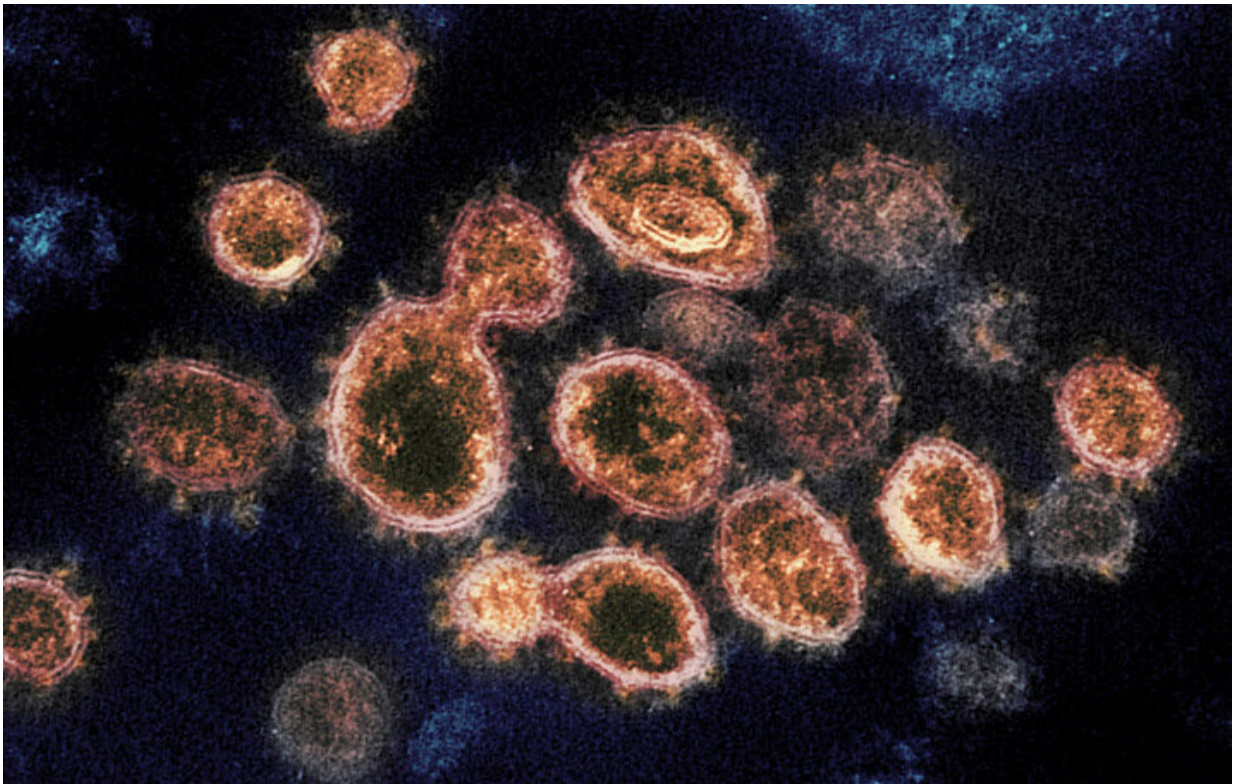


# Patients with severe forms of coronavirus disease could offer clues to treatment

March 25 2020, by Meghan Rosen

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The virus that causes COVID-19, called SARS-CoV-2, shown here in an electron microscope image, can trigger severe cases of infection in some younger patients. Studying them could help scientists pinpoint genetic mutations that make people more susceptible to the disease. Credit: NIAID-RML

Hundreds of clinicians worldwide are banding together in an effort to

study some types of severe cases of the new coronavirus disease.

The project, led by Howard Hughes Medical Institute (HHMI) Investigator Jean-Laurent Casanova at The Rockefeller University, seeks to identify genetic errors that make some [younger patients](#) especially vulnerable to the virus that causes COVID-19, the infectious respiratory [illness](#) also known as coronavirus disease 2019.

Casanova aims to enroll 500 patients internationally who meet three broad criteria: they're less than 50 years old, have been diagnosed with COVID-19 and admitted to an [intensive care unit](#), and have no serious underlying illnesses, such as diabetes, heart disease, or lung disease.

By studying these patients' DNA, scientists may pinpoint [genetic mutations](#) that make some people more susceptible to infection. Such information could one day help doctors identify people who are most at risk of developing severe coronavirus disease, says Casanova, a pediatrician at Rockefeller. It could also offer clues for scientists searching for new therapeutics. For example, if patients' cells aren't making enough of a particular molecule, doctors may be able to offer a supplement as treatment.

That day may still be years away. "This is not a short-term effort," Casanova says. Some scientists have hypothesized that COVID-19 might be a seasonal illness, with infections ebbing in the spring and summer, and then returning in the fall. But Casanova's team is optimistic. They have already begun enrolling patients and have started sequencing their "exomes"—spelling out all of the DNA letters in every gene in a person's genome. "We're going to try to find the genetic basis of severe coronavirus infection in young people."

Late last year, when the first coronavirus infections began cropping up in China, Casanova started reaching out to his colleagues there. Though the

most severe cases seemed to concentrate among older adults and those with other conditions, Casanova was interested in the outliers—kids and young adults hit hard by the illness who didn't have any of the usual risk factors, such as age or underlying illness.

His team kicked off a new project to study these mysterious cases, and in January—just weeks after the Wuhan outbreak—began enrolling patients. Clinicians mailed patient blood and DNA to his lab, and researchers there and elsewhere began processing samples—the first steps needed for scientists to peer into patients' genomes. Now, the project is global, and Casanova is collaborating with scientists and healthcare workers from Europe to Africa, Asia, and Oceania.

We will recruit children and adults

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