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Title - Nanomaterial-based delivery systems to overcome the limitations of oncolytic adenovirus

Abstract - Despite exponential growth in clinical development of oncolytic virus (OV) in recent times, there are several limitations that must be overcome to maximize their therapeutic potential in the clinical environment. Both local and systemic delivery efficiency of OVNs can be greatly augmented by utilizing nanomaterial-based carrier systems. Nanomaterials can be strategically engineered to facilely endow novel or enhanced functional properties to OVNs that are not easily achievable via genetic engineering of the viral genome; for example, ability to evade of host immune surveillance system, prolong blood circulation time upon intravenous administration, perpetuate biological activity of the virus in tumor tissues, or attenuate nonspecific shedding and off-target accumulation in normal tissues. Although there is no one-size-fits-all carrier system that addresses numerous and diverse obstacles to maximize the delivery efficiency of OVNs, many innovative nanomaterial-based carrier systems have been developed to enhance the therapeutic potential and safety profile of locally or systemically delivery of OVNs to date.