

Government rushes virus gene-mapping as mutations spread

February 17 2021, by Ricardo Alonso-Zaldivar



In this Dec. 8, 2020 file photo, Rochelle Walensky, speaks during an event at The Queen theater in Wilmington, Del. The U.S. is scrambling to expand DNA mapping of coronavirus samples to identify potentially deadlier mutations starting to spread around the country.(AP Photo/Susan Walsh)

The U.S. is scrambling to expand DNA mapping of coronavirus samples

taken from patients to identify potentially deadlier mutations that are starting to spread around the country.

On Wednesday, the White House announced a scaled up push by the Centers for Disease Control and Prevention, and by a U.S. Army biodefense institute. But the more significant action is on Capitol Hill, where a House bill headed for floor debate would provide \$1.75 billion for genomic sequencing.

"I don't think this is going to be a light switch; I think its going to be a dial," CDC head Dr. Rochelle Walensky told reporters, as she described the effort.

The U.S. now maps only the genetic makeup of a minuscule fraction of positive virus samples, a situation some experts liken to flying blind. It means the true domestic spread of problematic mutations first identified in the United Kingdom and South Africa remains a matter of guesswork.

Such ignorance could prove costly. One worry is that more transmissible forms such as the UK variant could move faster than the nation's ability to [get the vaccine into Americans' arms.](#)

"You've got a small number of academic and public health labs that have been basically doing the genomic surveillance," said David O'Connor, an AIDS researcher at the University of Wisconsin. "But there is no national coherence to the strategy."

The CDC is trying to shepherd those efforts and align them with the government's own expanded commitment. Officials said Wednesday the administration will spend \$200 million for the CDC to increase genomic sequencing to about 25,000 samples a week, or triple the current level.

On a parallel track, a U.S. Army biodefense institute will increase

[coronavirus](#) gene mapping to 10,000 samples a week by the end of the month, up from about 4,000.

Provisions of President Joe Biden's COVID relief bill would take the hunt to another level.

Besides a \$1.75 billion budget for gene mapping, House legislation that cleared the Energy and Commerce Committee last week calls for the CDC to organize a national network to use the technology to track the spread of mutations and guide public health countermeasures.

In the Senate, Wisconsin Democrat Tammy Baldwin has introduced a bill that would provide \$2 billion. Baldwin says the U.S. should be analyzing at least 15% of positive virus samples. That might not sound like much, but the current rate is believed to be 0.3% to 0.5%. Analyzing 15% of positive samples would expand surveillance by at least 30 times.



In this Feb. 10, 2021, photo, Jeff Zients, White House coronavirus response coordinator, attends a virtual meeting with mayors from the African American Mayors Association in the South Court Auditorium on the White House complex. Scientists would gain vastly expanded capabilities to identify potentially deadlier mutations of the coronavirus under legislation advancing in Congress. The U.S. now maps only the genetic makeup of a minuscule fraction of positive virus samples, a situation some experts liken to flying blind. (AP Photo/Jacquelyn Martin)

Genomic sequencing essentially involves mapping the DNA of an organism, the key to its unique features. It's done by high-tech machines that can cost from several hundred thousand dollars to \$1 million or more. Technicians trained to run the machines and computing capacity to support the whole process add to costs.

In the case of the UK variant first detected in England, the changes in the virus allowed it to spread more easily and are also believed to cause deadlier COVID-19 disease. Walensky said it has already been identified in more than 40 states.

"Genomic sequencing testing is how we will spot variants early before they spread," said White House COVID response coordinator Jeff Zients.

Sequencing 0.3% to 0.5% of virus samples, as the U.S. is now doing, "just doesn't give us the ability to detect strains as they develop and become dominant," said Dr. Phil Febbo, chief medical officer for Illumina, a San Diego-based company that develops genomic sequencing technologies.

The Biden administration has to "set a very clear goal," he added. "What's the hill that we are going to charge?"

"We need that data. Otherwise, in some ways, we're flying blind," said Esther Krofah, who directs the FasterCures initiative of the Milken Institute.

Even more worrisome than the UK variant is a strain first detected in South Africa that scientists suspect may diminish the protective effect of some of the coronavirus vaccines. That variant has also been identified in the U.S. in a limited number of cases.

At the University of Wisconsin, AIDS scientist O'Connor said the CDC's new goal of gene-mapping 25,000 samples a week works out to about 5% of U.S. cases, still below the level of surveillance in the United Kingdom. He and his colleagues started sequencing coronavirus samples from the Madison area "because that's where we live."

His colleague, virology expert Thomas Friedrich, said a national effort will require more than money to purchase new [genomic sequencing](#) machines. The CDC will have to set standards for state health officials and academic research institutions to fully share the information they glean from analyzing virus samples. Currently, there's a hodgepodge of state regulations and practices, and some of them restrict access to key details.

"We need to look at this as a Manhattan Project or an Apollo program," said Friedrich, invoking the government-led scientific endeavors that developed the atomic bomb and landed men on the moon.

The United Kingdom was able to identify its variant because the national health system there has a coordinated gene mapping program that aims to sequence about 10% of samples, he added. Since that happened, there's been greater urgency on this side of the Atlantic Ocean.

"The utility of doing this may not have been as apparent to as many people until these variants started popping up," Friedrich said.

© 2021 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed without permission.

Citation: Government rushes virus gene-mapping as mutations spread (2021, February 17) retrieved 5 May 2024 from

<https://medicalxpress.com/news/2021-02-virus-gene-mapping-mutations.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--