2.6 Tony Fauci — 35 Years of HIV/AIDS: Science and Policy

Tony Fauci: [00:00:00] Thank you very much, Bruce. It's really a pleasure and a privilege actually to be here with you today and join so many of our long-standing colleagues in reviewing this, really, I think, a historic situation of the 35 years that we've had to experience with this most extraordinary disease.

I want to thank the organizers for inviting me. I want to particularly thank Bob Gallo who actually when he called me up and invited me, asked me and **[00:00:30]** gave me the suggestion about what he thought would be a good idea for me to do, and that is to take a look at and to review with you from a personal standpoint, in so much the same way as Paul [Volberding] and others have done, the triple role that I have had over the last 35 years in HIV/AIDS, and that is both as a scientist, as the chief of the Laboratory of Immunoregulation, as the director of NIAID, and then finally, in my role in the conception of, **[00:01:00]** development of, and implementation of the PEPFAR program.

I'm going to rapidly go through this and talk to you about each of these. First, my role as a scientist. Several of you who have already presented have actually made the point that it's the perspective from which you've come. We've heard from the people who've been involved in endogenous retroviruses for years before HIV. We heard from Paul about his situation of being a clinician and an oncologist that took care of patients. I came at **[00:01:30]** it from a clinical standpoint.

This is a picture of me as in my chief residency in internal medicine at the New York Hospital-Cornell Medical Center. I had previously, after medical school, done three years of residency in New York Hospital-Cornell, and then I went down to the NIH and NIAID. Recruited down there by [Sheldon M.] Shelly Wolff (1930–1994), my mentor, my dear friend, and ultimately actually the best man at my wedding. I went back to Cornell as a chief resident, **[00:02:00]** and then came back to the NIH, with a career that I tried to balance between fundamental basic bench research and the issue of clinical medicine.

I studied infectious diseases and immunology, but my early research before HIV was fundamentally looking at the regulation of the immune response in diseases of aberrant immune regulation, in which, together with Shelly Wolff, we developed remission-inducing **[00:02:30]** therapeutic regimens for diseases that were formerly fatal like Wegener's granulomatosis and the vasculitis. (1, 2) I was focused on aberrancy of the immune response. The point I want to make with you is that my background was inadvertently training me for a disease that I had no idea was going to come upon us.

If you look at these papers and just take a look at the issues in red, all of those talk **[00:03:00]** about almost the same theme, the effect of immunosuppressive therapy, polyclonal or aberrant immune activation. (3, 4, 5, 6, 7) During these early years between '72 when I came back from the chief residency to the beginning of HIV, Bart Haynes was in my laboratory at that time. As you can see on some of these papers, Bart is a coauthor with me. (8, 9, 10, 11, 12) He was a fellow in the lab before he left for his illustrious career at Duke.

I kept on doing this **[00:03:30]** for about nine years, and then all of a sudden, something happened that happened to all of us, I think, in this room. This *MMWR* series came out. The first one, again, I had then been down at the NIH doing immune aberrant research for the previous nine years from '72 to '81. The first *MMWR* were five gay men from Los Angeles that Mike [Gottlieb] told you about. (13)

I looked at it as somewhat of a curiosity, but it was the second **[00:04:00]** *MMWR* on July 3rd, 1981, of now 26, curiously, all gay men, not only with PCP (*Pneumocystis* pneumonia) but with Kaposi's sarcoma and other opportunistic infections. (14) It was this that absolutely changed my professional career and my life. Because I made a decision, much to the dismay of my mentors, that I was going to walk away from that nine-year, rather highly successful career in immune regulation, **[00:04:30]** in which, as my mentor, Shelly Wolff, who recruited me down, said, "You were on an extraordinary career trajectory."

I told him I wanted to put that aside and start admitting, at the time, all gay men into our clinic to try and study them. This was in the summer and fall of 1981. I remember his words. He said, "Tony, I love you, so please don't give up your day job if you're going to do this." I felt I needed to **[00:05:00]** explain to the world why I was doing that. I decided to write what I call my apologia pro vita sua. (15) For those of you who didn't take Latin in high school, that means sort of a explanation or excuse for what you're doing with your life.

I wrote a paper in the winter of 1981, and I sent it to the *New England Journal of Medicine*. They turned it down because they said it was a bit alarmist. **[00:05:30]** I resent it to the *Annals of Internal*

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Jump to:

- **Q&A**
- **Citations**
- **Index**
- **Search**
- **Video**

#early theories of AIDS etiology

Medicine, who actually accepted it. In that paper, I said, "Because we do not know the cause of the syndrome, any assumption that it's going to remain restricted to a particular segment of our society is truly an assumption without scientific basis."

