 genome was sequenced really early on in the pandemic. And then it was shared with the whole world. So, countries didn't need to wait for the virus to reach them. They could start doing their own vaccine research right away. And Dr. McDonough says that's the reason that there's so many different types of COVID vaccines now. And all of that makes for a safer vaccine.

Dr. Anne McDonough: If there was some major problem with the safety or the efficacy of any of these vaccines, there are hundreds of labs and scientists and epidemiologists and data statisticians that would be chomping at the bit to expose it in any way, shape, or form. And so, the amount of scrutiny that is put onto both vaccine, as well as the COVID response in general worldwide, is absolutely unprecedented, but it also has been an opportunity for a lot of scientific advancement because of that.

Lizzie Peabody: It might seem remarkable or even scary that these companies were able to create vaccines for this novel virus in under a year. But that quick turnaround was built on decades of hard work, research, and competition that have fueled vaccine development for over a century. Work that began with the unsung hero of the modern vaccine, Maurice Hilleman.

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Lizzie Peabody: You've been listening to Sidedoor, a podcast from the Smithsonian with support from PRX.

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Lizzie Peabody: If you find that you have more questions about COVID-19 or any of the vaccines, the Smithsonian has created a website that can help fill you in on the science behind the vaccines, how COVID-19 works, as well as the history behind infectious disease in the United States. You can find all of this information and lots more at [vaccinesandus.org](https://vaccinesandus.org). That's [vaccinesandus.org](https://vaccinesandus.org).

[MUSIC]

Lizzie Peabody: And I want to give a shout out to past Sidedoor teammates who produced the original Hilleman episode, Rachel Aronoff, Jason Orfanon, and Tony Cohn.

[MUSIC]

Lizzie Peabody: Our podcast team is Justin O'Neill, Nathalie Boyd, Sharon Bryant, Ann Conanan, Caitlin Shaffer, Jess Sadeq, Tami O'Neill, and Lara Koch. Extra support comes from Jason and Genevieve at PRX. Our show is mixed by Tareq Fouda. Episode art is by Dave Leonard, our theme song, and other episode music are by Breakmaster Cylinder.

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Lizzie Peabody: If you would like to sponsor our show, please email [sponsorship@prx.org](mailto:sponsorship@prx.org).

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Lizzie Peabody I'm your host, Lizzie Peabody. Thanks for listening.