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Special Issue Reprint

## Recent Advances in Microneedle-Mediated Drug Delivery

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This Special Issue, titled "Recent Advances in Microneedle-Mediated Drug Delivery," published in *Pharmaceutics*, presents state-of-the-art research focused on novel developments and biomedical applications of microneedle technologies. The collection highlights innovative approaches across various microneedle types, including dissolving, solid, hollow, and coated microneedles. The key advancements explored in this issue include breakthroughs in microneedle fabrication techniques, materials science, drug encapsulation methods, and controlled release systems. Significant emphasis is placed on demonstrating improved therapeutic outcomes, enhanced bioavailability, and reduced side effects via minimally invasive transdermal delivery. Additionally, applications covering vaccine delivery, biologics administration, and precision medicine illustrate the broad therapeutic scope and clinical relevance of microneedle platforms. Overall, this compilation provides comprehensive insights into recent scientific progress, emphasizes critical future directions, and reinforces microneedle-mediated drug delivery as a transformative approach in pharmaceutical sciences and healthcare innovation.

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