Then I started to do what I've been doing for the last 35 years. This is the picture of my laboratory, and again, we were all studying immune regulation, **[00:06:00]** focusing predominantly on dysregulation of B cells in disease. There was a fellow who came into my lab that year, and when I decided that I was going to start studying it, the person with the circle around is [H. Clifford] Lane, who over the years has now become my partner over the last many years in this. What we decided to do was to start, in 1981, the first clinical group looking at HIV infected individuals.

#fear

I recruited the person **[00:06:30]** on the right, Henry Masur. Mike [Gottlieb] mentioned him. Henry was the first author on the New York City paper that described the first cases from New York City, the clinical description of them. (16) I brought Henry down because we needed to have someone who could help us take care of the patients. The ICU at the NIH was very concerned about admitting patients. I recruited Henry down to be the deputy director of the ICU. Henry told me, "I **[00:07:00]** have my boys in infectious diseases. I don't know anything about ICU." We brought him down anyway. For those of you who know about recruiting, he became the deputy director of the ICU, and he's now one of the best ICU physicians in the country.

We started to admit patients. Now, as Paul [Volberding] had said, and others have said, my perspective of this came from seeing the patient and trying to ask and answer some important questions. The trouble was the patients were so sick. We had very little time to **[00:07:30]** get back to the lab at the bench to do research because we spent hours and hours and hours taking of critically ill patients, which like Paul, almost all of them died during those early years. What we did is we just studied what we knew best. This was 1982, early 1983. The virus was not yet discovered.

We were doing kinds of observation on what I knew best, [which] was the dysregulation of the immune response. **[00:08:00]** This is the first paper that I published with Cliff Lane, who was my fellow at the time, on hyperactivity of B cells. (17) It's very interesting because, inadvertently, I accept no insight into that, I was describing the first demonstration of aberrant immune activation in HIV/AIDS, which as we know, now, 30-plus years later, is the fundamental driving force of HIV replication. We were seeing it in B cells, and then as we looked **[00:08:30]** around, we saw it in virtually every system.

We then moved to T cells and were starting studying the phenotypic abnormalities, as well as the depletion of T cells. (18, 19, 20) In 1989, we described, in the blood, that the CD4+ T cell that maintained its expression contained the HIV provirus in patients and individuals who had not yet developed full-blown AIDS.

We then went on to show that the preferential infection of CD4+**[00:09:00]** T cells was in the memory subset. (21) Again, this was 1990, before we had the insight that the memory effector CD4+ T cells in the gut were a major target. I tell this to you because observations are important, even when you can't explain them at the time. That's the reason why we have to keep accumulating this.

#in vitro vs. in vivo

#cell culture, tissue culture, immortalized cell line

Bob mentioned that he and Flossie [Wong-Staal] had described the in vitro model for latency. (22) **[00:09:30]** We at that same time, at that same year, used that model in a cell line to determine the effect of stimulating with cytokines, the individual cells that were in fact harboring virus. (23, 24)

Just about that time, in the mid-90s, Bob Siliciano had established the model of reservoir in individuals who were treated. He did that with a pre-doc fellow in his lab, Tae-Wook Chun. **[00:10:00]** Bob was very generous. He called me up one day and say, "I have a really good person for a postdoc for you," and he sent me Tae-Wook Chun who has been with me for now, over 20 years. As shown here on the bottom of the slide, we began studying in earnest in parallel with what Bob [Gallo] was doing so eloquently in Baltimore, the reservoir of HIV. (23, 24) We found out much to our dismay, that you didn't have to be infected for years to get a big reservoir. In fact, the reservoir was established early during **[00:10:30]** acute infection, which is very, very important.

We then use the reservoir to see if endogenous cytokines in an autocrine and paracrine manner could actually drive HIV replication. These are just a couple of the studies that show that inflammatory, pro-inflammatory cytokines like TNF- and IL-6 [interleukin 6] can do that. (25, 26) In fact, in a representative data from that paper, five out of six of the patients were able to **[00:11:00]** induce replication-competent virus from the CD4positive T cells by cytokines that are important in the inflammatory response.

In the mid-1990s, Giuseppe Pantaleo came to the laboratory and began studying HIV in lymphoid tissue. (27) This is the paper that appeared in the same issue of *Nature* that Ashley Haase did it from a different perspective and came out with exactly the same conclusion. (28) There were a pair of papers here, ours **[00:11:30]** and Ashley's, in which we show that even when individuals were what we called clinically latent because remember, we did not have yet the sensitive assays for HIV virus.

