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Targeted Nanomedicine for Prevention and Treatment of Diseases

Abstract: Targeted Nanotechnology has the potential to deliver multiple imaging and therapeutic agents to the "right place" at the "right time" thereby enhancing treatment outcome while reducing morbidity. This could dramatically improve treatment responses in several diseases, especially, cancer where the survival statistics have been, so far, dismal. Treatment specificity can be further improved by using remotely triggered therapeutic modalities like photodynamic therapy, which involves the use of light to cause cell death. Nanotechnology also enables a novel approach to combination therapies by allowing target specific, intracellular delivery of multiple agents for rational mechanism-based combinations that can further enhance treatment outcome. Nanochemoprevention, which involves use of nanoparticles for delivery of chemopreventive agents, is an emerging field that has shown some promise for cancer prevention. Although still in its infancy, nanomedicine, which refers to the use of nanotechnology for biomedical applications, has already made an impact in the clinic. Translational nanomedicine is a rapidly growing interdisciplinary field and in this talk I'll focus on the synthesis, characterization and preclinical testing of nanoparticles that could be potentially used for the prevention and treatment of cancer.