

Integrating social, genetic, and environmental factors in COVID-19 research

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Both social factors—such as low socioeconomic status and crowded housing—and genetic factors—such as variants in genes related to inflammatory pathways—likely impact COVID-19–related health

outcomes. In an article published in *Advanced Genetics*, researchers propose a framework for considering the interactions between these different factors—similar to those between genes and the environment—for COVID-19 studies.

The work is important because people's genetics act in concert with social and environmental factors to determine their [health risks](#). With a focus on the situation in the United States, the investigators provide information on the independent and joint impacts of social determinants of health and genetic risk factors on individuals' vulnerability and susceptibility to COVID-19 to guide research, healthcare, and policy related to COVID-19. They note that when assessing [genetic factors](#)' association with a condition such as COVID-19, to avoid bias, one has to consider the impact of the social determinants of health, because they often fall along disadvantaged ethnic and racial lines.

"The interactions of social determinants of health and environmental exposures are complex and exist from micro (biological) to macro (social system) levels," said senior author Asiyah Yu Lin, MD, Ph.D., a DATA Scholar of the National Human Genome Research Institute, NIH. "In our framework, we treated the traditional [environmental factors](#) as part of the social determinants of health, so that researchers can systematically collect, assess, and develop methods to study those factors and genomics. In addition, more funding, education, and research are needed for collecting research-ready social determinant data, not only for COVID-19, but also for other diseases."

More information: Jimmy Phuong et al, Social Determinants of Health Factors for Gene–Environment COVID-19 Research: Challenges and Opportunities, *Advanced Genetics* (2022). [DOI: 10.1002/ggn2.202100056](#)

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