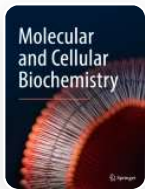


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Gut microbiota regulates gut homeostasis, mucosal immunity and influences immune-related diseases

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Abstract

The intestinal microbiome constitutes a sophisticated and massive ecosystem pivotal for maintaining gastrointestinal equilibrium and mucosal immunity via diverse pathways. The gut microbiota is continuously reshaped by multiple environmental factors, thereby

influencing overall wellbeing or predisposing individuals to disease state. Many observations reveal an altered microbiome composition in individuals with autoimmune conditions, coupled with shifts in metabolic profiles, which has spurred ongoing development of therapeutic interventions targeting the microbiome. This review delineates the microbial consortia of the intestine, their role in sustaining gastrointestinal stability, the association between the microbiome and immune-mediated pathologies, and therapeutic modalities focused on microbiome modulation. We emphasize the entire role of the intestinal microbiome in human health and recommend microbiome modulation as a viable strategy for disease prophylaxis and management. However, the application of gut microbiota modification for the treatment of immune-related diseases, such as fecal microbiota transplantation and probiotics, remain quite challenging. Therefore, more research is needed into the role and mechanisms of these therapeutics.



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