Special Issue

Immune Response to Pathogen Infection

Message from the Guest Editors

The immune response to pathogen infection is a complex and tightly regulated process that involves both innate and adaptive mechanisms working together to control and clear invading microorganisms. Immunogenetic factors play a major role in shaping these responses, since genetic variations can influence individual susceptibility, disease severity, and even how efficiently the immune system reacts. Within the adaptive immune branch, T and B lymphocytes are crucial players. In addition, the microbiome has emerged as an essential component influencing host immunity. Its composition and diversity can modulate immune maturation, affect resistance to pathogen colonization and even alter the quality of vaccine-induced responses. Although we still do not fully understand all these interactions, it is clear that host genetics and the microbiome work together in shaping the immune system.This Special Issue explores how immunogenetics, microbiome dynamics, and cellular and humoral mechanisms integrate to define the immune response to infection and its clinical outcomes, opening new possibilities for personalized therapies and more effective vaccination strategies.

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"Microorganism" merges the idea of the very small with the idea of the evolving reproducing organism is a unifying principle for the discipline of microbiology. Our journal recognizes the broadly diverse yet connected nature of microorganisms and provides an advanced publishing forum for original articles from scientists involved in high-quality basic and applied research on any prokaryotic or eukaryotic microorganism, and for research on the ecology, genomics and evolution of microbial communities as well as that exploring cultured microorganisms in the laboratory.

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