

Special Issue

Advanced Strategies in Bacterial Antibiotic Resistance

Message from the Guest Editor

Bacteria deploy sophisticated tactics—genetic mutations, adaptive evolution, and exploitation of mobile genetic elements (MGEs) like plasmids, transposons, and integrons—to acquire, optimize, and spread resistance. This Special Issue aims to gather cutting-edge research and comprehensive reviews that explore the novel and evolving tactics employed by bacteria to survive antibiotic pressure. It focuses on the molecular, genetic, and ecological strategies bacteria use to achieve and enhance resistance.

Suitable topics include, but are not limited to:

Novel resistance mechanisms (enzymatic inactivation pathways, efflux pump variants, target site mutations, and permeability barriers).

Emerging vectors (plasmids, ICEs, phages) and conditions facilitating the accelerated spread of resistance genes.

Strategies like persister cell formation, transient tolerance induction, and population heterogeneity enabling survival under fluctuating antibiotic exposure.

Global regulators, stress responses, metabolic adaptations, epistasis, and compensatory evolution fine-tune resistance and fitness.

Enhanced resistance mechanisms unique to or amplified within biofilm communities.

Guest Editor

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Message from the Editor-in-Chief

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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