

Special Issue

Exploring the Mechanisms of the Effects of Microplastics and Nanomaterials on Biological Physiological Functions

Message from the Guest Editor

The increasing presence of microplastics and engineered nanomaterials in our environment and biological systems has become a pressing concern for human and ecological health. Mounting evidence indicates that microplastics and nanomaterials may induce oxidative stress, inflammation, mitochondrial dysfunction, endoplasmic reticulum stress, and autophagy dysregulation. Furthermore, the interaction of these cells with the immune system, gut microbiota, neural circuits, and endocrine systems can result in subtle but chronic physiological disturbances. Despite the growing awareness of this phenomenon, the precise molecular and cellular mechanisms underlying these effects remain largely elusive and urgently need clarification. The present Special Issue has been conceived to explore the mechanistic basis of how microplastics and nanomaterials affect biological systems, with a focus on physiological functions at cellular, tissue, organ, and systemic levels. Contributions employing in vitro models, animal studies, omics technologies, and imaging techniques to investigate uptake, biodistribution, biotransformation, signaling pathway disruption, and long-term toxicity are welcome.

Guest Editor

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