FACT OR FICTION: FOSTERING TRUST IN SCIENCE

Announcer 00:00

Please welcome the panel on "Fact or Fiction: Fostering Trust in Science," moderated by Senior Health Correspondent at TIME, Alice Park.

Alice Park 00:20

Good afternoon, everyone, and welcome to this panel, which I'm really looking forward to. I think this is a topic of high importance right now, very relevant, and we have an amazing group of panelists. So I'd like to start just by having each of you introduce yourselves and briefly tell us your affiliation. Maybe we can start with you, Rick.

Rick Berke 00:42

I'm Rick Berke—I'm the co founder and executive editor of STAT, which we founded almost 10 years ago to cover health and medicine.

Seema Yasmin 00:52

Hi everyone. I'm Dr. Seema Yasmin. I direct the Stanford Health Communication Initiative. I'm a Clinical Assistant Professor of Medicine at Stanford, and I'm also an author and a journalist.

Joel Bervell 01:03

Hey, everyone. My name is Joel Bervell. I'm a recent medical graduate starting in medical residency in internal medicine, but better known online as the Medical Mythbuster for creating videos about health inequities online, but also host The Dose podcast with the Commonwealth Fund.

Francis Collins 01:17

Good morning, everyone. I'm Francis Collins. I had the privilege of serving as the lead of the Human Genome Project a few years back. I also then became the Director of the National Institutes of Health, the largest supporter of biomedical research in the world, and served three presidents in that role, and that also included the experience of being in that leadership role during COVID. I'm currently unemployed [audience laughter]—not that I'm looking for a job. And also the author of a book called *The Road to Wisdom on Truth, Science, Faith and Trust*.

Alice Park 01:53

Thank you all. And I want to say Joel, when he says recent medical graduate, he literally means recent. He just walked this week.

Joel Bervell 02:00

Yes. [Audience applause] Thank you. [Laughter]

Alice Park 02:05

All right, so I think, as you can see, we're going to have some really interesting perspectives on this very important issue of trust in science. And I just wanted to lay the tape—set the table a little bit, and lay the groundwork. And when we talk about trust in science, I think we need to really look at it from two perspectives, one being the more traditional one, which is how much the public trusts scientific institutions and scientists and doctors and the information that they provide and the expertise they provide. But recently, we have seen sort of another layer of this trust get put on this, which is the question of, how trustworthy are these venerable institutions and leaders in both science and medicine. So we've seen disinformation and misinformation coming from these institutes, which obviously leaves the public wondering, how do I know what's right? What is fact and what is fiction? So I guess I'd like to start by asking each of you, really, in your view, if you could name one important—how we got to this point. First of all, let's kind of explore how we got to the point where we've got information that's not the problem, but we have no way to really assess what is true and how to vet all of that information. So Rick, maybe we can hear from you about how you think what brought us to this point.

Rick Berke 03:33

Sure. First of all, I think the idea of trust in science or distrust is not new. I mean, you remember with the Salk or I don't remember, but with the Salk vaccine, there was enormous resistance from disenfranchised groups, from religious groups, health workers were assaulted. So, I mean, there's been, there have been trust issues for a long time, but I think the also conservatives who have been against big government, also given all the funding that

comes to government from—government to science, is so that that's sort of a coupling that's made scientific institutions sometimes a target. But what you've said about trustworthy and these institutions—you know, I looked at this, if any of you saw there was a Kaiser poll out this week that said less than half Americans say they have at least some confidence in their in agencies like CDC and FDC. And what's also interesting, but not surprising, is there's a huge drop in Democrats trusting institutions, where, pre-Trump, it was the Republicans who didn't trust these institutions. Now there's a slight rise in GOPers trusting institutions. I think what changed is—I think back when I think about it from my own perspective at STAT, I think about our first launch day 10 years ago. Our big story that day was an investigation of Donald Trump's vitamin business and his—and that's before we knew he was even going to be like the nominee in the first time he was elected. But we did this big look, and we looked at and he was quoting scientific authorities and selling these vitamins, and it was totally bad science, totally fraudulent. And but that was only little did we know—that's a precursor to sort of bad information, misinformation out there. And obviously, since, I think it all started more when he took office and really politicized and villainized science in a way that we've never seen before. I mean, we had an event a couple months ago with Bill Nye, the Science Guy. And you know, you guys know him from, you know, he's pro science. He's a happy guy. And he got on stage and just started raging against RFK Junior. He was just out of control and wouldn't stop. And that's, you know, decades of this guy—I don't think this guy had uttered any kind of political or anything. But when you have leaders out there who are saying things that aren't always trusted and the other thing is, if I could mention Dr. Collins, he there was an—there was an event, a Truth in Science event in DC earlier this year, and one of our reporters was covering it, and saw someone not assault, but sort of threaten you at this event, threaten, and you could talk more about it if you want or don't want, but our reporter, looking out for you, called security to say this guy is being threatened. I mean, this is someone who, as he said, has served president after president, and for whatever you could say about how the NIH operated, or the pros and cons, or whatever this is, there was a veneration or support for scientific leaders and institutions. So I think anyway, to get back to your point, I think it was—it's this political—politicization, and something where you can't always trust the data that comes out and one last thing that I'll say, if you know today, we have a story that the AG, Pam Bondi said that in the first 100 days, 119 million people—lives were saved because of drug busts. 119 million in the first 100 days. And then she got back, she said, oh, I'm sorry, I'm correcting, I have to correct myself. So I thought, okay, she's going to put the truth out. Then she said it's really 258 million. [Laughter] And this is just utterly, staggeringly untrue. And so what do we do with this? And so it's just thrown out there in a way that I've never seen before.

