

Special Issue

New Advances in Functional Nanomaterials, Nanomedicines and Biosensors Based on Nucleic Acids

Message from the Guest Editors

Nucleic acids, including DNA and RNA, play important roles beyond genetics. Recently, they have been widely applied in functional nanomaterials, nanomedicines, and biosensors. In nanomaterials, nucleic acid-based structures like DNA enzymes and aptamers are combined with materials such as gold nanoparticles and MnO₂ nanosheets for targeted drug delivery, gene regulation, imaging, and sensing. In nanomedicine, nanotechnology improves the delivery of siRNA, miRNA, and DNA by protecting them from degradation and increasing bioavailability. For biosensing, aptamers and DNazymes serve as biorecognition elements, enabling detection of pathogens, gene mutations, and biomarkers through measurable signals. These applications offer high sensitivity and specificity, making nucleic acids powerful tools in diagnostics and biomedical research.

Guest Editors

Dr. Yuancong Xu

College of Life Science and Chemistry, Faculty of Environment and Life, Beijing University of Technology, Beijing 100124, China

Dr. Peng Cao

College of Chemistry and Life Science, Beijing University of Technology, Beijing 100124, China

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MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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Editor-in-Chief

Prof. Dr. Maurizio Battino

Department of Odontostomatologic and Specialized Clinical Sciences,
Sez-Biochimica, Faculty of Medicine, Università Politecnica delle
Marche, Via Ranieri 65, 60100 Ancona, Italy

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