



# REPRIEVE



# MASSACHUSETTS GENERAL HOSPITAL

**Clinical Coordinating Center**  
Massachusetts General Hospital  
55 Fruit Street, 5LON207  
Boston, MA 02114

**Data Coordinating Center**  
Massachusetts General Hospital  
165 Cambridge Street Suite 400  
Boston, MA 02114

## Effect of host factors and COVID-19 infection on the humoral immune repertoire in treated HIV

Samuel R. Schnittman, Wonyeong Jung, Galit Alter, Steven K. Grinspoon, and colleagues

[Published in JCI Insight, 2023](#)

### Background

People with HIV (PWH), especially those with lower CD4+ T cell counts, may have more of a challenge controlling infections, including COVID. There is much to learn about the ways in which different individual characteristics affect the immune system's ability to respond to infections. Across almost one third of all REPRIEVE participants globally, blood samples were evaluated for antibody responses (one way the immune system responds to pathogens) to SARS-CoV-2 (the virus that causes COVID) and several other pathogens. This information was combined with clinical data on COVID infections or complications, as well as different patient characteristics.

#### ➤ The participants:

- Participants were included from the entire global REPRIEVE cohort based on blood sample availability and timing
- 2,464 participants (1,599 male), 283 COVID antibody-positive, 2,181 COVID antibody-negative
  - 92% reported asymptomatic COVID infection or did not report any symptoms
- Median age: 53 years
- Median body mass index (BMI): 26.0 kg/m<sup>2</sup>

#### ➤ The findings:

1. Among all participants, COVID infection (vs no infection) was associated with higher antibody responses to cytomegalovirus (CMV) and Epstein-Barr Virus (EBV), two viruses that are widespread in the community
2. Among COVID-negative participants, female sex, older age, lower nadir CD4 (the lowest CD4 level that the patient has ever had, which might suggest damage to the immune system), and different global regions were associated with different patterns of antibody responses to a variety of pathogens
3. Among COVID-positive participants, higher BMI was associated with very high immune responses to SARS-CoV-2, while lower nadir CD4 was associated with higher antibody responses only to a few types of pathogens and may not be strong enough to protect against infection

**In Summary:** This study allowed us to assess antibody responses to different pathogens across a globally diverse cohort of PWH. COVID infection was associated with higher antibody responses to CMV and EBV. Among those with COVID, higher BMI was associated with greater, and possibly damaging, antibody responses and lower nadir CD4 was associated with an antibody response that may not be enough to protect against infection. Both findings might explain why PWH with obesity or lower nadir CD4 have worse outcomes after COVID.

REPRIEVE Trial Website: [reprivetrial.org](https://reprivetrial.org)

*The findings shared in this summary are from the REPRIEVE population at a specific point in time. These findings are descriptive and not intended to change clinical care. If you have questions about what you've read, please talk to members of the REPRIEVE study team at your local site or a health care provider*