Alice Park 08:18

Okay, yeah, we're going to get deeper into that issue of, you know, I think we can all remember from the beginning of the first Trump administration, this new sort of lens through which we look at facts, or how we define facts, and I think that's one of the things that you're bringing out Rick. Seema for you how has it gotten this politicized? You know, how did we get to the point where science, which presumably, you know, is fact, it's objective, it can't be quibbled with. How do we get to this point where it now can be and is being questioned and pulled apart in and interpreted in many different ways?

Seema Yasmin 08:59

Yeah, I will say that this isn't new, and back in 2014 if you remember to those days of the Ebola epidemic, the biggest, deadliest Ebola epidemic. As a science journalist at the Dallas Morning News, I received death threats, so

there was already this very sinister undertone of, you shouldn't be reporting these facts, you shouldn't be framing the information and the science in a particular way. And it's gotten worse, clearly and in fact, one of the things I'm working on is a safety tool kit for science journalists, because what do you know? We need it? I have peers and colleagues who report on vaccines and climate change, who have to check under their cars because they've been told that there might be a bomb beneath their car, like this is where we are now. So yes, to you saying it's not a new problem. I'll also say it's an issue that's really close to home in that I am a scientist and a journalist and a physician, but I was raised in a community that felt really disenfranchised from science, from medicine, from the government and from the media and for quite legitimate, credible reasons, medical racism is a real thing. We grew up experiencing that, and so it's not a coincidence that I went to medical school and journalism school to try and fix these issues, but we have a really long way to go. Because of scientific illiteracy, we're not reaching people and meeting them where they are and then what we do. And I'm guilty of this—I worked for CNN for seven years, and you would have seen me probably really frustrated on the TV during COVID, being like, believe the science just do what the scientists say, because lives were on the line, and it was really scary. Except if we haven't peeled back that curtain on the scientific process, if we haven't said, here's what a scientists look like. Hey, sometimes they're Muslim and they're brown and they're immigrants and they could be your next door neighbor, then we're just shouting at people during a really scary time, and we're being scientists, which means that we are good at talking about uncertainty to each other, we're not so great at communicating that to the public. And I've had arguments with fellow journalists about you need to include the relative risk, or you need to include what this means, so people can really grasp that information. So I am so evangelical about this, and now I write books for kids about science literacy. I have a book called What the Fact WTF. That book tour was so fun because we had WTF stickers, and going into middle schools and high schools, and the stickers would end up all over everyone's faces. But that book really also opened my eyes to saying I'm a scholar of the way scientific misinformation and disinformation spreads. You know what? You can have those conversations with 11 year olds like middle school kids are the best they should be allowed to run the country, actually. You can have really profound conversations with them about what's black and what's white and what's gray and how scientific conversations and how scientific uncertainty can get communicated to different publics. So for me, scientific literacy so that we are all moving together and we don't just have this elite hierarchy of I am the omniscient researcher who knows what you need to know, and here's how I'm going to communicate it to you, and you should just do what I say. We've seen that fail over and over. And I will say that I did medical school, and then I moved to the US after being a hospital doctor in England, because America, this is sad—was the place to train in public health. It was, I did my research all I looked globally. And if you wanted to be an amazing frontline public health worker, then the Epidemic Intelligence Service at the CDC, please protect it— we should have a moment of silence and prayer—was the place to train. And when I was working there and getting sent into these different hot zones, that's when I had my aha moment of it's never just a virus or a bacteria or a fungus that's spreading—it's information contagion happening at the same time, and we didn't have the tools to deal with that information contagion. People didn't trust us, and this was 14 years ago that I moved to the US to be a disease detective at the CDC. I had to leave that job after a few years to go to journalism school because I realized otherwise I was not going to be effective as a public health physician. Right now, I'm actually in clown school and doing stand up comedy, because I really think if we're going to have scientists talking to the public, laughter is the shortest bridge to connection. And if I'm wearing a mask or, you know, it really is, it's therapeutic for me too. I did the keynote for the American Academy of Pediatrics last fall, and I did it as a whole 30 minute stand up comedy set, because I was like, everyone is depressed—I am depressed. I am scared. How else are we going to get this information out to people that don't like us and don't trust us, if I do clown stuff and I'm making jokes about whatever, also my love life, it's not just all about science, but there's a lot to make fun of, but that's how I think we're gonna connect and break through that scientific illiteracy.

Alice Park 14:17

I know that probably no one here would have guessed when they read the description of this session about solutions to, you know, fostering trust in science.

Seema Yasmin 14:25

It's the way. It's the way forward. Clown school.

Alice Park 14:25

Would be clown school. Okay, Joel, now I think you bring a particularly interesting perspective to this, because, you know, we're all geezers here—I include myself in that, and I call myself and a dinosaur now, but coming into medicine when you are at this particular point, how do you see this breakdown in trust, and how concerned are you and your classmates and your cohorts about what that means for the medicine that you can practice and the atmosphere in which you will be practicing medicine.

