

CONVERSATIONS WITH MIKE MILKEN



Susan Desmond-Hellmann

Former CEO, Bill & Melinda Gates Foundation; former Chancellor, UCSF; former President of Product Development, Genentech

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Mike Milken: Sue, thank you for joining me today.

Susan Desmond-Hellman: I'm really glad to be with you.

Sue, you have maybe *the* unique ability to look at this virus. I'd like to start way back, near the beginning. You spent two years as a visiting faculty at the Uganda Cancer Institute studying and treating patients with infectious disease. What was that experience like and how has it shaped your career and your personal values? And Sue, how would it help you look at what the effects are of COVID-19?

It's actually quite remarkable how often over these past couple of months I've thought about the beginning of my career, coming to San Francisco as a medical intern in the beginning of the AIDS epidemic. It's not at all an exaggeration to say that the entire time I

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trained – for myself and my colleagues – HIV was something that so impacted how we thought about caring for patients, how we thought about our own mortality because patients who were dying were young. And it has absolutely informed a lot of how I think about the novel coronavirus.

No matter where I've been in my career, whether it's Uganda, Genentech or USCSF or the Gates foundation, these are people's parents and brothers and sisters and spouses and children. There's enormous suffering and fear and difficulty. But there's also what I think has been absolutely fantastic with

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biotech / pharma: an aggressive push to say, what are the assets we have? What can we repurpose? What can we use that we already have on the shelf?

In the case of Genentech and Roche, they've got a medicine called Actemra. It's a medicine for rheumatology, for arthritis. But it is an antagonist to IL-6 which can be used for cytokine storm, for this kind of burst of immune system that seems to be harming patients. So both Roche and Genentech – and Regeneron who have a similar molecule – very quickly took their medicine and are interacting with clinicians to ask, can this help? In the case of Gilead, they took Remdesivir, a medicine that failed in Ebola, but is already on the shelf. Can this be reused?

You spoke about IL-6. Could you talk a few minutes about what is causing many of the deaths in patients and why many of the things that Genentech had worked on, or Regeneron or others, were dealing with this issue of IL-6?

Most patients don't get very, very sick, but when they do get very, it is primarily a respiratory illness. Occasionally cardiovascular problems come in as well. The medical term for what seems to be happening is a cytokine storm, an overwhelming reaction of the body brought on by the very mechanisms in the body that are trying to fight off the virus. The IL-6 medicine – the monoclonal antibodies that are being used – are being used specifically to fight off that reaction. Now we don't know if that will help because the risk of course is if you decrease fighting off that reaction, then the virus will kill you. But it's definitely, for the sickest patients who were in the ICU, worth trying this – to say, can we dial down the body's immune response with these antagonists to IL-6?

You were a leader in research at one of the most exciting biotech companies ever created: Genentech. They helped pioneer therapies such as Avastin and Herceptin. What was it, this culture at Genentech, that made it so successful?

Probably a lot of things. I would start with leadership. I think Art Levinson who had been the head of R&D became the CEO of Genentech and drove the company to do two things that I think were just so powerful. The first thing he drove the company to do is believe in science, and that if we understood it, and we followed the science, that was the way to make a great company. But the second thing was doing the right thing for patients. If we took longer in the studies and maybe decreased the short-term impact on the bottom line that we would be a good business. I still remember when Genentech decided right after Art became the CEO to spend almost 50% of revenues on R&D. People thought that was crazy – and it probably was a little crazy – but it was belief in the science and a bet on the long term.

You ran one of the leading medical centers in the world at the University of California, San Francisco as chancellor. The [QBI Coronavirus Research Group](#) that was formed at UCSF that we've had a chance to interact with at the Milken Institute – talk to us a little bit about that group.

Nevin Krogan is the guy who's driving this, and he's gotten more than 50 scientists together to share data, to share results, and to look at answering the question, are there things that we can do? And also collaborating with people who have big chemistry libraries to look at, once we have unique insights into how we could interfere with this virus and its mechanics in the body, are there ways that these molecules can be

brought forward quickly to help patients? So this is such a good example of a multi-lab, multi-investigator scientific collaboration where people are just going as fast as they can together, putting competition to the side.

