

Viruses in the human gut show dynamic response to diet

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The digestive system is home to a myriad of viruses, but how they are involved in health and disease is poorly understood. In a study published online today in *Genome Research*, researchers have investigated the dynamics of virus populations in the human gut, shedding new light on the gut "virome" and how it differs between people and responds to changes in diet.

"Our bodies are like [coral reefs](#)," said Dr. Frederic Bushman of the Perelman School of Medicine at the University of Pennsylvania, senior author of the study, "inhabited by many diverse creatures interacting with each other and with us." The interactions between viruses, bacteria, and the human host likely have significant consequences for human health and disease, especially in the delicate ecosystem of the gut microbiome.

In this work, lead author Sam Minot, Bushman, and colleagues investigated the dynamics of the gut virome during perturbations to diet. The group studied six healthy volunteers -- some received a high fat and low fiber diet, others a low fat and high fiber diet, and one an ad-lib diet.

By analyzing [DNA sequences](#) from [viruses and bacteria](#) present in stool of the volunteers over the course of eight days, they found that although the largest variation in virus diversity observed occurred between individuals, over time [dietary intervention](#) significantly changed the proportions of virus populations in individuals on the same diet, so that the viral populations became more similar.

"The study provides a new window on the vast viral populations that live in the [human gut](#), demonstrates that they vary radically between individuals, and shows that dietary changes can affect not just bacterial populations but also viral populations," Bushman said.

More information: Minot S, Sinha R, Chen J, Li H, Keilbaugh SA, Wu G, Lewis J, Bushman FD. The human gut virome: Inter-individual variation and dynamic response to diet. *Genome Res* [doi: 10.1101/gr.122705.111](#)

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