Joel Bervell 15:05

Absolutely. Well let me second what everyone has said that this is not a new problem. I mean, you can go all the way back to the smallpox epidemic, and Onesimus, who was a black slave, brought over the idea of inoculation from Africa. Cotton Mather then picks it up—but then, of course, people didn't believe it, right? And so this is not new—it's been going on for generations. I think it's important to start there to realize that while it's not a new problem, the solutions we need are going to be different in today's day and age. And I say that because, as you mentioned, coming into the kind of this space, I am a big proponent of social media, and the ways that social media can go both be good and be harmful. So I created a platform about five years ago, where I started debunking myths that I was seeing that existed in my healthcare—the healthcare system. It started off being around specifically race based medicine, off of all the work that you did when with the Human Genome Project, thinking about that race is not genetic ancestry and ethnicity is but not race, but it's expanded into thinking about misinformation and disinformation and how it spreads overall, because I've seen it so much online, both within my kind of generation, but also within older generations, with the advent of new technologies, which I know we'll get to too of artificial intelligence and chat bots and all these types of things. But I also want to level set to make sure we all understand the difference between misinformation and disinformation. Misinformation being wrong information that's out there, disinformation being purposefully wrong information that's being put out there. And it's important to know that, because they have different ways to kind of understand them, and especially on social media, recognize and tackle them. But I think right now, we are in a disinformation ecosystem. What I mean by that is there are actors out there that can literally put false information online for the benefit of themselves, that there's an institution that can pay an influencer, per se, to be able to post about some piece of information that is not true but advances one specific type of ideology or belief that exists out there. And what happens is you maybe reach people online through social media, through Instagram, TikTok, Twitter, Threads, whatever, but then you also couple it with the podcast bros that are out there talking about this. So maybe a podcast like Joe Rogan doesn't necessarily repeat the misinformation, but even validates it. So now you've gotten two pieces. You have social media. Now you have

a podcast reading this misinformation, and then maybe you hear it on Fox News or somewhere else, and it's a third piece of information from what's supposed to be a trusted source in order for people to believe what's the truth. But when you're getting all these different things, it doesn't matter how much of the facts you know, you start sowing doubt within what should be something that is set within their science. And I think that's the that's the ecosystem that we exist in right now. And so then the question is, how do we actually tackle that problem? And I think the one—one of the my biggest gripes with public health has been that we have not done a good enough job of being a trusted face. If you think about public health, who do you think about? Is it a person? Is it an institution? We don't have anything that we can really grasp onto and social media in this new age, especially my generation, we want to connect person to person, with something that feels real, tangible, and human. It's why we're making AI more human right now, because you want to feel as if you have that human emotion, but public health has fallen so far behind this in the sense that we don't have a way to feel human. It's and so you think about the COVID pandemic when suddenly everyone's being told, go wear masks. But it's like, who's telling me this? It's a [inaudible] bureaucrat that's saying it, and it scares a lot of people, and it makes it easy to say that is the government, that is a third party that's something that doesn't connect to me being able to put all these things out there when, in fact, the government is made up of individual people. I mean, we're talking about right before this, the cuts that are happening right now in the NIH and HHS, and a lot of my friends are the ones that had just started off in these workforces and are being laid off. And so for me, I see these people, I know that they went to work in forestry, to be looking at snails as research, because they just love snails for no other reason. They're not wanting to get money out of it or extort the system, but they understand that there are things that we can be learning in science outside of that. And so I think for me, one of the biggest lessons we can be taking right now is, how do we actually humanize science again, or maybe in a way that it's never been done before. And then there was another point that was brought up, I think is really important to raise as well, which is about the legacy of mistrust within marginalized communities. And I talk a lot about this, about on my platforms. My platform is mainly for Black and Brown communities who don't see themselves represented in medicine. And I see so much misinformation, or even truth, actually, of things that have happened when it comes to things like the Tuskegee syphilis experiments, or when you think about, I mean, there's so many examples of it, but Mississippi appendectomies and all these unfortunately horrific things in medicine that have happened. But I always say, if we are able to—talk about these horrific things and what we've learned about it, that's how we build the most important thing in science, which is trust. And the more we're able to talk about what's happened in the past but where we're going in the future, the more we're actually able to get people to understand why it matters. But really what comes down to is restoring humanity, acknowledging the trust that's out there. And then the last thing is really informing a new generation to be able to have the skills to spot misinformation and disinformation, especially when it comes to science. So I want to kind of do a little experiment. How many people are on social media in this room right now? Okay, awesome. How many people wait—keep your hands up if you're on social media. How many people were ever taught how to use social media. Okay? I see one hand, awesome—I'll have to talk to you afterwards. But we're not taught how to use social media. Yet every single person has Instagram or TikTok or LinkedIn, that's a social media if you didn't raise your hand on your phones right now. And we are all getting information on the daily, and we may not know how to filter it out and evaluate it. And so my job on my platform is I don't just talk about the issues. I teach people how to spot misinformation at the same time. I think that's what we need to be leaning into teaching a new generation the same way we taught typing skills in classes that I took or that we learned about how you go to the library and look at the barcodes, we need to be able to be teaching how do you spot misinformation, disinformation, and how specific parties can be benefiting from not telling the truth.

Alice Park 21:25

I want to come back to that when we get a little more concrete about, you know, some of the solutions. But Francis, I want to ask you you have this perspective of having been at the NIH, as you said, through three presidents, and wonder if you could tell us a little bit more about how you've seen, you know, this is not a new problem, right? This, this mistrust of science, how you've seen it, evolve and change to the point now where as as Joel has is saying, you know, it's really more about disinformation and misinformation, rather than simply mistrust.