And we probed lymphoid tissue and found out even the people that look relatively well, this is the kind of copious virus that they had in their lymphoid tissue. The white on the left, as you see is copious virus trapped in the follicular dendritic cells, and on the right are individually cells **[00:12:00]** expressing virus.

We continue to study the reservoir with Tae-Wook showing that it was inducible virus, that it decayed at a certain rate. (29, 30, 31) This was done simultaneous with elegant studies from Bob Siliciano and David Ho, and looking at the relationship between the size of the reservoir and the potential for a rebound when you stop.

Things became very sobering when we found out that despite years of antiretroviral therapy, when you looked at an individual whose CD4 **[00:12:30]** count reconstituted, who had no detectable viral load, when you empirically looked at them and took their cells out in vitro, and this was the studies that came out the same week from Doug Richman (b. 1943), from Bob Siliciano in my lab, that virtually every individual had replication-competent virus, despite the fact that we were hoping to have eradicated virus from their blood. (29, 32, 33)

We were unsuccessful. We pushed it a little further by doing the empiric experiment of taking **[00:13:00]** individuals and stopping their antiretroviral drug after they've been on for three years with undetectable virus. (34) Virtually everyone, with few exceptions, rebounded back to the viral set point. We try to "flush it out," as many people are trying to do right now. We literally blasted patients with IL-2 in a study that Cliff Lane had been doing to reconstitute the immune response. What we found that we brought the reservoir down to essentially undetectable **[00:13:30]** levels. (35) Then what we did is we stopped therapy, not only did the virus rebound, as you see in red, but the reservoir was reconstituted to a higher level. My only lesson for that is beware when you look for the reservoir and you don't see it, it almost is always there. That became very, very clear from that study.

We looked at B cells and the phenotypic abnormalities of dysfunctional cells, and also what we **[00:14:00]** did was look at the effect of the role of envelope in the induction of aberrant signaling. (36, 37) We had a number of papers and what we found out that the aberrant signals lead to increased virus replication, corroborating the hyperactivation driving a virus replication. It all began to fit in.

Over the years beginning with Drew Weissman when he was in my lab, he's now at Penn, we looked at a variety of aberrant signals on T cells, leading to their dysfunction. (38, 39, 40, 41) **[00:14:30]** What we did then was go and discover a new receptor, [integrin] 47 [alpha 4 beta 7] (a transmembrane receptor) and we looked at it and found that that the virus binds to this receptor. It isn't a receptor for infection, but it is one that signals and triggers and binds. And most recently, after 10 years of working on 47, we found out that if you give it in a non-human primate model, an antibody to 47 in a paper that came out just yesterday **[00:15:00]** you can actually have, with all due respect to Mark [Harrington], sustained remission in a non-human primate. (42, 43, 44) As you can see after discontinuation of ART (antiretroviral therapy), the individual monkeys that got anti-47 did extraordinarily well.

#cure vs. remission of HIV/AIDS

(For further discussion see the Q&A for the talk by 2.5 Françoise Barré-Sinoussi)

I'll skip this slide because it summarizes what I said.

Let me go quickly onto the next programmatic highlight of my years as the institute director. I was appointed in 1984. (45) I did it for several reasons. **[00:15:30]** I wasn't particularly enamored of administration, but I felt that infectious disease and certainly HIV/AIDS was not going in the right direction and did not have the support that I thought it should have. I accepted the job as NIAID director. that opened my life to things that I never would have been prepared for when I showed you on the first slide, as a clinician, as a scientist.

The first was dealing with the Congress. This is a picture of me test defying **[00:16:00]** before a House Appropriations Committee hearing. There's good news and there's somewhat sobering news about that. When you talk about records, I don't know whether this is a good record or not, but I've been told by people who looked up the *Congressional Record* that I have testified before Congress 245 times over the last 35 years, so I may have the all-time indoor record of testifying before Congress. Sometimes it's good news. It depends on who the **[00:16:30]** administration is and sometimes it's bad news. You either get praised or you get killed. You just got to know when to duck.

Now, the other thing I got introduced to was the activists. This is a picture of Larry Kramer (1935–2020, co founder of the Gay Men's Health Crisis and ACT UP), essentially the father of activism whom we all know. As Mark had said, we try to get—the activists tried to get the attention to the federal government. Larry got it. In the *San Francisco Examiner*, he wrote this on the front **[00:17:00]** page of the Sunday section, "I call you murderers, an open letter to an incompetent idiot, Dr. Anthony Fauci of the National Institutes of Allergy and Infectious Diseases." He got my attention and I began to listen to them.

