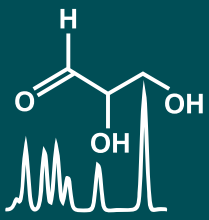

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Special Issue Reprint

Effects of Environmental Exposure on Host and Microbial Metabolism

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Trillions of microorganisms, collectively known as the gut microbiota, reside in our gastrointestinal tract and play an essential role in human health and disease. The gut microbiota can be disrupted by various factors, including environmental exposure. Disruptions of the gut microbiota by environmental exposure may exert adverse effects on human health by affecting host metabolism, intrinsic microbial metabolism, and gut microbiota–host co-metabolism. This Reprint investigates a wide spectrum of these influences, from emerging environmental pollutants like microplastics, per- and polyfluoroalkyl substances, and bisphenol S to traditional contaminants such as fluoride and epoxiconazole fungicide. It also evaluates the role of dietary factors, including non-caloric sweeteners, probiotics, prebiotics, and natural compounds. The research compiled here marks a significant advance in deciphering the complex relationship between our environment, our metabolism, and our microbial inhabitants. These findings are crucial in unraveling the intricate metabolic processes that shape both human health and the dynamics of our microbial partners. While these findings are pivotal, they also underscore the need for further research to establish the causal roles of the gut microbiota in disease development and progression. A deeper understanding of these interdependencies is essential to guide the development of precise and effective strategies for disease prevention and treatment.

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