Francis Collins 21:59

Sure, a lot of really good comments already made here, but maybe take it even back further. How did we get on this pathway, not just about distrust of science, but distrust of institutions in general, and all that does seem to play out as we became increasingly polarized as a society, much of it driven by politics, and that didn't start last week or a decade ago. You could maybe go back almost to the 60s and begin to see the early roots of this. Remember Barry Goldwater—you could say it was sort of a start of something along the lines of, we Americans have to break ourselves into groups and consider that our group is right and the other group is wrong, as opposed to let's figure out how to find compromise. That got worse in the 90s, Newt Gingrich certainly putting forward a lot of the same kinds of arguments, but it's progressed since then and in a steadily destructive way of causing us more and more to align ourselves in nonoverlapping tribes, and to have everything about our decisions influenced by which tribe we happen to be in at the moment. On top of that, I think there's been this general weakness that's been growing in our society about the importance of truth, that there really is such a thing as objective truth, and it's not okay when presented with a fact that you don't like to say, well, that's just not true for me. If it's a fact, it's a fact that doesn't care how you feel. Ironically, I think this started on the left with the whole post modernist movement, which began in academic humanities departments, basically saying there is nothing really that you could say is actually true—it's all about opinion. We're all culturally influenced. So if you thought you had a true fact, well probably you just need to recognize that it wasn't really dependable, after all. And as that began to migrate in the direction of science, which it tried to for a little bit, then there was a real collision, because I'm sorry, the earth really does go around the sun, and it's not ok to say I don't like that. But I'm not sure we did a good job of convincing people that this was really important. The Flat Earth Society has a growing membership. It really does, people who are quite convinced the earth is flat, and everything you try to explain about those pictures from outer space, oh, you know, that was just a mock up that was done to try to convince you of something. When I look out the window, it looks flat to me. I mean, we laugh about it, but the fact that can exist right now tells you there's something really, seriously gone awry in our ability to discern things that are pretty clearly definable as facts. There are people who don't believe that man walked on the moon because they thought that was also something that was made up. Come on, people, we have to have this constitution of knowledge, as Jonathan Rauch calls it in his book by that same name, where we as a society agree to certain things that are established facts, and it's not okay to start pulling things out of that pile and saying, well, I'm sorry that doesn't work for me anymore. So that was in there. We had increasing polarization. We had this uncertainty about whether truth matters. We had the deluge of sources of information, which, as Joel is just talking about, is full of misinformation, and frankly, disinformation that is there not to help you, but to hurt you. And then on top of that, we have a lot of politics, and all of this infected our ability to figure out how to make trust decisions. Sort of think about, how do you decide whether to trust a person or an institution? I suspect most of you would identify the same factors that I would you'd want to know is this a source that is credible? I mean, do they have expertise? Do they know what they're talking about? Have they done the homework, or is it just some random post on social media from somebody who had an idea that day? Secondly, do they have integrity? Is this a source that has, over the course of time, behaved in an honest way, or have they been manipulating people for their own benefit? And the third one, which maybe we don't think about, but I think we should, is humility. Does that source have humility about the limits of their expertise? Like, if you're

an expert on global warming, well, that's great—talk to me about that, but don't try to tell me what my I should do about this particular medical problem I have right now. Humility, you're limited there. So okay, if you go with that, competence, integrity, humility, you're in a pretty good place. But there's a fourth criteria right now that has emerged and almost overtaken all the others, and that is, is this source in my bubble? Do they share my values, my views, and if it happens that the source is in your bubble, you're willing to accept something and kind of ease, easily miss those other critical criteria. And if that source is in that other bubble, with those people over there that I don't like and that maybe they're actually evil, I don't care what they have to say or how credible or full of integrity and humility they are, I'm not going to believe that. And that has infected our ability to make these critical judgments that we're talking about here, about what to take on board in your own portfolio of information that you trust. And the consequence of that, because these bubbles are driven by politics, is that, unfortunately, everything ends up being segregated into one of those bubbles. And at the moment, politics, plus science, has basically resulted in politics. The science gets lost along the way. And if you're in one party, you have to be in favor of science, and if you're in the other party, you have to be skeptical and oppose it. And at the same time that is so completely backwards. If science is going to help us, it can't be dependent upon your political party. But right now it is. Look at all those measures of trust in science, the strongest predictor of whether you do or do not is your political party.

Alice Park 28:00

I think you raise a very good point about all of you have mentioned, you know, science literacy, speaking to people, educating people, but you know, Francis, you raised this very important point, which is, what happens if those people are not receptive, you know what, if they don't want to listen to you? Which is, as you very eloquently said, what we're seeing right now. You know, there is just no ability to say, okay, let me hear what you have to say, and let me consider those factors, because they're just shutting it all off.

Rick Berke 28:31

A quick commercial here for Braver Angels. How many of you know about Braver Angels? I'm looking for hands. Almost a couple people worth looking this up. Braverangels.org started now, nine years ago, as an effort to do exactly this, to get people who completely disagree and who live in different tribes or bubbles to actually meet together. A lot of it was done virtually during COVID. Sometimes it's in person, and actually listen to each other instead of planning your attack or your response or your message, that what that person just said is stupid. Now listen so well that you can say back to that person, here's what I heard you say. Did I get it right? Sounds like marriage counseling. [laughter] That's what we need in the whole country right now. I've been part of that now for two and a half years, it has been eye opening what is possible if people are willing to make that effort, and if we started to do that across the country, not just in special circumstances, run by Braver Angels, but with our neighbors, maybe we'd have a chance to begin to turn this around. But right now, most people are just uncomfortable even thinking about having such a conversation.

Alice Park 29:22

I wonder if any of the other panelists want to comment. I think Joel, you brought up the idea of really looking at communities right? And we saw during COVID that community based programs and efforts to address concerns about vaccines were far more effective than you know hearing from the director of the CDC or government bureaucrats. So tell me a little bit about how we can capitalize on that and how we can really, is it really having trusted messengers? Is that what we're missing here in terms of building up that workforce so to speak to really, not only educate people about health, but make sure that they're hearing and open to hearing those messages.

