

**IBD**  
**GUT MICROBIOTA**  
**IN IBD GOES VIRAL**

A new study has shown that the enteric virome (the viruses in the gut) is altered in patients with IBD, with disease-specific changes observed between ulcerative colitis and Crohn's disease.

IBD is complex, with multiple factors (including genetic and environmental factors) contributing to disease development. Evidence points towards a role for the gut microbiota in IBD pathogenesis, but the contribution of the gut virome is only just beginning to be appreciated. "Recent advances in sequencing technology have led to the discovery of a diverse enteric human virome consisting of bacteriophages, as well as eukaryotic viruses," write the authors in their study published in *Cell*.

Norman *et al.* conducted metagenomic sequencing analysis of the DNA of virus-like particle preparations from stool samples from patients with IBD and controls (non-IBD households) from a UK cohort initially and two independent US cohorts for validation. Bacterial 16S ribosomal RNA sequencing analysis was also performed. Richness (number of taxa counted per sample) and diversity (richness and relative abundance) of microorganisms were quantified.

Increased richness of bacteriophages and, in particular, a marked expansion of *Caudovirales* bacteriophages was observed in IBD samples. Moreover, striking differences in richness and the type of bacteriophage taxa identified were observed between ulcerative colitis and Crohn's disease samples—each disease type had unique bacteriophages—and across cohorts. Importantly, IBD-associated changes to the bacterial microbiome (reduced bacterial diversity and richness compared with controls) was inversely correlated to IBD-associated changes to the gut virome.

"These data provide a rationale for considering virome diagnostics for IBD and manipulation of the enteric virome as a novel therapeutic strategy for the management of IBD," write the authors. Further work is needed to clarify how the gut virome, and also interactions within the gut microbiota, contribute to disease pathogenesis. Understanding predator–prey relationships between bacteriophages and gut bacteria and their influence on the host could be crucial.

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**Original article** Norman, J. M. *et al.* Disease-specific alterations in the enteric virome in inflammatory bowel disease. *Cell* doi:10.1016/j.cell.2015.01.002