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Nanoparticles for Tumor Imaging and Therapy

Guest Editor:

Prof. Dr. Paola Manini
Department of Chemical Sciences, University of Naples "Federico II", Complesso Universitario di Monte S. Angelo, Via Cupa Nuova Cinthia 21, 80126 Naples, Italy

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Message from the Guest Editor

In this century, nanoparticles (NPs) have been given a great amount of attention by biomedical researchers. NPs can disperse hydrophobic drugs stably in aqueous conditions without aggregation. Importantly, their physicochemical properties, including size and surface charge, can easily be modified by adjusting the component molecules or fabrication method. NPs can delay the early release of drugs in order to allow sufficient time for therapeutic action.

In terms of tumor-targeting, NPs utilize two basic strategies comprising either passive or active targeting. Passive targeting is based on physicochemical properties. Specifically, when NPs are injected intravenously, they generally circulate longer in the blood stream compared to free drugs. In angiogenic tissues such as tumors, NPs penetrate the fenestrated structure of blood vessels more at the disease site, which in turn leads to significant accumulation of the drug, which is aided in part by slow lymphatic drainage. On the other hand, active targeting relies on a biological interaction between ligands on the surface of NPs and the cell target, which further increase specificity.

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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

Message from the Editor-in-Chief

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International Journal of Molecular Sciences Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

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