

UCLA Health scientists pioneer faster, cheaper COVID-19 testing technology

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A nasal swab used to collect a specimen is stored for laboratory testing for the presence of coronavirus. Credit: Mufid Majnun/Unsplash

The U.S. Food and Drug Administration has granted emergency use authorization for scientists at UCLA Health to begin using a new method

of COVID-19 detection using sequencing technology called SwabSeq. The method is capable of testing thousands of samples for coronavirus at the same time, producing accurate, individual results in 12 to 24 hours.

SwabSeq adds a unique molecular bar code to each sample in the first step of its processing. The samples are then combined in a sequencer and the bar codes allow for the identification of which specific sample has the virus. The underlying technology of SwabSeq can be applied to any type of [sample](#) collection, such as a nasopharyngeal, oropharyngeal or saliva [test](#).

"This is a technological breakthrough that will dramatically increase the amount of COVID-19 testing while reducing the wait time for results and costs," says Dr. John Mazziotta, vice chancellor for UCLA Health Sciences and CEO of UCLA Health.

Dr. Eleazar Eskin, chair of the Department of Computational Medicine affiliated with both the David Geffen School of Medicine and the Samueli School of Engineering at UCLA, explains: "SwabSeq is highly scalable because it leverages two decades of advances in genomic sequencing technology. Using SwabSeq, a relatively small lab can process tens of thousands of samples per day."

Dr. Eskin's department collaborated on the groundbreaking technology with scientists at UCLA Health, the Department of Human Genetics, the Department of Pathology and Laboratory Medicine and Octant, a start-up company founded and incubated at UCLA. SwabSeq is a modification of Octant's technology that is being applied toward drug discovery and has been made available broadly to fight the pandemic. UCLA scientists have been leading a broader coalition of academic and industrial labs around the country and world developing the technology to scale testing.

Octant co-founder and CEO Dr. Sri Kosuri, says: "UCLA has been at the forefront of taking SwabSeq from an initial technology to validating its use in large-scale testing of real patients. We jump-started a whole community of researchers now using the technique to help bring people back to work and school."

"This is an innovative use of genomic sequencing for COVID-19 testing that is uniquely scalable to thousands of samples per day, sensitive and fast—a combination that is challenging to find in diagnostic testing," says Dr. Valerie Arboleda, an assistant professor in the Departments of Pathology & Laboratory Medicine and Human Genetics.

Dr. Jonathan Flint, professor in the Departments of Psychiatry and Biobehavioral Sciences at the David Geffen School of Medicine, says, "The sequencing technology is able to fill the gap in COVID-19 testing, particularly for the asymptomatic population, because it doesn't have the same supply chain bottlenecks that have limited further expansion of current clinical PCR testing."

"SwabSeq is simple, sensitive and flexible and can provide a turn-around time of less than a day," explains Dr. Leonid Kruglyak, chair of the department of Human Genetics at the David Geffen School of Medicine. "It has the potential to expand testing capacity to the scale required for pandemic suppression."

Provided by University of California, Los Angeles

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