Table S1 Basic characteristics and Promising roles of common NPs.

Category	Size (nm)	Particle Structure	Therapeutic Use
Liposomes	50-450	Spherical vesicle with lipid bilayer membrane structure and aqueous core	–Delivery of therapeutics –Gene therapy –Biomedical implants
SLNs	50-1000	Lipid matrix solid at physiological temperature, surfactants and, in some occasions, by cosurfactants	–Controlled release of the incorporated drug –Providing chemical protection for therapeutics –Gene therapy
PMs	10-100	Core-shell structures of spontaneously self-assembled Amphiphilic co-polymers	–Delivery of therapeutics, including pH sensitivity drug release –Imaging contrast agent –Solid tumor therapeutics –Gene therapy
Dendrimers	<15	Highly branched, monodispersed macromolecule with tendrils extending from a central core	–Delivery of therapeutics –Conjugation of chemotherapeutics –Gene therapy
MSNs	50-300	A honeycomb-like porous structure with hundreds of empty mesoporous	–Precisely regulate targeted drug release –Optical, and photothermal properties –Gene delivery –Overcome tumor chemoresistance
QDs	2-10	Heavy metal cores surrounded by a bandgap semiconductor shell	–Optical and fluorescent properties –Biomedical implants –Imaging contrast agent –Therapeutics delivery –Quantum optical semiconductor device
CNTs	10-200	Tiny tubular shapes composed of carbon atoms	–Delivery of therapeutics –Conjugation to antibiotics as an antimicrobial agent –Imaging contrast agent –Tumor imaging and therapeutics –Gene delivery –Efficient and rapid hemostasis, improve the safety of surgery

			–Photodynamic therapy and photothermal therapy
Metallic nanoparticles	1-100	Gold, copper, silver	–Optical, photoelectric, fluorescent, and photothermal properties –Imaging contrast agent –In vivo tumor imaging –Gene delivery –Breast cancer diagnostics –Adjuvants for cancer vaccines -Demonstrated significant cytotoxic and radiosensitizing effects