

Special Issue

Recent Advances in Non-Viral Vectors for Gene Therapy and Gene Delivery

Message from the Guest Editor

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This Special Issue aims to collate mechanism-anchored research that advances the efficacy, specificity, and safety of non-viral gene delivery vectors, positioned within the core disciplines of formulation science, biopharmaceutics, pharmacokinetics, and nanomedicine. For this Special Issue, original research articles and reviews are welcome to be submitted. Research areas may include, but are not limited to, the following:

- Lipid, polymer, peptide, extracellular vesicle, and inorganic carrier platforms;
- Tissue-selective targeting, biodistribution, and barrier traversal in vivo;
- Cellular uptake pathways, endosomal escape mechanisms, and organelle routing;
- Immune interactions, reactogenicity mitigation, and tolerability profiling;
- Scalable manufacturing and CMC, including stability and analytical release testing;
- Microfluidic synthesis, process intensification, and quality-by-design;
- Quantitative PK/PD modeling, systems analysis, and imaging-guided tracking;
- Delivery of CRISPR/Cas systems, base/prime editors, and antisense oligonucleotides;
- mRNA and self-amplifying RNA vaccines, protein replacement, and gene modulation.

Guest Editor

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Message from the Editor-in-Chief

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