Special Issue

The Role of Metabolites and the Gut Microbiota in Development, Homeostasis, and Diseases

Message from the Guest Editors

The gut microbiota and its associated metabolites play a crucial role in regulating host development and maintaining physiological homeostasis. This complex and dynamic ecosystem influences diverse biological processes, including immune system maturation, nutrient processing, and metabolic regulation. Through primary and secondary metabolic pathways, intestinal microbes produce numerous metabolites that act as key signaling molecules, modulating host cellular pathways and contributing to both health and disease. Disruptions in microbiome composition or function—dysbiosis—are linked to metabolic syndrome, inflammatory diseases, and developmental disorders via the gut–organ axis, i.e., the two-way interaction between the gut microbiota and other organs. This Special Issue aims to advance understanding of the intricate crosstalk between microbial communities, their metabolic outputs, and host physiology, with emphasis on mechanisms underlying systemic homeostasis. We welcome original research from basic models to epidemiological studies, as well as novel measurement techniques, bioinformatics tools, and innovative data analysis approaches.

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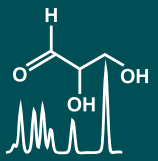

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About the Journal

Message from the Editor-in-Chief

The metabolome is the result of the combined effects of genetic and environmental influences on metabolic processes. Metabolomic studies can provide a global view of metabolism and thereby improve our understanding of the underlying biology. Advances in metabolomic technologies have shown utility for elucidating mechanisms which underlie fundamental biological processes including disease pathology. *Metabolites* is proud to be part of the development of metabolomics and we look forward to working with many of you to publish high quality metabolomic studies.

Editor-in-Chief

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