Mark told you the storming of the NIH, the children of Larry Kramer were Mark Harrington and Gregg Gonsalves (b. 1963, co-founder of TAG) and Peter Staley (b. 1961, co-founder of TAG) and others. Here's another thing that's a wake-up call. Coming to the FDA, I think early on, they were **[00:17:30]** not so sophisticated, they thought maybe I worked at the FDA, so they said, "Dr. Fauci

you're killing us." Then when they found that I was at the NIH, they came in, and stormed the NIH. This is all very well chronicled in *How to Survive a Plague*. A very elegant documentary by David France. (46)

Now, presidents, I had to deal with five presidents. [Ronald] Reagan was one who as said by many could have used the bully pulpit, but he did not use bully pulpit **[00:18:00]**. I think that's one of the things that were very, very important that he did not do that he should have done. I think he may have been interested, but he was not really pushing it forward. Things got much better when George H. W. Bush was vice president and decided he wanted to learn about HIV and when he did become president, I had the opportunity to become very close with him. That's when the budget, together with the Congress and the activists, started to go up, and **[00:18:30]** things started to change.

Now, I had some very interesting obstacles in my way early on, which tells you a little bit about the history and some rough things that I had to do. When I took over as director of NIAID there was a reluctance on the part of the classical infectious diseases people to put resources or attention. In fact, the old venerable and respected heads of infectious disease refused to do anything with infectious disease. What **[00:19:00]** I had to do with something was very painful, I essentially had to remove the individual in charge of infectious disease and start the division of AIDS.

This is some of the things that we did at NIAID and are still doing, from starting the Division of AIDS doing the National Cooperative Vaccine and Drug Discovery Groups (NCVDGs) to the various networks HVTN [HIV Vaccine Trials Network], HPTN [HIV Prevention Trials Network], pediatrics, and all the others that many of you in this room have been involved with. From that has been extraordinary science. **[00:19:30]** There have been over 300,000 papers, obviously, not all of them supported by NIAID, but the fingerprints of investigated supported by NIAID are on them.

I always use the terminology, “follow the science.” Well, if you follow the science, this is what happens: breathtaking advances over 35 years, not the least important of which is in the area of treatment. Sam Broder, Mitch Mitsuya (b. 1950), Bob Yarchoan (b. 1950), and the people from Burroughs-Wellcome **[00:20:00]** were the first to do what Bob had emphasized regarding AZT. Then came the iconic study in the *New England Journal of Medicine* with Margaret Fischl as the first author, showing the clear effect, transient though it was, with AZT. (47) The targeted antiviral development, which got-- I wouldn't say was born with HIV, but came into its own with HIV and has now had implications for hepatitis Cdirected therapy. **[00:20:30]**

The 30 plus antiretrovirals that we have now, and given in combination, have completely transformed the lives of HIV infected individuals. Now, having lived through this, I'm looking through the audience, I've seen people there—on the left, 1987, a little decrease doesn't last long. Two drugs 1994, a bigger decrease lasts, mm, a little bit longer, but not much. But then the 1996 triple combination, we have durable suppression leading **[00:21:00]** to now the same situation that we were early on, where we can now look at people in the eye and say, "If you come in and get treated early and go on antiretrovirals, you can actually live an additional 50 years." (48)

A number of seminal studies SMART (Strategies for Management of Anti-Retroviral Therapy study, 2002–2006), HPTN 052, START (Strategic Timing of Antiretroviral Treatment study, 2011–2016) answering the question. It's better to be on antiretroviral continuously than interrupting it. If you treat an individual who's infected, not only do you save their lives, you prevent them from infecting others. You should start as soon as you know you're HIV **[00:21:30]** infected.

Prevention is the same thing. It started off with rather low-tech things, condom use, behavioral modification, but then we did the interdigitation of the treatment together with prevention. In both preexposure prophylaxis (PrEP), treatment-as-prevention (TasP), prevention of mother-to-child transmission. All of this has been done by an enormous number of highly talented investigators in the field, working as a team to get this done. **[00:22:00]**

Finally, let me close on the situation with PEPFAR. It's a very interesting story and reflects upon what this country is made of, and really individuals, particularly people in the White House who may not have been perfect in other things they did, did some extraordinary things, and that is the birth of PEPFAR. I got to know very well, President George W. Bush for a variety of reasons, including after he was elected with the tragedy of 9/11 **[00:22:30]** and then the anthrax scare. I got very much involved in the development of a biodefense system in research and development. I was essentially down the White House all the time.

