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State of California-Funded Research Advances Pandemic Response

UCSF Researcher Dr. Charles Chiu leads Coronavirus tracking using techniques refined under grant from California Initiative to Advance Precision Medicine

Sacramento, CA -- A State of California grant recipient is using the techniques he refined and expanded under that grant to sequence viral genomes from hundreds of COVID-19 patients, informing health officials of how the virus is mutating and spreading around the world. Charles Chiu, MD, PhD, an infectious disease physician and professor of laboratory medicine at University of California San Francisco, received the grant funding from the California Initiative to Advance Precision Medicine (CIAPM) housed in the California Governor's Office of Planning and Research (OPR). Chiu conducted the research in collaboration with four other Universities of California, the Department of Public Health, several California-based companies, and other partners.

CIAPM funded Chiu's project, *Precision Diagnosis of Acute Infectious Diseases*, from 2015-2018. Just prior to receiving this award, his team developed a method of rapidly diagnosing thousands of disease agents in a single, minimally invasive test, known as metagenomic next generation sequencing. CIAPM funds helped Chiu and his team achieve the critical step of taking the test from the research laboratory into the clinic, and expanding its application to more diseases, including pneumonia. In addition, during the project period, Chiu's team optimized the test for faster results, and certified the test for use at hospitals and clinics across the country.

"I am extremely grateful for the support that the State of California has given for my work in precision medicine," said Chiu, who also serves as Director of the UCSF-Abbott Viral Diagnostics and Discovery Center. "It showed foresight and prepared us to respond immediately to the current crisis with real-time genomic sequencing."

Now Dr. Chiu is building on that work. By sequencing viral genomes from COVID-19 patients, Chiu is providing public health officials with valuable information about the virus's transmission, which can identify the origin of an individual's illness and can help determine if interventions, such as stay-at-home orders, are slowing the spread of infection. Chiu's work will also help officials understand if the virus is becoming

more dangerous and whether small differences between strains of the virus have distinctive effects on human health.

“California’s response to the COVID-19 pandemic relies on a huge amount of research that’s already begun, long before the current moment,” said Kate Gordon, Director of OPR and Governor Newsom’s Senior Advisor on Climate. “Dr. Chiu’s research is a perfect example. With State funds programmed for the past several years through OPR’s California Initiative to Advance Precision Medicine, Dr. Chiu has been able to create a system that has already strengthened and will continue to support State leaders’ ability to keep Californians safe and healthy.”

“During a pandemic, the right information delivered at the right time can save countless lives,” said California Surgeon General Dr. Nadine Burke Harris, MD, MPH. “Dr. Chiu is at the frontlines of elevating our scientific understanding of this disease by developing critical tools to help get answers fast.”

California established CIAPM to capitalize on the state’s strengths in high-performance computing and biotechnology for the benefit of all Californians, especially those who are disadvantaged by health disparities. The program supports three ongoing projects and is planning future grants. The Advisory Council leading the Initiative includes California Surgeon General Dr. Nadine Burke Harris and California Health and Human Services Secretary Dr. Mark Ghaly, as well as other health experts. The Council will meet virtually in May.

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