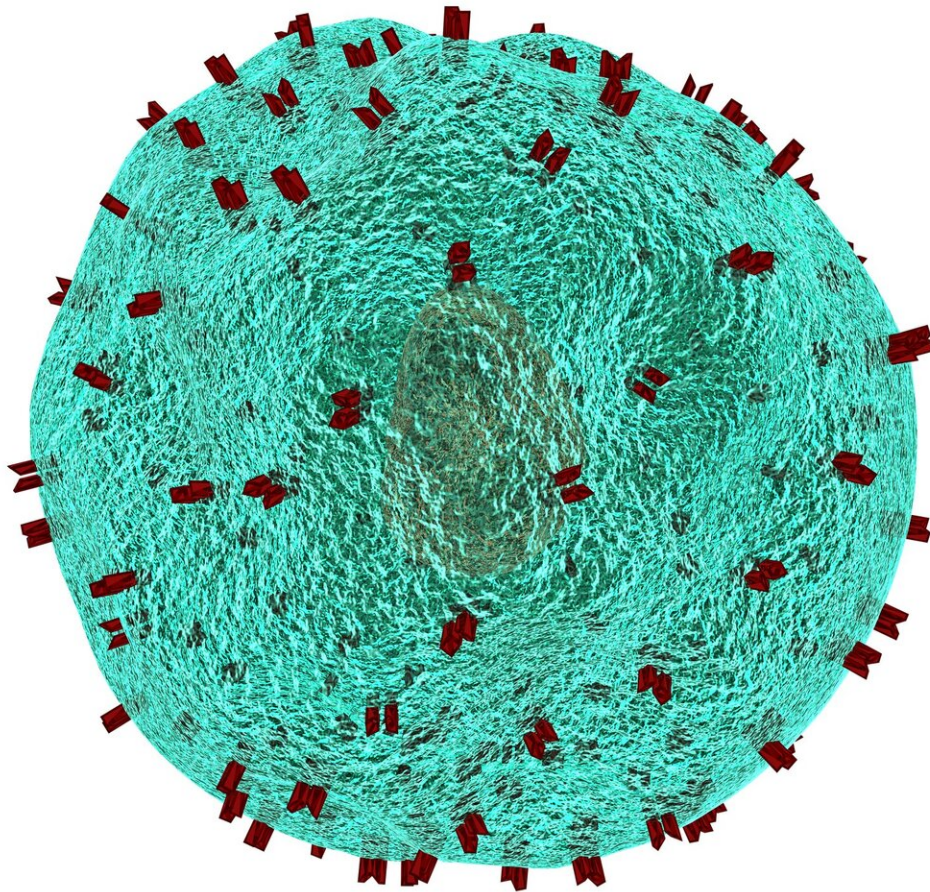


Kids with MIS-C mount normal T cell response to COVID-19

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Multisystem inflammatory syndrome in children (MIS-C) is a serious condition associated with a recent COVID-19 infection. The syndrome is rare, and it remains unclear how the viral infection leads to MIS-C and why it only develops in some children.

One hypothesis was that [children](#) with MIS-C might mount an abnormal T cell response—immune cells that help the body fight viral infections—to the coronavirus, causing inflammation.

But abnormal T cell responses to the virus do not appear to be a cause of MIS-C, University of California San Diego School of Medicine researchers report in a study publishing October 2, 2021 in *European Journal of Immunology*.

All children with MIS-C who participated had normal T cell responses to the COVID-19 virus, comparable to children and adults who had recovered from COVID-19 without MIS-C. Children with a clinically similar but unrelated inflammatory condition called Kawasaki disease also served as a control group.

"Considering the rarity of MIS-C and Kawasaki disease, we were fortunate to have a relatively large group of patients participating in this study—one that's only possible in this region, thanks to the early actions of UC San Diego, Rady Children's Hospital and our Kawasaki Disease Research Center," said senior author Alessandra Franco, MD, Ph.D., associate professor of pediatrics at UC San Diego School of Medicine. "This should be considered a preliminary observation, but we believe our study adds to the growing body of evidence regarding how kids respond to the COVID-19 virus."

The team compared responses to bits of the COVID-19 virus by T cells isolated from 11 children with MIS-C to two control groups: 1) two children and five adults who had recovered from previous COVID-19 infections without MIS-C and 2) 10 children with Kawasaki disease.

They found that nine of the 11 children with MIS-C had T cells that specifically recognized the COVID-19 virus. But these T cell responses did not correlate with disease severity or age. Their T cells acted similarly to those of children and adults who had a previous COVID-19 infection but not MIS-C.

Examining additional children with MIS-C, the team found that these patients did have lower numbers of other [immune cells](#), such as tolerogenic myeloid dendritic cells, compared to the children without MIS-C. These cells reduce inflammation and are particularly numerous in children. Fewer of these [cells](#) might help contribute to the development of MIS-C, Franco said.

Next Franco and team plan to study how T cell memory develops in children with MIS-C and how their immune systems restore to normal as they recover. They also hope to compare T cell dynamics in vaccinated and unvaccinated children.

MIS-C symptoms may include abdominal pain, bloodshot eyes, chest pain, headaches, rashes and vomiting. Parents should seek emergency [medical care](#) if their child experiences trouble breathing, confusion, inability to stay awake or blue-colored skin. MIS-C is treated with supportive care, such as fluids and anti-inflammatory medication. Some children with MIS-C may require treatment in an intensive care unit.

According to the Centers for Disease Control and Prevention, the best way parents can protect children from MIS-C is by taking actions to prevent the household from getting the virus that causes COVID 19,

such as masking, avoiding crowded areas and vaccination for those who are eligible.

More information: Li-En Hsieh et al, Characterization of SARS-CoV-2 and common cold coronavirus-specific T cell responses in MIS-C and Kawasaki disease children, *European Journal of Immunology* (2021). DOI: [10.1002/eji.202149556](https://doi.org/10.1002/eji.202149556)

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