Joel Bervell 30:24

Absolutely. Well, let me just start by saying I love what you said about Braver Angels, and it reminds me of motivational interviewing. Right? One of the main things that we learn in medical school. How do you make sure if someone disagrees with you, you motivate them and ask the right questions to acknowledge how they're feeling and get to the true root of their issue of what they want. I always say that. I think when it comes to misinformation, it's always built in a grain of truth, right? There's something true about it that allows us to pick up on that and then run with them. If it's about vaccines, it's the it's the desire to want our families to be healthy, right? That's the truth. We all want that. But some people know that vaccines are healthy, and that's the way other people think vaccines are not the way that's going to hurt their families. So it's trying to teach people this is actually the accurate way, then that vaccines, taking a vaccine, is the best way that you could protect your family. And if you care about that, then this is what you should be doing, not the other way around. And so then to get to the trusted messengers part, it's finding the right trusted messengers, not just throwing someone that we think is going to be able to speak to a community, but really working from the community ground up and finding the right people. I think we all in our communities know a Mr. or Mrs. Jones that's been down the street that we all love, that maybe made us baked goods and cookies and took it over to us. Those are the individuals that we trust, the ones that we go to when we say, I would, I understand where you're coming from— I know you have my best intentions at heart that you would never do anything that would harm me. So in different communities, it's working with trusted messengers that already exist with all the beautiful things that you just stated, whether it's the trust that's already there that's built over time, or the humility, being humble. And so that's for me, I think about things like barber shops, right places that we spend a lot of time and build trust in the most intimate way, salons where people are spending a lot of time, how do we have those conversations in those places? Churches, and community centers, after school programs, teachers. I think these are all different people that we put trust into. And we don't have to reinvent the wheel when it comes to thinking about trust from institutions. We have trusted figures in our lives. We can all think about those people. I'm sure if I asked you guys, everyone would remember your second grade teacher, right? Oh, I heard, I see some shaking their heads. Well, for me, it was Mrs. Good —so hi Mrs. Good. But no, I think we all remember different teachers who had an impact in our lives, or different trusted messengers, at least one person. So it's figuring out, how do we find the right individuals to amplify the message in a way that gets to reach people where we can start doing and I mentioned this before, pre-bunking and so not just waiting till someone's already been exposed to misinformation, but teaching them things beforehand. So when misinformation shows up, they're able to spell it and say, actually, I learned in school that this is how vaccines work, so I know why this is the wrong information, as opposed to just saying this is wrong.

Alice Park 33:07

Seema, I wonder if you can address the difference perhaps, between scientific literacy and scientific understanding, you know, to make sure that people actually understand what they are reading and what they are absorbing.

Seema Yasmin 33:17

Yeah and one of the things I do look at is the networks in which information spreads, the information ecosystem, and my research is establishing information access, so not just the facts being thrown at you, but your ability to make sense of those facts and actually relate them to your life and the decisions that you make. And so we are trying to argue and put together the evidence that information access is a social determinant of health. I'm sure you've all heard by this point that your life expectancy can be predicted by your zip code, and that's because your zip code speaks to your proximity to green spaces versus your proximity to a jail or a prison or a library, right? All of that impacts you, perhaps much more than your genetic code, but so does information access and not all information is equal, and also your ability to make sense of that isn't equal. There's an equity aspect to information. And so that's the disconnect that you can go into a community and say there's a new vaccine here's a pamphlet that has all the ingredients on it. This ingredient might sound really scary. It's got five syllables in the name, but, you know, it's in mouthwash too. Like that could make you feel better. But actually, the decision making that goes into something like yes, me and my kid will receive a vaccine or we won't, is about so much more than what's inside that vial, and this is how we end up with stockpiles of vaccines and fridges and freezers and not in people's arms where they actually matter. And one of my biggest beefs with public health, as a public health physician who adores public health, is we've just so often used a one size fits all message, and this goes against all the evidence. You know, there's so much research out there that shows you talk to six people, all of whom don't want, for example, the COVID vaccine, they will give you six radically different reasons as to why they don't want it. One person might say, well, actually, doctor, I'm up to date on everything else. Even got my annual flu shot. Just feel like this vaccine hasn't been around that long, or maybe, you know, you guys worked on it too quickly I don't trust it. Versus the other person who's like, I am vehemently against all vaccines. I take my children to chicken pox parties. That's the thing I had to investigate them once upon a time. We're having the same conversation with all of those folks, when actually they are coming to this conversation from a really different place. And I will say that one of our problems in medicine and public health is we're so siloed. And this is the thing that I'm trying to break through with the Stanford Health Communication Initiative, is that with intractable problems like this one, we need a multi disciplinary approach. We need everyone on board to deal with this. And I say this because there's actually a science and an art to having productive conflict and to having productive disagreements. And I will tell you I am so annoyed that I just learned about the science of healthy conflict and how to have an effective but polarizing conversation in my 30s, like I should have learned that in middle school, that maybe would have saved so many of my relationships too. You know, I just thought I was conflict averse and a conflict avoidant, not realizing that conflict can be healthy if you know how to do it. So one of the things that I teach in my books for kids, but also for adults, is that science communicators and people outside of the science-y stuff have been studying the way that we do communication. We generally use something called the knowledge deficit model, even though we may not know the name of what we're using. It's really, really bad at breaking through biases. So it is time to try something new and what social psychologists and others and communication scholars are doing is saying, actually, there's a science and an art to this. Here are five methods that have been used since big tobacco to dupes. I'll tell you the five really quickly. It's fake experts, logical fallacies, impossible expectations, cherry picking data and conspiracy theories that five makes up an acronym FLICC, FLICC the research—the science, shows that when you teach someone, not just that, hey, vaccines are amazing and you've been duped, take that out of the conversation, because they're already not liking vaccines, and you're just going to make this really heated. Instead, what you do is

you find something that you have common ground on, maybe you both agree about something to do with mental health or climate change, and then you can say, hey, you know how there's some people that actually think climate change is a hoax. Here are the five methods that have been used to dupe them. They are five methods that have been used for decades, if not even centuries. Perhaps those are the same methods that perhaps you might have come across. The research shows that when you take that polarizing topic out of the conversation, at least to begin with, what happens is you can actually give someone an umbrella of cognitive protection. You are BS proofing their brain by saying, if you watch out for these red flags, you will be more resilient to falling for falsehoods. And so then what happens? And the research shows this. It demonstrates really clearly, people become really good at noticing red flags. They'll be like, is that person actually an expert? They'll be like, is this person I'm disagreeing with, they're cherry picking all the data just to back up their existing world view. And then you get to have a conversation that's really rooted in curiosity and empathy, as opposed to what's really easy to happen, which is, I'm right, you're wrong—why don't you understand that vaccines are the best things at sliced bread, and so that this science and this art really needs to be taught. It's what I'm trying to do with my research and my books. But we need to get this out there, because otherwise we are just hitting our heads against a brick wall and not actually moving the needle, not actually having, dare I say, compassion for people that have really different perspectives than we do.

