

Bacteria identified that may lead to inflammatory bowel disease in certain individuals

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Certain bacteria that inhabit the intestine provide the environmental trigger that initiates and perpetuates chronic intestinal inflammation in individuals who are genetically susceptible to inflammatory bowel disease (IBD), a study led by Harvard School of Public Health researchers has found.

Inflammatory bowel disease results from a loss of homeostasis, or balance, between the [immune system](#) and the microbes that inhabit the intestine.

"In this study, we identified two [microbes](#) that instigate gut inflammation that leads to [inflammatory bowel disease](#) in mice," said lead investigator Wendy Garrett, assistant professor of [immunology](#) and [infectious diseases](#) at HSPH. "We show using both metagenomic and conventional culture techniques that an individual's genetic background influences what bacteria reside within his or her intestine. Several studies are currently underway examining the intestinal microbial communities of patients with IBD and we are looking forward to exploring the role of the Enterobacteriaceae we have identified in patients with IBD."

The study appears in the September 16, 2010, edition of *Cell Host & Microbe*.

IBD is a chronic inflammatory disorder that afflicts 1.4 million persons

in the US and the incidence is rising around the world. Not only is IBD a devastating and debilitating chronic illness, it is also one of the three highest risk factors for the development of colorectal cancer. There are two principal forms of IBD: Crohn's disease and ulcerative colitis. Approximately 30,000 new IBD cases are diagnosed each year in the U.S.

Whether IBD is caused by individual species of bacteria or disruptions of entire microbial communities remains controversial, said senior author Laurie H. Glimcher, Irene Heinz Given Professor of Immunology at HSPH. "Our findings suggest that answer bridges both hypotheses--specific species of bacteria (*Klebsiella pneumoniae* and *Proteus mirabilis*) appear to work in concert with the indigenous gut microbial community to cause IBD."

More information: "Enterobacteriaceae Act in Concert with the Gut Microbiota to Induce Spontaneous and Maternally Transmitted Colitis," Wendy S. Garrett, Carey A. Gallini, Tanya Yatsunenko, Monia Michaud, Andrea DuBois, Mary L. Delaney, Shivesh Punit, Maria Karlsson, Lynn Bry, Jonathan N. Glickman, Jeffrey I. Gordon, Andrew B. Onderdonk, and Laurie H. Glimcher, *Cell Host & Microbe* 8, 292, September 16, 2010.

Provided by Harvard School of Public Health

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