

Protozoan parasite increases risk of colitis, study reveals

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Researchers have discovered that the intestinal parasite *Tritrichomonas muris* (pictured) increases the susceptibility of its host to colitis. Credit: Escalante et al., 2016

Researchers from the University of Toronto have discovered that mice infected with the common gut parasite *Trichomonas muris* are at an increased risk of developing inflammatory colitis. Their findings, which have been published online in *The Journal of Experimental Medicine*, expand the type of gut-resident microorganism that can affect the health of their host and suggest that related parasites may cause gastrointestinal disease in humans.

In recent years, researchers have discovered that the trillions of bacteria that reside in the gastrointestinal tract have an enormous impact on human health and disease. But the effects of other types of microorganisms that live in the gut, such as the unicellular eukaryotes known as protozoans, are less well understood. Though some protozoan species, which are part of the protist kingdom of life, cause diseases like malaria and leishmaniasis, the protozoa that commonly live in the gut are generally thought to be harmless.

While studying the inflammatory mechanisms underlying colitis in rodents, a team of researchers led by Dana Philpott and Thierry Malleval realized that their [laboratory mice](#) were more susceptible to developing the disease if their intestines were already infected with the protozoan *Trichomonas muris*. This parasite is commonly found in the intestines of mice, and the researchers observed that its presence raised the levels of pro-inflammatory T cells and cytokines in the host animal's gut. These inflammatory factors may "prime" the intestinal tissue to become inflamed, leaving it more susceptible to colitis.

[A recent study](#) published in *Cell* revealed that, while the related parasite *Trichomonas musculus* makes the intestine susceptible to both colitis and colorectal cancer, it induces an immune response that protects mice against *Salmonella* infection. This may be why host animals tolerate protozoans such as *T. muris* living in their intestines. Several species of protozoa reside in the [human gut](#), and some of them are prevalent in

patients with [gastrointestinal disease](#), suggesting that similar host-parasite interactions could affect [human health](#). "Our findings highlight the need for a better understanding of cross-kingdom interactions between host and protozoa within the [gastrointestinal tract](#)," says Philpott.

More information: Escalante, N.K., et al. 2016. *J. Exp. Med.* [DOI: 10.1084/jem.20161776](#)

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