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Sommario/riassunto	Nanoparticles (NPs) offer unique properties for biomedical applications, leading to new nanomedicines. Recent examples of advanced nanoparticle-based nanomedicines are COVID-19 RNA vaccines. Regardless of the delivery route of the NPs into the body (intravenous or subcutaneous injection, oral, intranasal, etc.), NPs inevitably come into contact with immune cells, such as macrophages. Macrophages are phagocytizing cells that determine the fate and the lifetime of NPs in relevant biological fluids or tissues, which has consequences for both nanosafety and nanomedicine. The aim of this Special Issue is to cover recent advancements in our understanding of NP-macrophage interactions, with a focus on in vitro models for nanosafety and novel nanomedicine approaches that allow the modulation of the immunological profile of macrophages. The current Special Issue compiles nine papers: seven research articles and two review articles. The original articles include studies on the interaction of different nanomaterials, such as multi-walled carbon nanotubes (MWCNTs), amorphous silica, gold nanoparticles, lipid carriers, and microspheres, with macrophages in different scenarios.