



*nutrients*



*Special Issue Reprint*

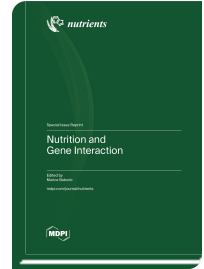
## **Nutrition and Gene Interaction**

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Over the past 15 years, nutrigenomics has established the relationship between genes, nutrition, and disease. This exciting research area shows that nutrition is not just about preventing deficiencies; it can also prevent and treat chronic illnesses like diabetes, cancer, and neurodegenerative disorders. By identifying how nutrients modulate cellular signaling pathways, diet can be used as a first line of defense against these chronic illnesses. This research helps inform dietary recommendations at the individual level and guide public dietary guidelines to reduce the prevalence of chronic illness.

This Special Issue compiles recent research on how nutrients impact genetic expression, using methods like transcriptomics, proteomics, and metabolomics. It presents nine studies exploring gene–diet interactions across various health outcomes, highlighting the promise and complexity of nutrigenomics. The key findings presented include the role of fermented foods in reducing the risk of non-alcoholic fatty liver disease, the influence of genetics on dietary needs and bone health, and the impact of early-life nutrition on long-term gene expression. The Special Issue also addresses the genetic regulation of liver, cardiovascular, and thyroid diseases, and the potential for personalized nutrition interventions to reduce disease risk.

Overall, this reprint advocates for precision nutrition, leveraging genetic and epigenetic insights to create personalized dietary strategies for better health outcomes.



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