He took me on Air Force One on a trip once to Pittsburgh to talk about their biodefense capability. He asked me what really worries me. I told him, "Biodefense and bioterrorism doesn't worry me as much as two things. One the possibility of a pandemic flu, **[00:23:00]** and two, that's a theoretical thing, but the real issue of HIV/AIDS." He got very, very interested in that. What happened is very soon thereafter, he sent me on a fact-finding trip together with Tommy Thompson, who was the secretary of HHS (United States Department of Health and Human Services) to a number of African countries.

He specifically asked me, "I want you to put together if you can, a program that's transforming and accountable to take care of treatment, prevention and care **[00:23:30]** for the majority of people who have HIV in the developing world." I went to these countries, visited, for example, Mulago

Hospital in Uganda, and found out that if they had drugs, they really could do it. I went into the bush here with an 18-year-old girl from the AIDS service organization (ASO). We traveled into villages and found out that she was delivering drugs. If we could deliver drugs to them, they probably could get it done.

I came back to Washington **[00:024:00]** in the spring of 2002, and through the very good graces of a very important person, Josh Bolten, who was the Deputy Chief of Staff to President George W. Bush. I told him, "I think we could do it." I spent the next several months from the spring of 2002 to the end of 2002, doing just that, putting together the design of PEPFAR. They wanted me down at the White House two days a week, but I was the director of NIAID, it was tough to do that. **[00:24:30]**

What I did is I turned, believe it or not, to my own lab. In my lab was an individual who circled there that some of you may know, his name is Mark Dybul (b. 1963). Mark was extraordinary the good clinician, didn't like the bench very much, so I had made him my special assistant to help me with policy. Mark got very much involved in helping me put together the PEPFAR program. We made a suggestion of seven million people that we could treat, prevent, **[00:25:00]** treat two million and care for 10 million. To our great gratification, after many, many, many meetings back and forth with members of the White House and with the President, the President announced the President's Emergency Plan for AIDS Relief on January 28th of 2003.

Interestingly and somewhat ironically, they had asked me if I wanted to be the director of the PEPFAR program. I did not want to leave NIAID. They picked [Randall L.] Tobias (b. 1942), but I suggested to them that they get Mark **[00:25:30]** Dybul to be his deputy because he really knew about HIV. In fact, after Randy left, Mark became the ambassador, followed by Eric Goosby (b. 1952), followed by [Deborah L.] Birx (b. 1956). All very important people, [who] have done a great job, and the results have been spectacular. (49) 9.8 million people on antiretroviral therapy and more than 1.5 million perinatal infections [averted].

Finally, on this last slide: What started off with was, following the science got us **[00:26:00]** to where we are. As I recently wrote in December of 2015, if we want to end the epidemic the way Françoise [Barré-Sinoussi] just said, I believe that we can do that if we continue all of us in the room and all of our colleagues on the outside, to continue to follow the science. (50) Thank you.

[applause]

Bruce Walker (Moderator): We're open to **[00:26:30]** comments and questions. Yes, Mark [Harrington].

Mark Harrington: I wanted to ask you about the issue of, what could you have done different? I'm just thinking of three examples where the SMART trial was not a very popular trial within a lot of academic circles, yet community members were very interested in whether it would be possible to take interruption of **[00:27:00]** treatment. Of course, through that trial, we learned not only that interrupting treatment was a bad idea, but we learned that the inflammation and some of the endocrine diseases that had been thought associated with the drugs were actually associated with uncontrolled HIV.

#counterfactual history

Then that allowed us to do the START study, which again was very unpopular in academia because I believe I'm one of the ACTG (AIDS Clinical Trials Group) researchers just called it the DUMB study because everyone believed that everyone should be ART anyway. We would have never gotten to our global guideline that we have now that everyone should be on therapy, **[00:27:30]** without SMART and TEMPRANO. Similarly, HPTN 052 was controversial. Larry pointed out earlier, the controversy about [ACTG trial] 076. I pointed out about the missed opportunities with opportunities to confections in the '80s. Given all that, the importance of both scientific heresy and of good science, well, what would you have done different over the last 30 years?

#iconoclasm in science

Tony: It's tough, Mark, to try and second guess yourself. **[00:28:00]** I may would have liked to do things differently. I think of all the things that stand out, and there are probably several, is that I think it maybe took me a little bit longer than I would have liked it to realize.

As an infectious disease person, the infectious disease people in the audience—the pre-HIV infectious disease people, if there are any left—often said that you really should be very careful before you do any prophylaxis on anything. **[00:28:30]** Prophylaxis is a bad thing, because you prophylaxis, you wind up getting resistance, et cetera. It took a while to realize that prophylaxis against infections in HIV is, as we all know now, lifesaving. I probably should have jumped on that a little bit sooner. I finally did, and I did it in spades, but I probably should have done it a little sooner.

