

Polymer Nanocomplex having Pathogen-mimicking Multivalency and Cell Entry Moieties for Enhanced Immunostimulation

김선영, 임용택<sup>†</sup>

성균관대학교

(yongtaik@skku.edu<sup>†</sup>)

In this work, we designed and synthesized linear type flexible polymer-based multivalent nanoconjugates consisting of multivalent immune stimulating epitope for the effective immunomodulation of antigen presenting cells such as dendritic and macrophage cells. Cytosine-Guanine(CpG) oligodeoxynucleotides can be recognized by Toll-like receptor 9 (TLR9) and induce powerful immune response via cell signaling pathways including NF $\kappa$ B and mitogen-activated protein kinases(MAPKs). Hyaluronic acid (HA) is a biocompatible, biodegradable, non-toxic polysaccharide, which has been applied for various drug delivery systems. In summary, we have developed HA polymer-based multivalent nanoconjugates and nanocomplex adjuvant materials for enhanced immunostimulation, by the combination of multivalent immune adjuvants with CpG ODNs (as a TLR9 ligand) and cationic PLL for the enhancement of cellular uptake. We showed that multivalent nanoconjugates exhibit a potent immunostimulatory activity in vitro and in vivo. In the future, these studies could be used to develop programmed immune-cells for efficient cancer immunotherapy.