

Specific bacterial species may initiate, maintain Crohn's

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Patients newly diagnosed with pediatric Crohn's disease had significantly different levels of certain types of bacteria in their intestinal tracts than age-matched controls, according to a paper in the October *Journal of Clinical Microbiology*. The work may ultimately lead to treatment involving manipulation of the intestinal bacteria.

The research grew out of many years' study of [gastrointestinal diseases](#), a particular focus being the role of mucus-associated bacteria in [inflammatory conditions](#), says Hazel M. Mitchell of the University of New South Wales, Sydney, Australia, the principle investigator on the study.

"We deliberately chose to examine children newly diagnosed with Crohn's Disease, as we thought this would increase our chances of detecting species that may be involved in initiating Crohn's disease," she says, noting that confounding factors potentially affecting intestinal flora such as antibiotic or anti-inflammatory intake, smoking, or [alcohol consumption](#), are less likely to be present in such children than in adults.

Of particular interest was the finding that one group of bacteria, known as Proteobacteria, was present at higher levels in mild cases, as compared with moderate to severe disease, and controls. That finding, "suggests that this group may play a role in initiation of the disease," says Mitchell, who credits her colleague Nadeem O. Kaakoush with much of the thought and laboratory work behind the study. "The latter finding is consistent with recent studies showing that members of the Proteobacteria, including *E. coli* and *Campylobacter concisus* may play a role in initiating [Crohn's disease](#)," says Mitchell.

There had been an indication that such was the case, prior to the current study, when the team's earlier research revealed *C. concisus* to be present in children who already had Crohn's, but not in healthy controls. That information in hand, the

researchers grew *C. concisus* from biopsy specimens from Crohn's children and examined their ability to attach and invade intestinal cells, as compared with strains grown from patients with gastroenteritis, and healthy controls. That research showed that only specific *C. concisus* strains could invade intestinal cells, that these strains were associated with Crohn's, and that they carried a plasmid which was absent from noninvasive *C. concisus* strains.

But studies examining dysbiosis (out of balance microbial populations) in adults with Crohn's were inconsistent. That led Mitchell and her colleagues to conduct the current study in children with newly diagnosed Crohn's. The results support the theory that Crohn's is linked to a gastrointestinal imbalance in the microbiota, says Mitchell. The bacteria associated with mild disease, including *C. concisus*, may be initiating infection, she says.

More information: N.O. Kaakoush, A.S. Day, K.D. Huinao, S.T. Leach, D.A. Lemberg, S.E. Dowd, and H.M. Mitchell, 2012. Microbial dysbiosis in pediatric patients with Crohn's Disease. *J. Clin Microbiol.* 50:3258-3266.

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