

**Title:**

The Genetic Groundwork of Crohn's Disease

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**Abstract:**

Crohn's Disease is a chronic inflammatory disorder of the gastrointestinal tract, whose etiology involves the complex interplay of genetic, epigenetic, and environmental factors. This review analyzes how genetic mutations, especially in NOD2 and ATG16L1 genes, and epigenetic changes mediated by DNA methylation and histone modifications might influence immune dysregulation in Crohn's Disease. It also discusses how environmental risk factors (smoking, diet), which determine the severity of the disease, trigger genetic-environmental interactions that predispose to these diseases. Recent progress in illustrating these pathways has led to personalized therapeutic approaches focused on specific molecular targets. Although the introduction of biological therapies has dramatically changed the management of the disease, many patients show variable treatment responses, highlighting a need for an alternative approach, including epigenetic modulators. Future studies are needed to develop targeted interventions and measure their long-term clinical utility. Advancements in personalized medicine based on genetic, epigenetic, and environmental information can improve therapeutic outcomes and the quality of life in Crohn's Disease patients.