Alice Park 39:16

Rick, I would argue that a lot of what Seema is saying obviously falls to the media as well, right? Because that is our role as journalists, that we can play in perhaps in our stories, raising some of those points and alerting people to the red flags. How do you find and draw the line between if there's so much disinformation and misinformation out there. And I think one of you earlier said, you know, it's a snowball effect, right? If one of someone reports, it gets picked up by someone else and gets picked up someone else, the context is lost. How do you as a journalist make decisions about what to report? And perhaps you know run the risk of adding to the noise, right, versus, you know, doing what Seema saying, which is perhaps educating people and kind of giving them a new framework from which to look at all of this.

Rick Berke 40:11

Well, as you know, from your own reporting, this is really hard, and it's really overwhelming, and the whole questions of trust in science come in so many directions, and I'll never forget just one sort of side example is when COVID during the beginning of the COVID crisis our reporter, Helen Branswell has covered infectious diseases for decades, so she knows this stuff really well. She was getting bombarded by people with doctor in front of their name who knew nothing about public health, who had no expertise, but wanted to get quoted and thank—thankfully, she had debt—she knew who to trust, so she was like waving people away, people she blocked on social media, because these people don't had no credibility. So we see it as our role as journalists is to be truth tellers and to explain to people this is really the truth. This is and covering this is really hard and complicated. You can't just throw a reporter on covering health and medicine. These are— these are hard subjects. But the problem is also, there's a lack of [inaudible]. When we talk about silos and bubbles of people, it's hard to get there's fault on all sides. Because, as an example, you know, Helen did a story recently where she was the one person doing that—it was a vaccine related story, and the HHS finally called her back and they wouldn't comment. They said we gave this detail to Fox News. So you can look at their story, and it turned out, Fox doesn't normally cover like they don't have the expertise that Helen does, but how do you that they're only going—go to people that that will spout what

they want to be spouted. And let me just tell you, we have real trouble. We have, you know, an opinion section, and I'm always telling our opinion editor, we need to listen to people and to get contrary points of view, we need to get people who are Trump supporter a lot of people out there. You need to tell the truth, but also get different perspectives. But people don't want to talk to even though we're not a partisan outlet. People want to go to places where they're really comfortable speaking out like Fox and other places. And in the same way, people who are critical of what's going on in science are afraid to talk publicly, I can't tell you the number of people I've talked to at this conference who are leaders in health and medicine who are like, scared to death about the future of vaccines, the future of like, of research, and have stories to tell, but, and I said, tell us, we'll write a story, tell the world. You know, we get—we get anonymous, confidential outreach every day from people at these agencies who are scared to death and upset about what's happening in these programs, but they don't want to talk about it and and there was a—you might have read, 2000 top researchers called on Trump to assault—to stop the assault on science, 2000 researchers. Every one of those researchers is a member of the National Academies, has the National Academies spoken out? No, so, so there's a fear out there. So this is bigger than like, we're trying to all tell the truth, but we're up against leaders in this country who are who are really like disinformation out there, that's absolutely wrong, and it's really about like this. And one other thing this, I told, I asked a reporter about a month ago, do a story on—please do a story find people who think what Trump is doing is good for science, because we've got to get that perspective. And he said, I will do that, but, you know, I'm not going to go for an easy one like Vinay Prasad, because he's like the obvious, like he's a gadfly, whatever, but I'm going to go to people that really are respected in science. So turns out he did a story, but people were really scared to even—people who supported Trump have real issues, but they were scared to speak out. Now, Vinay Prasad has a huge regulatory role, announced yesterday at the FDA. And what are we supposed to believe? Some of what he has spouted maybe true. We had our columnist, Adam Flores, he wrote today, don't panic. Here's the good in this. But many other people are saying this is a disaster, so we as journalists have to, like, be careful, to not overreact and not condemn this but, but let's be honest here, this is, this is an assault on science. When you see day after day stories we're writing about people—people's cancer research programs getting canceled, people losing their jobs. It's not just re—reframing, and we have to, we have to tell it like it is. But that's hard, because we want to listen to all sides, but it's really hard. And I also think, think what, what you're saying about the barbershop thing, I think you're absolutely right about the one-on-one personal communication, but I worry about the people in the barber shop who are watching are in their bubble of information, and there's, as many people at the barber shop who are saying, don't get vaccinated. So, so it's really an enormous challenge, and I don't know quite what we should do.

Seema Yasmin 46:05

You see now why I went from med school to clown school. Much better job security in the US.

Rick Berke 46:11

I think maybe I'll go to clown school.

Alice Park 46:13

I think you'll have a lot of followers. Francis, I wanted to ask you this which, and it's inspired by a question from an audience member as well, which is, what happens when our trusted leaders become disenfranchised? As Rick was saying, when we're seeing we're hearing things like people are being advised not to use certain words and grants like vaccines or mRNA, you know, for fear of not having those grants approved. And you know, there are serious repercussions now for a lot of this, and Rick was talking about some of them. So from your perspective, I think you give us a kind of unique view on this, having been at NIH what happens when leaders our trusted leaders become disenfranchised with the way things are going right now, and with the amount of distrust and the kind of assault on science. How can we counter that?