Monica Green: I was wondering if you could **[00:29:00]** speak more about your sense of your relationships with the people comparable to you internationally, because this was a pandemic. Everything that was going on with AIDS or most everything that was going on with AIDS was going on a lot of other places as well. I was just wondering if you could just give something more of that larger international context.

Tony: Yes. For the most part, it was quite good relationships. **[00:29:30]** Particularly in many of our European colleagues, certainly in Africa. You heard the story that Jim [Curran] had mentioned. Part of the team of that group at [Project] SIDA was [Thomas C.] Quinn, who was a member of my lab, together with the people that Jim spoke about. Then the relationships that we've developed, particularly in the African countries, in South Africa and Uganda and others, I think have been very strong. We have good relationships with the individuals in Australia **[00:30:00]** as well as in Canada. It could always be better but I think that this truly has been a global effort that I think is working. It's not over yet as Françoise [Barré-Sinoussi] said so well, but it certainly is working.

Audience 3: I have a question, I am particularly new to-- right here. [laughs] I'm particularly new to HIV but if I look at **[00:30:30]** still what we don't understand about this virus, it's very, very fascinating. I am wondering whether there is any intentions at the NIH to increase funding for HIV/AIDS research? Because there is the general kind of impression everywhere else is that HIV is under control and so we can forget about it, and that worries me a little bit. I'm wondering whether within the inner circles there is any attempt to reinvigorate **[00:31:00]** HIV research by putting more money?

Tony: Well, yes. You worry about it, I obsess over it. One of my great accomplishments for the year from an administrative standpoint was to prevent the AIDS budget from getting cut this year. So you are really quite correct. There was a movement in the Congress to essentially cut, just for the reason that you said, the misinterpretation—well, there are several things about it, the **[00:31:30]** misinterpretation that it's over, but also the inappropriateness of saying, if you look at the amount of money that you spend per death of AIDS in the country compared to the amount of money you spend per death of other diseases, we definitely should cut AIDS.

Which is crazy, because what you then get penalized for is for your success. If you are successful in preventing it, you are going to get penalized. I agree with you completely. I think one of the battle about not getting **[00:32:00]** it cut, I'm trying to get everyone to start realizing that it should be increased depending upon the scientific and public health opportunities as opposed to saying, it's going to be flat. We are on there, it does worry me a lot.

Jim Curran: Tony, I don't want to speak about AIDS or science or anything, I just want to talk about you, I think you are a rainbow. I've had a chance to observe the rainbow from a lot of different **[00:32:30]**perspectives. A rainbow and we were both young guys hanging out doing this kind of stuff, the rainbow when I was at CDC, longer, and now as an academic and a dean and OAR [NIH Officer of AIDS Research] council, and I saw this type of thing and I don't think that I've ever seen anybody who has been more persistent and reliable as a combination scientist, a citizen, government figure, and communicator than you are. That's not just with AIDS but with Zika **[00:33:00]** and Ebola.

Mark was talking about the importance of science communication in the country, no one trusts the government, but they trust Tony Fauci when it comes to talking about infectious disease and that means you got to be there over and over for decades, and you got to do those 245 Congressional things and you got to go on CNN every time they call you, and then you got to go to the lab and make sure you are telling the truth. I just like to give you a round of applause for your life's work. **[00:33:30]**

[applause]

Wasif Khan: I have a question going back to the previous one, it seem now like not that appropriate, [chuckles] but after this round of applause, but a question about F word, [chuckles] the funding. With your superexcellent **[00:34:00]** communication skills and relationship with the Congress and so on, I'm wondering whether, as the disease repertoire increases, is there a way to convince Congress and what can the scientific community do to make them realize that it also needs additional resources? That you cannot take like HIV to put into Zika, or vice versa and things like that which I am sure **[00:34:30]** you have to deal with.

Tony: I'd like to give you an answer that makes sense, one, two, three, here is the three or four things you can do. There is no answer to your question. Just look at what [Thomas R.] Frieden (b. 1960) and I had to go through when the president asked for $1.9 billion for Zika in February, and we had to go down and brief the Congress about 100 times apiece, and we only got it in September, we got it for the next year's emergency funding. **[00:35:00]** There is no way to explain that except it's completely crazy that irresponsibility of having a disease that's lapping at our shores, and six, seven months after the President asked to for money that we need we don't get.

Things in Washington are tough. I hope that after the elections somehow it will change a bit, but I'll still be here punching them, so don't worry about it.

Bruce: Well, on that note, let me say, we all hope you live forever. **[00:35:30]**

[laughs]

[applause]

There is nobody else I think that has moved the needle for more of us than Tony.

