Special Issue

Discovery and Structure Optimization of Antibacterial Natural Products

Message from the Guest Editor

Natural products (NPs) have been an important source of drug discovery and development due to their novel structures and wide range of pharmacological activities. Most antibiotics are derived from NPs and their derivatives, such as penicillin G, amoxicillin, oxytetracycline, and minocycline. NPs have particular advantages over purely synthetic molecules. First, they are evolutionarily "optimized" structurally for specific biological functions, including anti-infection, interaction with other organisms, and receptor/protein binding. Second, NPs have a broader chemical space than typical synthetic small molecule compound libraries, bringing the advantages of scaffold diversity and structural novelty. Third, due to the large number of sp3 carbon atoms and chiral centers, NPs have the unique ability to interact with receptors and targeting selectivity, thereby exhibiting multiple antimicrobial mechanisms of action, such as disrupting bacterial cell membranes and inhibiting cell wall synthesis. Therefore, NP-based antimicrobial drug discovery is one of the hot topics in current research.

Guest Editor

Dr. Yong Guo

1. School of Pharmaceutical Science, Hengyang Medical School, University of South China, Hengyang, China
2. School of Pharmaceutical Sciences, Zhengzhou University, Zhengzhou, China

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Molecules
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
molecules@mdpi.com

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Message from the Editor-in-Chief

As the premier open access journal dedicated to molecular chemistry, now in its 29th year of publication, the papers published in *Molecules* span from classical synthetic methodology to natural product isolation and characterization, as well as physicochemical studies and the applications of these molecules as pharmaceuticals, catalysts, and novel materials. Pushing the boundaries of the discipline, we invite papers on all major fields of molecular chemistry and multidisciplinary topics bridging chemistry with biology, physics, and materials science, as well as timely reviews and topical issues on cutting-edge fields in all of these areas.

Editor-in-Chief

Prof. Dr. Thomas J. Schmidt
Institute of Pharmaceutical Biology and Phytochemistry, University of Münster, Corrensstrasse 48, D-48149 Münster, Germany

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