Francis Collins 47:12

I'm glad we're talking about this again. Having been at NIH for more than three decades, I went through various transitions between administrations, and there were always some bumps when that happened, but there has never been anything close to what's happening right now in terms of the assaults on science and medical research, with firings of 1000s of capable scientists at NIH, FDA, CDC, budgets that have been slashed, grants that had been in place already for two or three years being stopped in mid course, some of them involving clinical trials that therefore left people very much high and dry in an utterly unethical way, and a proposal that next year the NIH budget should be cut by more than 40% which would be absolutely devastating to any hope of things being able to move forward at a time of great scientific opportunity, and yes, the way in which this is very heavily politically driven, so that a grant that had the word diversity in its abstract is likely to have been terminated, even if what they were talking about was diverse cell types in the brain, didn't matter. There's an assault now going on, an mRNA technology, as if that is something that the government shouldn't be supporting anymore. Apparently, not realizing that that is one of the most promising approaches to cancer right now is the mRNA vaccines that one can develop and apply very quickly in a personalized way for somebody who has stage four cancer.

Alice Park 48:45

And came out of Operation Warp Speed.

Francis Collins 48:47

And came out of Operation Warp Speed which was supported by Donald Trump. So the logic here escapes any possible explanation, and it also is troubling, because all of these changes are being made in a slash and burn approach without any real interest, it seems, in the consequences. It's basically taking move fast and break things and applying it to our nation's medical research enterprise, where maybe first do no harm would have been a better place to start. So a lot of harm is being done, and the leaders who are forced to implement this, are totally demoralized. I am, so are the six institute directors at NIH who have been let go in the course of the last couple of months for no justification whatsoever. It is particularly hard for young scientists to look at this situation and see whether there's a future for them anymore. I have the privilege of working with the scientists, most of them graduate students, who organized the Stand Up For Science effort that was across the country, in 32 different places, bringing people together to say, science is in trouble. Can we do something about this? Trying not to get nasty about it, but just trying to share the information. And of that group, fully a third of them are actively looking

into the possibility of moving to Europe or to the UK or to Australia, and Europe is opening its arms to say, sure, come on. When you look at the way our scientific leadership of the world has been so heavily benefited by being the place where everybody wanted to come to be able to follow their science dreams, and that arrow is getting reversed, to draw people to other places and away from us, with huge consequences for our future, as far as our health and also our economy. So it's all completely upside down, and yet everybody is scared to say so, as Rick is saying because of the way in which any outspoken voice is likely to be attacked and threatened as far as their safety. And if they're an institution like the National Academy of Sciences that depends on a federal contract, worried that if they say something, they're going to be the next one to be targeted. And by the way the National Academy was founded by Abraham Lincoln with an executive order. There are people who worry that another executive order could basically put it out of business. So you can understand the fears, but this is not the time to hide under your desk. This is really the time where we have to get this information out there to the general public that something really bad is happening here. That's what I'm motivated right now to spend most of my time on, is to try to see if can we build that sort of coalition that has the expertise, that it knows all the things that have been learned about science communication, that says that the knowledge deficit model does not work, and that other methods will and people respond not to statistics, but to stories, and to get those stories out there, to have a story bank of people whose lives have been touched by the advances in science that you can resonate with and that don't happen to live all of them on the coast, but some of them live in the middle of the country. And get that information in a way through all kinds of media, and especially social media, which I think we have really lost most of those opportunities where the missing, the disinformation folks are winning, and we've never really tried to do it that way. It's almost like we need to have a science communication core, like a Peace Corps, except we'll call it the science communication core, and enlist every high school science teacher and every college student who's majoring in one of the sciences and all the members of the scientific societies, and provide some well validated, tested messages that you know are going to work and turn this loose so that you have in your community this whole phalanx of people who have expertise, who have integrity, who have humility, and also have really good tested materials to be the source of valid, trusted information so that we can make up for the terrible deficit right now of people understanding the harms that are being done, and it's urgent to do this in just you know, the 100 days the amount of damage that has been done to medical research efforts that took decades to build is unbelievable, and it we're already at risk of losing a whole generation of the scientists that we're going to make the next round of breakthroughs. This is a crisis.

Alice Park 48:50

People give the Trump administration the credit for. In the next minutes, I want to take that and move into looking at solutions. How do we confront that? How do we reverse that? And I've got a question from the audience about AI, which we haven't really talked about yet here. But as everyone who's done a google search in the last few minutes probably knows we're seeing the potential of that. Obviously, it's a double edged sword, but wondering if any of you have any thoughts on whether AI could be an instrument to that in helping to kind of filter some of the noise that we're getting on social media on the internet, and is there a way that, you know, we can proactively, sort of look at algorithms and ways that we can take advantage of what AI can do to sort of help, you know, set up some red flags for people I know in like the UK, for example, there are on YouTube, there are flags for, you know, certain content for children. Is that something we could transfer over to health information?

Rick Berke 54:20

Let me if I could say I think AI has enormous potential benefits for health information, but I'm really nervous right now some of the applications we've looked at algorithms that are being used that exclude and treatment and access so many, so many communities and we've done a lot on United Health and how they used AI to cut off people's Medicare and their health benefits, and to boot them out of hospitals early by using AI. So a lot of—there's bad that's going on with health and AI that we have to be really careful about. I think there's huge potential, but it really worries me, and it worries me when you look at sort of again, this is complicated stuff, and we're already talking about misinformation, disinformation, so now you're going to trust AI for this, I don't know. I'm nervous.

