

Gut bacteria tire out T cells

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Leaky intestines may cripple bacteria-fighting immune cells in patients with a rare hereditary disease, according to a study by researchers in Lausanne, Switzerland. The study, published in *The Journal of Experimental Medicine* on September 15, may explain why these patients suffer from recurrent bacterial infections.

Patients with a disease called common variable immunodeficiency (CVID) suffer from recurrent bacterial infections as a result of faulty [immune cells](#). But despite these immune defects, CVID patients rarely contract viral infections. New data from Matthieu Perreau and colleagues in Lausanne now show that bacteria-fighting T cells in the blood of these patients showed signs of exhaustion (evident by their expression of an inhibitory protein called PD-1), but virus-fighting T cells were unscathed.

T [cell exhaustion](#) in the patients was associated with increased [gut bacteria](#) in the bloodstream, possibly due to the lack of protective antibodies that normally clear these wayward bugs. As a result, bacteria-specific T cells may be repetitively stimulated, a scenario known to trigger exhaustion. Indeed, the tired T cells from CVID patients could be rejuvenated by blocking PD-1. And in patients who received infusions of antibodies ("IVIG" therapy), often used to treat symptoms of CVID, PD-1 expression on T cells waned along with the levels of bacteria in the blood.

The data suggest that "immunotherapy" strategies aimed at perking up T cells—already in use in cancer patients—may protect CVID patients

against recurrent [bacterial infection](#).

More information: Perreau, M., et al. 2014. *J. Exp. Med.* [DOI: 10.1084/jem.20140039](#)

Provided by Rockefeller University

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