

Special Issue

Advances in Cationic Nanoparticles for Vaccine Delivery: Design, Mechanisms, and Applications

Message from the Guest Editors

Cationic nanoparticles (cNPs) and adjuvants are emerging as transformative tools in vaccine research, offering innovative solutions to enhance antigen delivery and immunogenicity. Their positive charge facilitates strong electrostatic interactions with negatively charged cell membranes, promoting efficient cellular uptake and improved antigen presentation. These properties make cNPs well suited for delivering diverse vaccine types, including protein-based, viral vector, and nucleic acid vaccines. At the same time, cationic adjuvants amplify immune responses, enabling robust and long-lasting immunity with reduced doses and fewer administrations.

We particularly encourage contributions that achieve the following:

- Focus on vaccines for high-priority global health targets, including both infectious diseases (e.g., HIV, malaria, tuberculosis) and therapeutic applications like cancer.
- Explore how cNPs can support dose-sparing strategies, improve accessibility, or enhance vaccine stability outside cold-chain environments.
- Integrate experimental and computational approaches to enhance understanding and predict vaccine safety and efficacy.

Guest Editors

Dr. Lúcia Maria Diogo Gonçalves

Faculdade de Farmácia, Universidade de Lisboa, 1649-003 Lisboa, Portugal

Dr. Yunys Pérez-Betancourt

Department of Microbiology, Cummings Life Science Center, University of Chicago, 920 E 58th St., Chicago, IL 60637, USA

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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Prof. Dr. Patrick J. Sinko
Department of Pharmaceutics, Ernest Mario School of Pharmacy,
Rutgers University, Piscataway, NJ 08854, USA

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