[00:35:41] [END OF AUDIO]

Citations

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Index

- ACT UP (AIDS Coalition to Unleash Power)
- ACTG trial 076 (1991–1994)
- activism, civil rights, protests, and social movements
- AIDS Clinical Trials Group (ACTG)
- AIDS service organizations (ASOs)
- Annals of Internal Medicine (journal)
- antibody, immunoglobulin
- antiretroviral therapy (ART)
- Australia
- AZT (azidothymidine)
- B cell
- Baltimore
- biosecurity
- Birx, Deborah L. (b. 1956)
- Bolten, Joshua B. (b. 1954)
- bully pulpit
- Burroughs-Wellcome & Company (GlaxoSmithKline)
- Bush, George H. W. (1924–2018)
- Bush, George W. (b. 1946)
- Canada
- cell culture, tissue culture, immortalized cell line
- Chun, Tae-Wook
- CNN
- condom
- Congress, US
- counterfactual history
- cytokines
- dendritic cell
- Department of Health and Human Services, US
- Duke University, Duke University School of Medicine
- Dybul, Mark R. (b. 1963)
- early theories of AIDS etiology
- ebola
- fear
- Fischl, Margaret
- Frieden, Thomas R.
- funding and grants
- gay men, gay community
- Gay Men's Health Crisis (GMHC)
- Gonsalves, Gregg (b. 1963)
- Goosby, Eric (b. 1952)
- highly active antiretroviral therapy (HAART), combination antiretroviral therapy (cART)
- HIV Prevention Trials Network (HPTN)
- HIV Vaccine Trials Network (HVTN)
- HPTN Study 052 (2005–2015)
- iconoclasm in science
- immunosuppression, immunosuppressive drugs
- in vitro vs. in vivo
- infectious disease (medical specialty)
- influenza
- integrin
- intensive care unit (ICU)
- interleukins
- internal medicine
- Kaposi's sarcoma (KS)
- Kramer, Larry (1935–2020)
- lab vs. clinic
- Lane, H. Clifford
- lymphatic system (lymph, lymph nodes, etc.)
- Masur, Henry
- medical school, residency, and fellowship
- mentoring
- Mitsuya, Hiroaki "Mitch"
- MMWR Morbidity and Mortality Weekly Report
- models (model systems, model organisms, modeling)
- mother-to-child transmission of HIV
- Mulago National Specialised Hospital (Mulago Hospital)
- National Institute of Allergy and Infectious Diseases (NIAID)
- National Institutes of Health (NIH)
- Nature (journal)
- New England Journal of Medicine (NEJM)
- New York
- New York Hospital–Cornell Medical Center
- non-human primates
- observation

- Pantaleo, Giuseppe
- pediatrics, pediatric AIDS
- PEPFAR (President's Emergency Plan For AIDS Relief)
- Pittsburgh, Pennsylvania
- Pneumocystis pneumonia (PCP)
- pre-exposure prophylaxis (PrEP)
- prevention of HIV/AIDS
- Project SIDA
- provirus
- public health
- Quinn, Thomas C.
- Reagan, Ronald (1911–2004)
- scientific competition and collaboration
- Session 8: Pathogenesis and Prospects
- SMART (Strategies for Management of Anti-Retroviral Therapy) study, 2002–2006
- South Africa
- Staley, Peter (b. 1961)
- START (Strategic Timing of Antiretroviral Treatment) study, 2011–2016
- Storm the NIH, May 20, 1990
- TEMPRANO study (2008–2015)
- Thompson, Tommy (b. 1941)
- TNF- (tumor necrosis factor alpha, cachexin)
- Tobias, Randall L. "Randy" (b. 1942)
- Treatment Action Group (TAG)
- treatment-as-prevention (TasP)
- Uganda
- University of Pennsylvania (Penn) and Perelman School of Medicine
- viral reservoir, viral latency, disease reservoir
- Washington, D.C.
- Weissman, Drew
- Wolff, Sheldon M. (1930–1994)
- Yarchoan, Robert (b. 1950)
- zika

Found 16 search result(s) for Fauci.

