

Special Issue on  
**Functional Genomics in Antimicrobial Drug  
Development: Current Technologies, Challenges, and  
Future Prospects**

# CALL FOR PAPERS

Infectious diseases are caused by pathogenic microbes such as bacteria, viruses, or fungi. They pose a serious threat to human health and are a significant cause of morbidity and mortality worldwide. In recent years, most antimicrobial drugs used to treat infectious diseases are becoming futile due to rapid emergence of multidrug resistance in common pathogens. An increase in infection due to a rise of antimicrobial resistance underlines the need for constant vigilance to fight against pathogenic microbes. There is little doubt that unravelling the mystery behind antimicrobial resistance mechanisms and rebuilding our antimicrobial drug arsenal by discovering new candidates could possibly protect humans from infectious diseases.

Over the past few years, various functional genomics techniques are implemented in the modern antimicrobial drug discovery process. Functional genomics approaches such as knockout analyses, mutation studies, genome engineering, metabolomics, transcriptome, and proteome expression profiling help to broaden our knowledge on host-pathogen interaction, pathogen physiology, and antimicrobial resistance mechanisms in general and have become the key methods to investigate the role of genes of unknown function. Functional genomics methods have also proven instrumental in the identification and validation of drug action from target assays. There are still good reasons to believe that utilizing functional genomics methods along with other existing traditional methods would result in the discovery of novel antimicrobials that are so urgently needed to cope with antimicrobial resistance development.

In this special issue, we aim to summarize the current status of functional genomic approaches to study host-pathogen interaction, microbial pathogenicity, multidrug resistance, and antimicrobial drug discovery.

Potential topics include but are not limited to the following:

- ▶ Pathogenomics in antimicrobial target discovery
- ▶ Metagenomics-guided antimicrobial discovery
- ▶ Genetically modified microbial strains for drug screening and determination of mode of action
- ▶ CRISPR-cas9 antimicrobials: challenges and future prospects
- ▶ Implementation of Next-Generation Sequencing (NGS) technology in antimicrobial drug discovery
- ▶ Targeting host-pathogen interactome for antimicrobial drug discovery
- ▶ Genome-wide transcriptome profiling of genes in understanding antimicrobial resistance mechanisms
- ▶ Metabolomics in antimicrobial drug discovery
- ▶ Proteomics of microbial pathogens
- ▶ Omics technologies for prospective antimicrobial drug development
- ▶ Genome-wide strategies for discovery of Next-Generation antimicrobials

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