

**Immunology and Gastroenterology: The Association Between Genes, Autoimmune Diseases, and Gastrointestinal Issues**

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**Abstract**

Autoimmune diseases such as lupus can cause gastrointestinal distress as well as an imbalanced gut microbiome. In this literature review I investigate the correlation between autoimmune diseases, gastrointestinal issues, and cancer. It is rare for patients with lupus to present with gastrointestinal symptoms; if there are gastrointestinal symptoms, they are mostly due to the medications used to treat lupus. With regard to the gut microbiome, patients with lupus, Irritable Bowel Syndrome, Celiac disease, and an *E. coli* infection tend to have a higher amount of *Bacteroidetes* as compared to *Firmicutes* than healthy patients; whereas patients with other autoimmune diseases like Crohn's disease show a higher amount of *Firmicutes* as compared to *Bacteroidetes* than healthy patients. Individuals with colorectal cancer tend to have a high amount of *Bacteroidetes*. With respect to genetic factors, there are certain genes (such as IKZF1, BCAT 1, and FCGR2A) that are shared between autoimmune diseases, gastric cancer, and other gastrointestinal diseases. An imbalanced gut microbiome can be the key to identifying autoimmune diseases and their comorbid gastrointestinal issues.

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