Page: September 11 attacks (9/11), 2001 (HIV/AIDS Research: Its History & Future Meeting)
... 2.6 Tony **Fauci** — 35 Years of HIV/AIDS: Science and Policy
Mar 06, 2021
Page: Wolff, Sheldon M. (1930–1994) (HIV/AIDS Research: Its History & Future Meeting)
... 1930–1994. Was the director of the NIAID until 1984, when he was succeeded by Anthony **Fauc i**
Aug 26, 2020
Page: military service and "Yellow Berets" (HIV/AIDS Research: Its History & Future Meeting)
... laboratory experience. Many of these physicians—including Sam Broder, Jim Curran, Tony **Fauc i**, Bob Gallo, Doug Richman, and Harold Varmus—were derided as "Yellow Berets ...
Jan 08, 2021
Page: 2.3 Mark Harrington — The Importance of Activism to the US Response (HIV/AIDS Research: Its History & Future Meeting)
... Some of them still in this room. Apologies if we ever went overboard. Dr. **Fauci**. I was involved and getting arrested in going into all these meetings and doing posters. I ...
Apr 27, 2021
Page: 2.2 James Curran — Deciphering the Epidemiology of AIDS (HIV/AIDS Research: Its History & Future Meeting)
... also an era, when I came into public health—probably like Tony **Fauci** and Bob Gallo—as a commissioned officer 00:01:00 during the Vietnam War ...
Apr 27, 2021
Page: 9.3 Victoria Harden — The Future of the History of AIDS (HIV/AIDS Research: Its History & Future Meeting)
... 05:30 particular example he cited was the 1985 ABC interview with Tony **Fauci** in which journalist George Strait got **Fauci** to speak the words "anal sex" so that Strait didn't have to say them ...
Apr 27, 2021
Page: 2.5 Françoise Barré-Sinoussi — Discovery of HIV (HIV/AIDS Research: Its History & Future Meeting)
... Francis indicating that the virus could infect chimpanzee. (15) Another paper with Tony **Fauci** an d Bob, showing also that HTLV's reinfection could be transmitted to chimpanzee and that could be also ...
Apr 27, 2021
Page: 9.1 Jon Cohen — Responding to AIDS: A Journalist's View (HIV/AIDS Research: Its History & Future Meeting)

... day. A lot of it was comic, 00:11:00 in ACT UP's way, and Tony **Fauci**, who's head of the largest AIDS Institute in the US government said it was, "Interesting theater ...
Apr 27, 2021
Page: 3.6 John C. Martin — Making it Simpler: A Single Pill to Treat HIV (HIV/AIDS Research: Its History & Future Meeting)
... all these years. To get into it, chuckles this is a picture from four years ago. Tony **Fauci** showed a picture of Mitch Mitsuya, Bob Yarchoan and 00:01:00 Sam ...
Apr 27, 2021
Page: 8.4 Robert Siliciano — The Challenge of the HIV Reservoir (HIV/AIDS Research: Its History & Future Meeting)
... HIV infection. (2) And a number of 00:01:00 studies from the Tony **Fauci** group then showed that HIV gene expression could be upregulated in infected T cell ...
Apr 27, 2021
Page: 2.1 Paul Volberding — The First Patients (HIV/AIDS Research: Its History & Future Meeting)

... iceberg slide. Every everyone lecturing in AIDS had an iceberg slide. Tony **Fauci**, I'm certain you did. We were beginning to get a sense 00 ...
Apr 27, 2021
Page: Session 10: What Have We Learned? (HIV/AIDS Research: Its History & Future Meeting)
... Center because it’s not really a hospital. Patient number two went to Tony **Fauci**, and I think back up on that and I think 00:10:00 “Boy ...
Apr 27, 2021
Page: 3.5 Daria Hazuda: Discovery and Development of Integrase Inhibitors (HIV/AIDS Research: Its History & Future Meeting)
... going to start my talk with this slide. I know it was shown earlier by Tony **Fauci**. I thought it was worth showing again for several reasons. First, as somebody who's ...
Apr 27, 2021
Page: 3.2 Samuel Broder: The First Clinical Trials of Antiretroviral Drugs (HIV/AIDS Research: Its History & Future Meeting)
... Gelmann, Edward P., Dan Longo, H. Clifford Lane, Anthony S. **Fauci**, Henry Masur, Margaret Wesley, Olivia T. Preble, Joan Jacob, and Ron ...
Apr 27, 2021
Page: 6.6 Robert Redfield — The PEPFAR Program to Treat HIV in Africa (HIV/AIDS Research: Its History & Future Meeting)
... 56 orphans." As then President Bush made the historic decision to form PEPFAR. As Tony **Fauci** commented, Tony really did from 2002 to 2003, 00:08:00 ...
Apr 27, 2021
Page: 2.4 Robert Gallo — Discoveries of Human Retrovirus, Their Linkage to Disease as Causative Agents & Preparation for the Future (HIV/AIDS Research: Its History & Future Meeting)
... leadership—I want to emphasize we have eras at NIH, there is the pre and postTony **Fauci**, you know, AC/BC (nb.: might mean “BC/AD”)—this is before ...
Apr 27, 2021