

Special Issue

Genetic and Molecular Determinants of Chemical-Induced Genotoxicity and Oxidative Stress

Message from the Guest Editors

Rapid advancements in molecular biology, toxicology, and omics technologies have dramatically expanded our knowledge of the pathways governing DNA damage, repair capacity, and the intricate roles of reactive oxygen species (ROS) in cellular dysfunction. This Special Issue aims to bring together cutting-edge research exploring how diverse chemicals—including environmental toxicants, endocrine disruptors, and engineered nanomaterials—interfere with genome integrity, mitochondrial function, and redox homeostasis. We are particularly interested in studies that elucidate mechanisms of DNA repair, mitochondrial dysfunction, oxidative stress signaling, and their contributions to genotoxicity, neurotoxicity, aging, and cancer. Additionally, we welcome research at the interface of nanomedicine and toxicology, focusing on both the therapeutic potential and safety considerations of nanoscale materials. By assembling comprehensive research papers and reviews on these topics, this Special Issue seeks to advance our understanding of the molecular foundations of chemically induced biological damage and to illuminate new strategies for risk assessment, prevention, and therapeutic intervention.

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Message from the Editor-in-Chief

A major strength of biological science is the diversity of approaches that biological scientists apply to their research problems. *Biology* reflects this diversity and brings together studies employing the varied experimental and theoretical approaches that are fueling biological discovery. *Biology*, the journal, is a fully peer-reviewed publication with a rapid and economical route to open access publication and is listed on PubMed. All articles are peer-reviewed and the editorial focus is on determining that the work is scientifically sound rather than trying to predict its future impact.

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