

Special Issue

Macrophage Plasticity: Beyond the M1–M2 Paradigm

Message from the Guest Editor

Macrophages are versatile immune cells with plasticity to adopt diverse functional states in response to microenvironmental cues. The classical framework of macrophage polarization into M0 (non-polarized), M1 (pro-inflammatory), and M2 (anti-inflammatory) states has long underpinned immunology, though emerging evidence shows this model oversimplifies their complex, dynamic biology. In vivo, macrophages exhibit a broad phenotypic spectrum, often co-expressing markers traditionally linked to both M1 and M2. This diversity reflects a continuum of activation states shaped by cytokine milieu, tissue-specific signals, metabolic status, and epigenetic modifications. This Special Issue aims to highlight the plasticity and multifaceted roles of macrophages in health and disease. We welcome original research and reviews exploring novel subtypes, unrecognized functions, and mechanisms of immune modulation. Topics include (but not limited to):

- The plasticity and heterogeneity of macrophage subtypes
- Microenvironmental influences on macrophage polarization and metabolism
- Epigenetic regulation and innate immune memory in macrophages

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Guest Editor

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The International Journal of Molecular Sciences (*IJMS*, ISSN 1422-0067) is an open access journal, which was established in 2000. The journal aims to provide a forum for scholarly research on a range of topics, including biochemistry, molecular and cell biology, molecular biophysics, molecular medicine, and all aspects of molecular research in chemistry. *IJMS* publishes both original research and review articles, and regularly publishes special issues to highlight advances at the cutting edge of research. We invite you to read recent articles published in *IJMS* and consider publishing your next paper with us.

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