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So Sue, you now leave UCSF, and I'll never forget when you called me to tell me you were leaving to go to Gates, the largest foundation in the world and probably the largest funder of efforts of any foundation in the world today to deal with COVID-19. How can Gates and other foundations be most effective in this mission?

The Gates foundation has been worried about respiratory-spread infectious diseases, worried about viruses, for many years – and didn't just worry, started investing and started to try and help the world get ready. And I'll give you a couple of examples. One is you'll hear when President Trump and his colleagues talk about the Murray model, the Institute for Health Metrics and Evaluation, these predictions of how much equipment we need, how many cases of COVID-19, how many deaths – this comes from a group of

modelers who are very academic and who are housed at the University of Washington, led by Chris Murray. And IHME is a huge asset, whether it's an asset that's been focused on polio, malaria, tuberculosis, and now focused on COVID-19. Their capabilities are really quite amazing.

The Coalition for Epidemic Preparedness Innovations (CEPI) was set up in early 2017 specifically to fund work on vaccines. And they had a very specific project for "Disease X," the kind of disease like COVID-19 that we didn't even know about yet, that we needed rapid-response platforms to make vaccines.

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The last thing I'll say about the Gates Foundation is the staff worries about the poorest people in the world. If the novel coronavirus hits the poorest communities in the world, they have so little ability to fight that off. And so right away, the first investment that Gates Foundation made was to Sub Saharan Africa to start to help Sub Saharan Africa get ready for the novel coronavirus. That's because the Gates Foundation is always thinking about the poorest people in the world.

Sue, I'm not sure the world fully understands what a contribution Gates has made under your leadership and Bill and Melinda and now under Mark Suzman. When I was in South Africa just a couple months ago before we changed the direction of all the centers of the Milken Institute to work in this area, we had a number of representatives from the Gates Foundation join us at our Sub Sahara Africa conference in Johannesburg. It's hard to turn in South Africa or subsaharan Africa without relying on many of the people from Gates and what they've funded in this area. We've talked over the years about the bioscience companies being the defense companies of the 21st century, but most of the world was really never prepared to solve this problem. As you think about what we've learned from this experience, what do we need to do to be prepared for the next pandemic potential so that it doesn't have the effects that this one has?

The ability to not just have tools from a bioscience standpoint –diagnostics, therapeutics, vaccines – but to also push ourselves in bioscience to look at the pace at which we come up with new tools. To have more platforms that are ready. To have more capability to adjust existing platforms for novel pathogens is one thing we need to do to get ready.

But the second thing that we haven't talked much about but is such an essential part of us getting to the next phase of this pandemic – and also being more ready for the next one – is our public health infrastructure. As I see national leaders talk about the testing,

the quarantining, the tracking to move from social distancing into a place where we can get back to work, we don't have the public health infrastructure, we don't have the workforce or the capability to do that, and to think about how we have a public health infrastructure and system that serves us well when we're thinking about overall health of people in the country that also can be adjusted to serve us where we need that public health infrastructure and primary healthcare infrastructure that can serve us in the face of a pandemic. That for me is a call for a return to good old-fashioned public health.

Sue, one of the best ways to predict the future is to make it. You often want to ask yourself, alright, this is how it looks like it's going to unfold, and can I be a part of a group that can change the course of history? What are the key elements today that when you think about it, could change the course of this virus and get us back to some sense of normal?

As fast and as safely as possible, we need a vaccine. We need a vaccine for many, many people who are not immune and are at high risk for getting very sick.

The second thing is, before we have that vaccine, we need a very thoughtful approach, with serious discussions about privacy, about tracking and testing as many citizens in the U.S. as we can to make sure that people are safe and can protect themselves.

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Sue, thank you for joining us and we wish you good health. Continue to play an important leadership role in solving this crisis.

Thank you. And I wish you good health as well. Thanks, Mike.