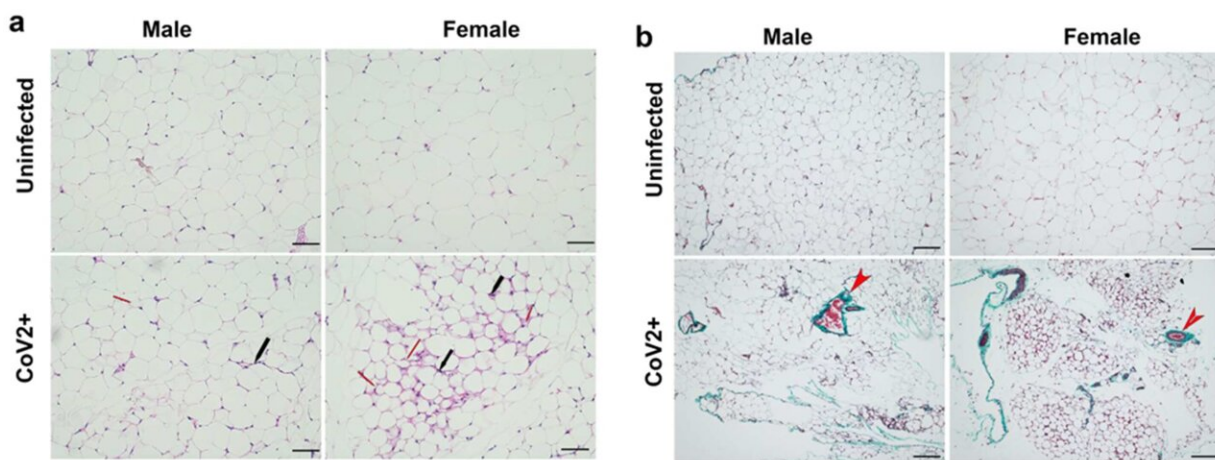


# Researcher might have found key to understanding why COVID-19 kills more men than women

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SARS-CoV-2 infection alters adipose tissue morphology at 10 DPI in hACE2 mice (n = 4 mice/sex). (a) H&E-stained sections of WAT of both males and females showing infiltrated immune cells (black arrow) and loss in lipid droplets (red arrow, smaller adipocytes) with CoV-2 infection compared to uninfected mice (20× magnification, scale bar—50 μm); (b) Masson-trichrome staining of WAT sections showing fibrosis and collagen (green color, red arrowhead) in CoV-2 infected mice (10× magnification, scale bar—100 μm). Credit: *International Journal of Molecular Sciences* (2023). DOI: 10.3390/ijms24021314

From the first months of the COVID-19 pandemic, observers noted that men are more susceptible to severe infections of the SARS-CoV-2 virus,

with increased death rates.

One scientist at the Hackensack Meridian Center for Discovery and Innovation (CDI) has new findings which may answer why.

Jyothi Nagajyothi, Ph.D., a scientist at the Hackensack Meridian Center for Discovery and Innovation (CDI) investigates [infectious diseases](#) relating to fat in the body, including COVID-19.

A new publication in the *International Journal of Molecular Sciences* indicates males fare worse than females with the disease because the virus more readily attacks females' fat tissue, in lieu of lung tissue.

"Our data suggested that in female mice adipose tissue may act as a sink/reservoir for SARS-CoV-2 and thus spares the lungs from a greater viral load, preventing pulmonary damage due to infiltrated [immune cells](#) and activated pro-inflammatory cytokines," they write.

The Nagajyothi Lab's mouse models, mimicking the human immune system, showed that females lost more fat compared to males when infected with COVID-19. The males had more virus in their lungs, while the females showed more virus in their fat tissue. The theory is that the adipose (fat) tissue in females may act as a "sink" or "reservoir" of the virus.

The latest paper follows a publication last year in *Frontiers in Cardiovascular Medicine* in which Nagajyothi and colleagues showed the virus infiltrated the lungs of males much more readily than it did in females. The latest paper goes a bit further, showing that an inverse relationship exists between the viral loads in the lungs and [adipose tissue](#), and it differs between males and females. They found that SARS-CoV-2 infection alters immune signaling and [cell death](#) signaling differently in SARS-CoV-2 infected male and female mice.

"These data may help explain the higher COVID-19 susceptibility in males compared to females," they conclude.

**More information:** Hariprasad Thangavel et al, Susceptibility of Fat Tissue to SARS-CoV-2 Infection in Female hACE2 Mouse Model, *International Journal of Molecular Sciences* (2023). [DOI: 10.3390/ijms24021314](https://doi.org/10.3390/ijms24021314)

Provided by Hackensack Meridian Health

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