

Chan Zuckerberg Initiative friends Novartis scientist in mission to conquer disease ^[1]

Discovery ^[2]

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Inspired by the birth of their daughter Max in 2015, Facebook founder and CEO Mark Zuckerberg and pediatrician Priscilla Chan embarked ^[3] on a philanthropic mission to impact the lives of all children in her lifetime. They spoke with dozens of top researchers, choosing to focus initially on cancer, infectious diseases, heart disease and neurological disorders because those types of illnesses cause the majority of deaths.

Chan and Zuckerberg found their way to Don Ganem, a virologist and head of infectious diseases research at Novartis. He and other leading researchers will serve as scientific advisors for the Facebook couple's new Biohub, a San Francisco biomedical center announced Sept. 21 that unites researchers from Stanford University, the University of California San Francisco (UCSF), and UC Berkeley.

The \$600 million hub marks the first science investment by the couple's Chan Zuckerberg Initiative. This initial investment is part of their \$3 billion commitment over the next decade to fund basic academic research and technology that could accelerate scientific progress—ultimately to cure, prevent or manage all diseases by the end of the century. To work toward this feat, Ganem says, many other research organizations would need to tap tools and knowledge from the Biohub to develop vaccines and therapies.

“Solving large problems requires bringing together scientists and engineers to work together in new ways, share data, coordinate, and collaborate,” said Zuckerberg, in a live video on his Facebook page ^[4] viewed by more than 3 million of the 1.7 billion people using the giant social network.

Ganem, who is based at the Emeryville, CA, research campus of Basel, Switzerland-headquartered Novartis, was interviewed about the ambitious Biohub. The following are edited excerpts from the interview.

What is the big idea behind the Biohub that should excite researchers in biopharma?

The idea of the Biohub is to promote teamwork and collaboration, very much inspired by the massive collaborations found in industry. In my group's research, for example, we're working with scientists from Novartis sites all around the world on projects to advance therapeutics. Mark Zuckerberg is coming from an industry background where collaboration is the daily bread, and he is trying to bring more of that to the atomized world of academia without losing the creativity and innovative aspects of university research. It's a new operating model for academic science, intended to enhance the work of universities, not replace it.

What could biomedical researchers learn from Mark Zuckerberg?

I think it's a question of whether university scientists can learn to embrace this collaborative, teamwork approach. Can they overcome the cultural limits and patterns of behavior resulting from systems that reward individuals for their individual rather than their collective achievements? These are open questions. If the Biohub can catalyze cultural changes in how researchers collaborate and results in more great science than the individualist model, then that is a great thing.

How is your pharma R&D perspective valuable at the Biohub?

The ultimate goal here is to produce knowledge that is useful in therapeutic and preventative interventions. So CZI wanted a perspective from somebody who understands academic science but also has some knowledge about how you translate that science into a drug. But they've been clear that the Biohub is not doing applied pharmaceutical research - they want it to catalyze and stimulate academic science. Embedded in the goal of eradicating or eliminating diseases is to have everybody doing fundamental science to have one eye on problems in human medicine. They're not asking them to develop medicines, they're asking them to build the knowledge base to enable that translational work.

What is the potential impact of the Biohub's projects on the discovery of new medicines?

It's extremely important. Everything we're working on in Emeryville in our antiviral program involves a pathway that was discovered by academics from various institutions during the last 25 to 30 years. Almost all the things that we're working on weren't even known when I was in medical school. They were all discovered by academic virologists in the last generation.

Should Novartis and other companies collaborate with the Biohub?

I don't think that at the moment they are directly soliciting input from companies. But I'm not saying that there couldn't be opportunities in the future. The hope is that the knowledge they produce will be very useful to biotech and pharma companies, but the intention first of all is that all the information generated from the Biohub be put in the public domain.

What influence are tech billionaires like Mark Zuckerberg having on the direction of biomedical research?

There's no question that in a time without growth in the federal science budget and with academic institutions outgrowing their financial blood supply, any source of new funding is going to be very welcome and is going to influence the direction people work in, toward ambitious goals and projects with funding to support them for decades. Every one of the recent foundations founded by technology leaders, including the Bill & Melinda Gates Foundation, has taken on important causes.

Ganem, Head of Infectious Diseases at the Novartis Institutes for BioMedical Research, joins the scientific advisory board of the Biohub with MIT bioengineer Sangeeta Bhatia, UC Berkeley gene-regulation expert Robert Tjian, and biochemist Richard Lifton, who is president of The Rockefeller University. Biohub co-director Joseph DeRisi, a UCSF biochemist working on precision infectious disease diagnostics, worked for many years with Ganem at the university.

The Biohub rallies basic researchers, physician-scientists and engineers to work as teams on ambitious projects. The Cell Atlas, for instance, aims to bring light to the molecular inner workings of cell types across major human organs, and the Infectious Disease Initiative seeks to remedy the likes of Zika, Ebola and HIV.

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