Francis Collins 55:23

A quick example. David Rand at MIT has been studying whether it's possible to use AI to help people who have been led into disinformation or conspiracy to recognize that actually that's not true, and comparing that to an actual conversation with a human being, the bot does better, maybe because people are a little less threatened, or maybe because it's programmed not to say, you're stupid and wrong. Actually quite statistically significant, published in Science a couple of months ago. Maybe there's a positive there.

Rick Berke 55:59

Maybe that's a good point too.

Alice Park 56:01

Well it does seem like AI has the power to also be able to rebut, right? If someone comes up with an argument that, you know, ideally, AI, with the data that it has, would be able to kind of look at and come up with an argument for, well, actually, no, you know, and here's, here's actually what the data show and things. That's why I was thinking maybe AI could be something that could be applied here in a way to really improve the education and the science literacy in a way that people kind of understand it better, rather than just saying, I don't believe that. Or, you know, close themselves off to it.

Seema Yasmin 56:37

Absolutely, and that research is ongoing. My big thing, though, is, again, as with social media, algorithms, is peeling back the layers on it, peeling back the curtains so people understand the mechanics behind it and understand that these systems were designed to hook you. They're designed to boost up content that is provocative, even if it's very untruthful. It's why we got that MIT research about a lie traveling seven times faster on Twitter, right, compared to the truth, which sits quietly in the corner. But to your point, Dr. Collins, one of the things I'm passionate about is creating a program for young people that turns them into advocates for other young people. Because I really think we have to start early, as early as possible. And so with What the Facts I'm turning that into a program so that every young person that reads it and feels empowered by the tools in it can then go pass that on

to other young people and not shame someone who fell for a lie, not shame someone who isn't pro science, whatever that might look like, but actually engage in a meaningful conversation. And so I think there might be ways to leverage AI in that too. And I think there's some exciting stuff happening. It's still early. And to Rick's point, we're all just kind of more nervous about the way that AI has turned people into misinformation or disinformation content creators.

Joel Bervell 57:54

Yeah, I think one thing I just want to add there is AI is all about what you put into it, right? What you put in is what you get out. Unfortunately, in our systems, we unfortunately have not had the most equitable systems. And so if you don't have diverse cohorts, clinical research, or if you have data that's being slashed right now and you are no longer able to look at these things, it gets built into an algorithm and perpetuated so it can actually increase biases, increase misinformation. Just to tell a quick story about even how I got started, I started talking on social media about biases that exist in healthcare, and one of those is this equation, called the GFR equation, which means for glomerular filtration. I'm seeing some nods over there. GFR is a measure of how well our kidneys work. If a high GFR number, your kidneys work well. If a low GFR number, your kidneys don't work very well. But for decades, there made this racial correction to this equation that essentially overestimated GFR for one population, black patients, when you went back to the research, it was built off of this false belief that all black patients had higher muscle mass than any other race. They got built into this algorithm and used all across the country. And so what that did was it made it harder for black patients to get diagnosed with chronic kidney disease, to be able to get kidney transplants, to be able to see a kidney specialist. It wasn't until 2021 that this equation was changed, and in 2023 the organ procurement and transplantation network said, if you've had this equation used, we're going to go back and essentially readjust your wait times. To date, 10 to 15 thousand Black Americans have now been moved up on the kidney transplant list. And last year, I was actually got to be on the Kelly Clarkson show, which was really cool, and I'd been talking about this on social media, and a woman came up and said that Kelly Clarkson brought a woman on the show to say that she had found out about this equation, had given it to her doctor—her doctor had found out that she can move it five years in the kidney transplant list, showing that when you use social media for good to have combat misinformation and actually put accurate information, you can literally save lives.

Alice Park 59:41

I think you raise another very important point too, which is that science evolves right, and our understanding of science evolves. And Francis, I wonder if you can address this. There's a question from the audience about and I know you've, you've talked about this before, particularly during COVID, and I think that's one of the reasons why we see so much skepticism and questioning of government institutions, public health officials, is that you told me one thing one day, you tell me another thing another day. There wasn't much evidence behind masking and social distancing at the time that those policies were adopted. Tell us a little bit about your experience being in the middle of that, and how lessons learned from COVID, you know, can be brought forward to better communicate the evolving nature of science, and that there is no black and white, you know, and that what you hear one day may change the next day.

Francis Collins 1:00:36

Yeah, in many ways, we had a golden opportunity during COVID to explain how science works, because we were doing it across the world in real time. Here came this virus that we knew almost nothing about, and we had to figure out in a very short period of time how to protect people from dying at a at a moment where the information was changing every day, and that that's science, right? You have a new problem, you have a hypothesis, you collect some data, and then you revise your circumstance. That's what we were doing, but we didn't explain it very well. And I wish that every time I've been in one of those vans that pulls up in front of your house, it has a camera inside it, and you jump in and you speak to, apparently, an audience, although you can't see them, and the person in your ear says, what should the public do today to protect themselves? That I would have started off saying, I'm going to give you the best guess that I've got right now based on the information we have, but the information has a lot of gaps, and so here's what we're going to say. And trust me, this is the experts that know as much as can be known right now about what you should do, but we might be wrong, and this might have to change in a month or two, because we'll have better data by then. Don't be surprised. We never said that. It was just like, here's what you have to do. You got 20 seconds, okay? Colin, say it now, and people would do what they thought was right based on that. And then when it did change, it was hard for people to understand that, and they felt like these people don't know what they're talking about. Or maybe they're even jerking us around and having just fun with it, or maybe they're making money off of—all these other ideas about motivation got in there when, in fact, we were all living a scientific experiment that affected our lives in profound ways, we could have done a better job of explaining that I wish going back to have had a better chance to do that, and if we have another one, maybe that's a lesson that we could remember.

Alice Park 1:02:31

All right on that note, I want to thank all of our panelists, very important discussion, and really appreciate you.