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Special Issue Reprint

Supramolecular Systems for Gene and Drug Delivery, 2nd Edition

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This Special Issue highlights the pivotal role of supramolecular and nanostructured biomaterials in nanomedicine. Through a carefully curated selection of nine original articles and reviews, this volume explores how molecular engineering can overcome crucial pharmaceutical barriers, such as poor drug solubility, rapid systemic elimination, and off-target toxicity.

The studies presented demonstrate the versatility of systems, ranging from cyclodextrins and calixarene nanoparticles for enhanced bioavailability to polymeric micelles and niosomes for targeted cancer and gene therapies. Furthermore, the use of carbon nanotubes, synthetic peptides, and biomimetic scaffolds underscores the potential of these platforms for treating oxidative stress, fungal infections, and promoting tissue regeneration. In summary, these contributions provide a comprehensive roadmap for designing the next generation of biocompatible and efficient therapeutic delivery systems.

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